

THOUBAL MULTIPURPOSE PROJECT

(e-TENDER)

TENDER NOTICE NO. 4

NO. ACE-II/IFC/7-50/2013-14/137 Dt. 30/08/2014

NAME OF WORK :- TMP, L-Earth Works (SH: Construction of RCC Tunnel from RD 9,380m to 10,220m for Water Transmission System from Thoubal Dam to Chingkheiching) – Package – 2.



**GOVERNMENT OF MANIPUR
IRRIGATION & FLOOD CONTROL DEPARTMENT**

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GOVERNMENT OF MANIPUR
IRRIGATION & FLOOD CONTROL DEPARTMENT

INVITATION FOR BIDS (IFB)

BID NO.:- ACE-II/IFC/7-50/2013-14/137 Dated: 30-08-2014

1. The Additional Chief Engineer-II, IFC Deptt, Manipur for and on behalf of the Governor of Manipur invites bids for the under-mentioned work detailed from registered contractors and firms.

Sl. No	Name of work	Approx. value of work (Rs)	Bid Security (Rs)	Tender Fee (Rs)	Period of Completion
1	2	3	4	5	6
1.	TMP, L-Earth Works (SH: Construction of RCC Tunnel from RD 9,380m to 10,220m for Water Transmission System from Thoubal Dam to Chingkheiching) – Package -2	16,30,63,673	32,61,000	15,000/-	15 (fifteen) Months

2. Bidding documents may be downloaded from the website <https://manipurtenders.gov.in> from **11.00 Hrs of 08/09/2014 to 11.00 Hrs of 07/10/2014**. Interested bidders may obtain further information at the same site.
3. Only Online Submission of the bids is acceptable. Offline Submission of the bids in Hard Copies is not acceptable and shall not be received. However the originals of Demand Draft/Bank Guarantee are to be submitted in hard copies.
4. All documents/papers uploaded/submitted by the bidder must be legible.
5. The **Tender fee** given in the table above, which is **not refundable**, is to be in the form of **demand draft** only of any nationalised bank payable at Imphal and drawn in favour of the **Executive Engineer, Thoubal Project Division No-VI, IFC Deptt, Manipur** and should be valid for 45 (forty five) days from the date of opening of the bid.
6. The **Bid Security (EMD)** of the amount specified for the work in the table is to be in the form of **demand draft/Bank Guarantee** of any nationalised bank payable at Imphal and drawn in favour of the **Executive Engineer, Thoubal Project Division No-VI, IFC Deptt, Manipur**. Bid security shall be valid for 45 days beyond the validity of bid i.e. (120+45) days.
7. Bids must be accompanied by scan copies of the Tender Fee and Bid Security (EMD).
8. Bids must be submitted online *w.e.f 11.00 hours of 08/09/2014* and shall be accepted up to **11.00 Hours of 07/10/2014**. The **Technical Bid** will be opened on **09/10/2014 at 13.00 Hours**. Interested bidders may attend the opening of the bid. If the office happens to be closed on the date of opening of the bid as specified, the bid will be opened on the next working day at the same time and venue.
9. Interested eligible bidders, if so desire, may obtain further information from the office of the authority inviting tender through the mail address, adlce2ifcd@gmail.com and phone No. **0385-2452947**
10. The original copies of the Bid security and Tender Fee should be submitted to the employer (Additional Chief Engineer-II, IFC Deptt, Manipur), Superintending Engineer, Thoubal Circle No-II, IFC Deptt, Manipur, Executive Engineer, Thoubal Project Division No-VI, IFC Deptt, Manipur on or before 1600 hours of **04-10-2014**. No proposal will be accepted in physical form except Bid Security & Tender Fee. If the office happens to be closed on the last

date of submission of Bid Security & Tender Fee in hard copy as specified, the same will be received on the next working day at the Office mentioned above. In case, Bid security & Tender Fee are not received within the specified time, the Bid shall be considered non responsive and shall not be downloaded/evaluated.

11. The Eligibility Criteria will be as under:

A. Technical Criteria:

The tenderer(s) should have physically completed within qualifying period i.e. the last 5 financial year and current financial year (even though the work might have commenced before the qualifying period) at least one work of similar nature for a minimum value of 35% of advertised tender value in State/Central Government Departments or any other / Semi Govt. organization or PSU etc.

- (i) Similar nature of works physically completed within the qualifying period, i.e. the last 5 financial years and current financial year (even though the work might have commenced before the qualifying period) shall only be considered in evaluating the eligibility criteria.
- (ii) The total value of similar nature of work completed during the qualifying period, and not the payments received within qualifying period alone, shall be considered.
- (iii) In the case of composite works involving combination of different works, even separate completed works of required value shall be considered while evaluating the eligibility criteria.

OR

Tenderer(s) should have received in any one financial year during the last 5 financial years (i.e. current year and five previous financial years) minimum payment of 35% of advertised Tender value of work from one or two similar satisfactorily completed/progressing works.

Note:

- a) The satisfactorily progressing works are considered those works where 50% of contract value has been paid.
- b) Certificate from private individuals/firms for whom such works are executed/being executed shall not be considered.
- c) *Similar nature of work means: The Bidder(s) should have experience in tunneling works of at least 500m long in the last 3 (three) years.*

B. Financial Criteria

Total contract amount received during the last three years (i.e. the current year and three previous financial years) should be minimum of 100% of advertised tender value of work with a minimum turn-over of Rs. 100 crores in last 3 financial years supported by (a) Authenticated payment record of any other Government Department or PSU's etc. or (b) Audited Financial Statement certified by Chartered Accountant.


12. Bids shall be strictly treated as non-responsive if:

- (i) Bid is not accompanied by bid security (with validity for a period of not less than 45 days beyond the validity of bid) and not secured as indicated in sub-clauses 16.1 and 16.2 of the Bidding Document.
- (ii) The undertaking regarding validity of bid, for a period of 120 days after the deadline date for bid submission specified in clause 20 of the bidding document, is not submitted.

13. The department shall not be responsible for any delay in postal service or disruption of web service.

14. The rates are inclusive of cost of traffic management during construction. Contractor shall

- provide road signals, bollards, boards, gunny bags, sheets etc. for safety of traffic during construction period, which will be incidental to work.
15. Uploaded documents of valid successful bidder will be verified with the original documents before signing the Agreement. The valid successful bidder has to provide the originals to the concerned authority on receipt of such letter, which will be sent through registered post or submitted directly to the employer.
 16. Subsequent Corrigendum/ Addendum if any shall be available in website indicated above.
 17. The Authority reserves the right to cancel any or all bids without assigning any reason.
 18. The bidders must possess Digital Signature Certificate of class II or Class III for submission of bids through online in the above website.
 19. Other details can be seen in the bidding documents.


Addl. Chief Engineer-II
Irrigation & Flood Control Deptt,
Manipur.

Not to be Published.

Endt. No. ACE-II/IFC/5-70/2013-14/137

Dated, the Imphal 30th August, 2014

Copy to:-

1. P.S. to Hon'ble Minister (IFC), Manipur.
2. The Principal Secretary (IFC), Govt. of Manipur.
3. The Director, Information & Public Relation, Govt. of Manipur along with 10 (ten) copies of the tender notice for information and wide publication in local/national dailies for 2 (two) days. The bill for publication of the tender notice may be sent in duplicate to the **Executive Engineer, Thoubal Project Division No.VI, IFC Deptt., Manipur** for payment.
4. The Chief Engineer, IFC Deptt, Manipur.
5. The Addl. Chief Engineer-I, IFC Deptt, Manipur.
6. All SE's under IFC Deptt, Manipur.
7. The OSD, IT Department, Manipur. He is requested to upload the tender documents on the website
8. All Executive Engineers, under IFC Deptt, Manipur.
9. The Secretary, Hills & Plain Contractors Association, Manipur,
10. Notice Board.


Addl. Chief Engineer-II
Irrigation & Flood Control Deptt,
Manipur

CRITICAL DATES

NAME OF WORK :- TMP, L-Earth Works (SH: Construction of RCC Tunnel from RD 9,380m to 10,220m for Water Transmission System from Thoubal Dam to Chingkheiching)
–Package-2

BID NO.:- ACE-II/IFC/7-50/2013-14/137 Dated: 30-08-2014

Publishing/Downloading Documents *Tender:-* *1100 hrs of 08-09-2014*

Last date for seeking clarifications *:-* *1600 hrs of 15-09-2014*

Last date for submission of Bid Security:- *1600 hrs of 04-10-2014*
(EMD) as Bank Draft/Bank Guarantee &
Tender Fee as Bank Draft in originals.

Last date for submission of tender *:-* *1100 hrs of 07-10-2014*

Date for opening Technical Bid *:-* *1300 hrs of 09-10-2014*

Place of opening of Bids *:-* *Office of Additional Chief Engineer-II, IFC*
Deptt, PWD COMPLEX, KHOYATHONG
IMPHAL. MANIPUR.

Officer Inviting the Bid *:-* *Additional Chief Engineer-II,*
Irrigation & Flood Control Department,
Manipur.

For any queries please contact helpline No. 0385-2452947

Or, email at addlce2ifcd@gmail.com

**CHECK LIST DOCUMENTS/ CERIFICATES TO BE UPLOADED BY THE BIDDER
AS PART – I – TECHNICAL BID**

(A) UNDER COVER I

SL. NO.	DOCUMENTS	FORMAT FOR UPLOADING
1.	Scan Copy of Bid Security	PDF
2.	Scan Copy of Tender Fee.	PDF
3.	Methodology and Program of Execution	PDF
4.	Execution Certificate of Similar Work (Form 3A)	PDF
5.	Letter of Application	PDF

(B) UNDER MY DOCUMENT (AS PER PRESCRIBED FORMAT)

SL. NO.	DOCUMENTS	FORMAT FOR UPLOADING
1.	Registration Certificate.	PDF
2.	Permanent Account No (PAN) / Taxpayer Identification No. (TIN)	PDF
3.	Affidavit for correctness of Bid (As per Format).	PDF
4.	Average Annual Turn Over (Clause 4.4.3.a)	PDF
5.	Bankers Details.	PDF
6.	Audited Balance Sheet for last 5 (five) years.	PDF
7.	Litigation Details (Clause 4.4.8).	PDF
8.	Machinery / Equipment Capability (Clause 4.4.5).	PDF
9.	Manpower / Personnel Capability (Clause 4.4.4).	PDF
10.	List of works executed (As per Format).	PDF
11.	Undertaking for validity (As per Format).	PDF
12.	Existing Commitments (As per Format).	PDF
13.	Quality Assurance Programme.	PDF
14.	Organisational Structure & Chart	PDF

Instructions to Bidders (ITB)

A. GENERAL

1. Scope of Bid
 - 1.1. The Employer (named in Appendix to ITB) invites bids for the construction of works (as defined in these documents and referred to as “the works”) detailed in the table given in IFB. The bidders may submit bids for any or all of the works detailed in the table given in IFB.
 - 1.2. The successful bidder will be expected to complete the works by the intended completion date specified in the Contract data.
 - 1.3. Throughout these bidding documents, the terms ‘bid’ and ‘tender’ and their derivatives (bidder/tenderer /bid/tender, bidding/tendering, etc.) are synonymous.
2. Source of funds
 - 2.1. The expenditure on this project will be met from the budget provision of Government of Manipur.
3. Eligible Bidders
 - 3.1. *This Invitation for Bids is open to all bidders.*
 - 3.2. All bidders shall provide in Section 2, forms of Bid and Qualification Information, a statement that the Bidders is neither associated, nor has been associated, directly or indirectly, with the Consultant or any other entity that has prepared the design, specifications and other documents for the Project or being proposed as Project Manager for the Contract. A firm that has been engaged by the Employer to provide consulting services for the preparation or supervision of the works, and any of its affiliates, shall not be eligible to bid.
4. Qualification of the Bidder
 - 4.1. All bidders shall provide in Section 2, Forms of Bid and Qualification Information, a preliminary description of the proposed work method and schedule, including drawings and charts, as necessary. The proposed methodology should include program of construction backed with equipment planning and deployment duly supported with broad calculations and quality assurance procedures proposed to be adopted justifying their capability of execution and completion of work as per technical specifications, within stipulated period of completion.
 - 4.2. As the Employer has not under taken prequalification of potential bidders, all bidders shall include the following information and documents with their bids in Section 2:
 - (a) Copies of original documents defining the constitution or legal status, place of registration, and principal places of business; written power of attorney of the signatory of the bid to commit the Bidder;
 - (b) Total monetary value of construction work performed for each of the last five years.
 - (c) Experience in works of a similar nature and size for each of the last five years, and details of works underway or contractually committed; and clients who may be contacted for further information on those contracts;
 - (d) Major items of construction equipment proposed to be used to carry out the Contract;
 - (e) Qualifications and experience of key site management and technical personnel proposed for the contract
 - (f) Report’s on the financial standing of the Bidder, such as profit and loss statements and auditor’s reports for the past five years:
 - (g) Evidence of access to line (s) of credit and availability of other financial resources facilities (10% of contract value) certified by the Bankers (Not more than 3 months old)
 - (h) Undertaking that the bidder will be able to invest minimum cash up to 25% of contract value of the work, during implementation of work
 - (i) Authority to seek references from the Bidder’s bankers;
 - (j) Information regarding any litigation, current or during the last five years in which the Bidder is involved, the parties concerned, and disputed amount.
 - (k) Proposals for subcontracting components of the Works amounting to more than 10 percent of the

Bid Price (for each, *the qualifications and experience of the identified sub-contractor in the relevant field should be annexed*);

- (l) The proposed methodology and program of construction backed with equipment planning and deployment, duly supported with broad calculations and quality control procedures proposed to be adopted, justifying their capability of execution and completion of the work as per technical specifications within the stipulated period of completion as per milestones.

4.3 *Bids from Joint Ventures are not acceptable.*

4.4 QUALIFICATION CRITERIA.

4.4.1 Qualification will be based on Bidder's meeting all the following minimum pass/ fail criteria regarding the Bidder's general and particular experience personnel and equipment capabilities and financial position as demonstrated by the Bidder's responses in the forms attached to the letter of Application (Specified requirements for joint ventures are given under para 4.9 below). Subcontractors experience and resources shall not be taken into account in determining the Bidder's compliance with qualifying criteria. To qualify for more than one contract, the Bidder must demonstrate having experience and resources sufficient to meet the aggregate of the qualification criteria for each contract given in paragraphs 4.4.3, 4.4.4, 4.4.5, 4.4.6 & 4.4.9 below.

4.4.2 Base year and Escalation

The base year shall be taken as (Reflected at Sl. No. 8 of Appendix to ITB).

Following enhancement factors will be used for the costs of works executed and the financial figures to a common base value for works completed in India.

Year before	Multiplying factor
Two	1.21
Three	1.33
Four	1.46
Five	1.61

Bidder should indicate actual figures of costs and amount for the works executed by them without accounting for the above mentioned factors.

In case the financial figures and value of completed works are in foreign currency, the above enhanced multiplying factors will not be applied. Instead current market exchange rate (State Bank of India BC selling rate as on the last date of submission of the bid) will be applied for the purpose of conversion of amount in foreign currency into Indian rupees.

4.4.3 General Experience

The Bidder shall meet the following minimum criteria :

- a) Average annual turnover (defined as billing for works in progress and completed in all classes of civil engineering construction works only) over the last five years of 35 percent of the value of contract/ contracts applied for.
- b) Experience in successfully completing or substantially completing at least one contract of underground tunnelling work of at least 50 percent of the value of proposed contract within the last five years. The work may have been executed by the Bidder as prime contractor or as a member of Joint venture or sub contractor. As sub contractor, he should have acquired the experience of execution of all major items of works under the proposed contract. In case a project has been executed by a Joint Venture, weightage towards experience of the project would be given to each Joint Venture in proportion to their participation in the Joint Venture.

Substantially completed works means those works which are at least 75% completed as on the date of submission (i.e gross value of work done upto the last date of submission is 75% or more of

the original contract price) and continuing satisfactorily.

For these, a Certificate from the employer shall be submitted along with the application incorporating clearly the name of work, Contract value, Billing amount, date of commencement of works, satisfactory performance of the contractor and any other relevant information.

4.4.4 Personnel Capabilities

The Bidder must have suitably qualified personnel to fill the following positions. The Bidder will supply information on a prime candidate and an alternate for each position, both of whom should meet the experience requirements specified below :

Sl. No.	Position	Total Experience (Years)	In similar works (Years)	As manager of similar works (Years)
1	Project Manager			
2	Other Position			
(Details given in Section 2, Tender Documents)				

4.4.5 Equipment Capabilities.

The Applicant should own or should have assured ownership to the following key items of equipment, in full working order, and must demonstrate that, based on known commitments; they will be available for use in the proposed contract.

Sl. No.	Equipment type and Characteristics	Minimum number required
1		
2		
3		
(Details given in Section 2, Tender Documents)		

4.4.6 Financial Position

The Applicant should demonstrate that he has access to, or has available, liquid assets (aggregates of working capital, cash in hand and uncommitted bank guarantees) and/ or credit facilities of not less than 10 percent of the value of the contract/ contracts applied for (Construction cash-flow may be taken as 10 percent of the estimated value of contract/ contracts).

4.4.7 The audited balance sheets for the last five years should be submitted, which must demonstrated the soundness of Bidder's financial position, showing long term profitability including estimated financial projection for the next two years. If necessary, the Employer will make inquiries with the Bidder's bankers.

4.4.8 Litigation History

The Bidder should provide accurate information on any litigation or arbitration resulting from contracts completed or under execution by him over the last five years. A consistent history of awards against the Bidder or any partner of a Joint venture may result in failure of the Bidder.

4.4.9 Bid Capacity

Bidders who meet the minimum qualification criteria will be qualified only if their available bid capacity at the expected time of bidding is more than the total estimated cost of the works. The available bid capacity will be calculated as under.

Assessed Available Bid capacity = $(A \cdot N^2 - 0.25 \cdot N \cdot B)$

A = Maximum value of works executed in any one year during the last five years (updated to the current price level) rate of inflation may be taken as 10 percent per year which will take into account the completed as well as works in progress;

N = Number of years prescribed for completion of the works for which bids are invited.

B = Value at current price level of the existing commitments and on-going works to be completed during the next 24 Months. (Refer to column 6 of the corresponding packages of NIT, period of completion of works for which bids are invited)

Note: In case of a Joint Venture, the available bid capacity will be applied for each partner to the extent of his proposed participation in the execution of the works. The statement showing the value of existing commitments and on-going works as well as the stipulated period of completion remaining for each of the works listed should be countersigned by the Engineer in charge, not below the rank of an Executive Engineer or equivalent.

4.4.10 Disqualification

Even though the Bidders meet the above criteria, they are subject to be disqualified if they have:

- Made misleading or false representation in the form, statement submitted and/ or
- Records of poor performance such as abandoning the work, rescinding of contract for which the reasons are attributable to the non-performance of the contractor, consistent history of litigation awarded against or financial failure due to bankruptcy. The rescinding of contract of a Joint Venture on account of reasons other than non-performance, such as Most Experienced partner of Joint Venture pulling out, court directions leading to breaking up of a Joint Venture before start of work, which are not attributable to the poor performance of the contractor will, however, not affect the qualification of the individual partners.
- Any bid not accompanied by a Scan Copy of acceptable Bid Security/Tender Fee, Methodology & program of execution, Qualification of similar work (Application Form 3A), Annual Turnover (Application Form 2) and Undertaking of validity of bid (as enclosed Format – A) shall be rejected by the Employer as non-responsive.
- Demand Draft/Bank guarantee (and other instruments having fixed validity) issued as surety for the bid shall be valid for 45 days beyond the validity of the bid. The tender fee should be valid for at least 45 (forty five) days beyond opening of the Bid.
- Any bid not accompanied by a Scan Copy of acceptable Bid Security/Tender Fee and not secured as indicated in Sub-Clauses 16.1 and 16.2 above shall be rejected by the employer as non responsive.
- The original Bid Security (EMD) and Tender Fee should be submitted to the employer (*Additional Chief Engineer-II, IFC Deptt, Manipur*) ,*Superintending Engineer, Thoubal Circle No-II, IFC Deptt. ,Executive Engineer ,Thoubal Project Division No.VI, on or before 16.00 hours of 04-10-2014* in a sealed envelope. The Bids of the bidders who have failed to submit the same shall be rejected. The envelope should be clearly marked as SECURITY/FEE for NIT No.....dt.....Package No.....

4.5 JOINT VENTURE ARE NOT ACCEPTED

5. One Bid per Bidder

5.1 Each bidder shall submit only one bid for one package. A bidder who submits or participates in more than one Bid (other than as a subcontractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the Bidders participation to be disqualified.

5.2 Cost of Bidding

he bidder shall bear all costs associated with the preparation and submission of his Bid, and the Employer will in no case be responsible and liable for those costs.

6. Site Visit

6.1. The Bidder, at the Bidder's own responsibility and risk is encouraged to visit and examine the Site of Works and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for the execution of the Works. The costs of visiting the Site shall

be at the Bidder's own expense.

7. Enrollment with e-portal :-

Bidders are required to enroll themselves in the web Portal “<https://manipurtenders.gov.in> with necessary Digital Signature Certificate of Class II or III for participating in the Bid.

B. BIDDING DOCUMENTS

8. Content of Bidding Documents

8.1. The set of bidding documents comprises the documents listed below and addenda issued in accordance with Clause 10:

Section	Particulars	Volume No.
1	Invitation of Bids	I
2	Instruction to Bidders	
3	Qualification Information and other forms	
4	Condition of Contract	
5	Contract Data	
6	Technical Specification	II
6	Form of bid	III
7	Bill of Quantities	
8	Securities and other forms	
9	Drawing	IV
10	Documents to be furnished by bidder	V

8.2. Copies of each of the volumes I, II, III and IV may be downloaded by the bidder. Documents to be furnished by the bidder in compliance to section 2 will be prepared by him and furnished as Volume - V in two parts (refer clause 12).

8.3. The bidder is expected to examine carefully all instructions, conditions of contract, contract data, forms, terms, technical specifications, bill of quantities, forms, Annexes and drawings in the Bid Document. Failure to comply with the requirements of Bid Documents shall be at the bidder's own risk. Pursuant to clause 26 hereof, bids which are not substantially responsive to the requirements of the Bid Documents shall be rejected.

9. Clarification of Bidding Documents

9.1 A prospective bidder requiring any clarification of the bidding documents may notify the Employer in writing or by cable (hereinafter “cable” includes telex, facsimile & email) at the Employer address indicated in the invitation to bid. The Employer will respond to any request for clarification which he received earlier than 15 days prior to the deadline for, submission of bids. Copies of the Employer's response will be forwarded to all purchasers of the bidding documents, including a description of the enquiry but without identifying its source through email.

10. Amendment of Bidding Documents

10.1 Before the deadline for submission of bids, the employer may modify the bidding documents by issuing addenda/corrigenda.

10.2 Any addendum/ corrigendum thus issued shall be part of the bidding documents and shall be communicated in writing or online to all the purchasers of the bidding documents. Prospective bidders shall acknowledge receipt of each addendum/corrigendum in writing or online to the Employer. The Employer will assume no responsibility for postal delays.

10.3 To give prospective bidders reasonable time, in which to take an addendum/corrigendum into account in preparing their bids, the Employer may, at his discretion, extend as necessary the deadline for submission of bids, in accordance with sub-clause 20.2 below.

C. PREPARATION OF BIDS

11. Language of the Bid

11.1 All documents relating to the bid shall be in the English language.

12. Documents Comprising the Bid

12.1. The bid to be submitted by the bidder as Volume V of the bid document (refer Clause 8.1 shall be in two separate parts:

Part- I Shall be named “Technical Bid” and shall comprise

- (i) Scan copy of the Bid Security in the form specified in Section 8.
- (ii) Scan copy of cost for Tender Fee.
- (iii) Qualification information and supporting documents as specified in Section 2
- (iv) Certificates, undertakings, affidavits as specified in Section 2
- (v) Any other information pursuant to clause 4.2 for these instruction
- (vi) Undertaking that the bid shall remain valid for the period specified in Clause 15.1

Part- II Shall be named “financial Bid” and shall comprise

- (i) Form of Bid as specified in Section 6
- (ii) Priced Bill of Quantities for items specified in Section 7
- (iii) Scan copies of documents should be clearly legible documents. Non Legible documents may be a cause for disqualification, rejection of bid/ tender.

12.2. Following documents, which are not submitted with the bid, will be deemed to be part of the bid.

Section	Particulars	Volume No.
1	Invitation for Bids (IFB)	Volume I
2	Instruction to Bidders	
3	Conditions of Contract	
4	Contract Data	
5	Specifications	Volume II
9	Drawings	Volume IV

13. Bid Prices

13.1 The contract shall be for the whole works as described in sub-clause 1.1, based on the priced Bill of Quantities submitted by the Bidder.

13.2. The Bidder shall fill in rates / prices in figures for all items of the works described in the Bill of Quantities. Items, for which no rate or price is entered by the bidder will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities.

13.3. All duties, taxes and other levies payable by the contractor under the contract or for any other cause shall be included in the rates, prices and total bid prices submitted by the Bidder.

13.4 The rates and prices quoted by the bidder shall be fixed for duration of the Contract and shall not be subject to adjustment on any account .

14. Currencies of Bid and payment

14.1 The unit rates and the prices shall be quoted by the bidder entirely in Indian Rupees. All payment shall be made in Indian Rupees.

15. Bid validity

15.1 Bids shall remain valid for a period *not less than 120 days after the dateline date for bid submission specified in clause 20*. A bid valid for a shorter period shall be rejected by the Employer as non-responsive. In case of discrepancy in bid validity period between that given in the undertaking pursuant to Clause 12.1 (v) and the Form of Bid submitted by the Bidder, the later

- shall be deemed to stand corrected in accordance with the former and the bidder has to provide for any additional security that is required.
- 15.2 In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the bidders may extend the period of validity for a specified additional period. The request and the bidder's responses shall be made in writing or online. A bidder may refuse the request without forfeiting his bid security. A bidder agreeing to the request will not be required or permitted to modify his bid except as provided in 15.3 hereinafter, but will be required to extend the validity of his bid security for a period of the extension, and in compliance with Clause 16 in all respects.
- 15.3 In the case of contracts in which the Contract Price is fixed (not subject to price adjustment), in the event that the Employer requests and the Bidder agrees to an extension of the validity period, the contract price, if the bidder is selected for award shall be the bid price corrected as follows:-
The price shall be increased by the factor of 0.2% for each week or part of the week that has elapsed from the expiration of the initial bid validity to the date of issue of letter of acceptance to the successful Bidder.
- 15.4 Bid evaluation will be based on the bid prices without taking into consideration the above correction.
16. Bid Security & Tender Fee
- 16.1 The bidder shall furnish, as part of his Bid, a Bid security in the amounts as shown in column 4 & 5 of the table of IFB for this particular work.
- i) The Bid security shall be in the form of Demand Draft/Bank guarantee from any nationalised banks drawn in favour of the Executive Engineer, Thoubal Project Division No-VI, IFC Deptt. and payable at Imphal.
- ii) The Tender Fee shall be in the form of Demand Draft from any nationalised banks drawn in favour of the Executive Engineer, Thoubal Project Division No-VI, IFC Deptt. and payable at Imphal.
- 16.2 Demand Draft/Bank guarantee issued as surety for the bid shall be *valid for 45 days beyond the validity of the Bid. The tender fee should be valid for at least 45 (forty five) days beyond opening of the bid.*
- 16.3 Any bid not accompanied by a Scan Copy of acceptable Bid Security and Tender Fee and not secured as indicated in Sub- Clauses 16.1 and 16.2 above shall be rejected by the Employer as non-responsive.
- 16.4 The original Bid Security (EMD) and Tender Fee should be submitted to the employer (Additional Chief Engineer-II, IFC Deptt. Manipur) , Superintending Engineer Thoubal Circle No-II, IFC Deptt. ,Executive Engineer,Thoubal Project Division No.VI, on or before 16.00 hours of 04-10-2014 in a sealed envelope. The bids of the bidders who have failed to submit the same shall be rejected. The envelope should be clearly marked as SECURITY/ FEE for NIT/BID No.dt.....Package No. - I
- 16.5 The contractor should write his name on the backside of the Security / Tender Fee
- 16.6 Interested bidders may attend the opening.
- 16.7 The bid security of unsuccessful bidders will be returned within 28 days of the end of the bid validity period specified in sub-clause 15.1.
- 16.8 The Bid Security for the Successful bidder will be discharged when the bidder has signed the Agreement and furnished the required Performance Security.
- 16.9 The Bid Security may be forfeited
- (a) If the Bidder withdraws the Bid after opening during the period of Bid Validity.
- (b) Deleted.
- (c) In the case of successful Bidder, if the Bidder fails within the specified time limit to i) Sign the Agreement; or ii) Furnish the required Performance Security.
17. Alternative Proposals by Bidders
- 17.1 Bidders shall submit offers that fully comply with the requirements of the bidding documents including the conditions of contract (i/c advance or time for completion), basic technical design as indicated in the drawing and specifications. Conditional offer or alternative offers will not be considered further in the process of tender evaluation.

- 18. Format and Signing of Bid
- 18.1 The bidder shall prepare the documents comprising the bid as described in Clause 12 of these Instructions to bidders, containing the “Technical Bid” and “Financial Bid: in separate parts as appropriate.
- 18.2 The Bid submitted online shall be assumed to be signed by a person or persons duly authorized to sign on behalf of the bidder, pursuant to Sub-Cause 4.3. All pages of the bid where entries or amendments have been made shall be also taken as signed by the person or persons signing the bid.
- 18.3 The bid shall contain no alteration or additions, except those to comply with instructions issued by the Employer, or as necessary to correct errors made by the bidder.

D. SUBMISSION OF BIDS

- 19. Deadline for Submission of the Bids
- 19.1 Complete Bid, (including ‘Technical and Financial) must be uploaded at the web address specified above within the date & time indicated in appendix. Offline submissions or hard copies of the bids / tenders are not acceptable and shall not be received under any circumstances.
- 19.2 The Employer may extend the deadline for submission of bids by issuing an amendment in accordance with clause 10, in which case all rights and obligations of the Employer and the bidders previously subject to the original will then be subject to the new deadline.
- 20. Modification and Withdrawal of Bids.
- 20.1 Bidders may modify or withdraw their bids before the deadline prescribed in Clause 19.
- 20.2 No bid may be modified after the deadline for submission of Bids.
- 20.3 Withdrawal or modification of a Bid between the deadline for submission of bids and the expiration of the original period of bid validity specified in Clause 15.1 above or as extended pursuant to Clause 15.2 may result in the forfeiture of the Bid Security pursuant to Clause 16.
- 20.4 The employer shall not be responsible for any delay in postal delivery, disruption in web service, or Inaccessibility of Network or Website.

E. BID OPENING AND EVALUATION

- 21. Bid Opening
- 21.1 The Employer will open all the Bids received including modifications made pursuant to Clause 22, in the presence of the Bidders or their representatives who choose to attend at the time, date and place specified in Appendix in the manner specified in Clause 20 & 23.3. In the event of the specified date of Bid Opening being declared a holiday for the Employer, the bids will be opened at the appointed time and location on the next working day.
- 21.2 Deleted
- 21.3 The Folder containing “Technical Bid” shall be opened first. The amount, form and validity of the bid security and tender fee furnished with each will be announced. If the bid security and tender fee furnished does not conform to the amount and validity period as specified in the Invitation for Bid (ref. Column 4 and Paragraph 3), and has not been furnished in the form specified in Clause 16, the remaining technical bid and the sealed financial bid will be returned to the bidder.
- 21.4 (i) Subject to confirmation of the bid security by the issuing Bank the bids accompanied with valid bid security will be taken up for evaluation with respect to the Qualification Information and other information furnished in Part I of the bid pursuant to Clause 12.1.
- (ii) After receipt of confirmation of the bid security the bidder will be asked in writing (usually within 10 days of opening of the Technical Bid) to clarify or modify his technical bid, if necessary, with respect to any rectifiable defects.
- (iii) The bidders will respond in not more than 7 days of issue of the clarification letter, which will also indicate the date, time and venue of opening of the Financial Bid (Usually on the 21st day opening of the Technical Bid)

- (iv) Immediately (Usually within 3 or 4 days), on receipt of these clarification the Evaluation Committee will finalize the list of responsive bidders whose financial bids are eligible for consideration.
- 21.5 Deleted.
- 21.6 At the time of opening of “Financial Bid”, the names of the bidders who were found responsive in accordance with Clause 23.4(iv) will be announced. The bids of only these bidders will be opened. The responsive Bidders’ names, the Bid prices, the total amount of each bid and withdrawals, and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening. Any Bid price which is not read out and recorded will not be taken into account in Bid Evaluation.
- 21.7 In case bids are invited in more than one package, the order for opening of the “Financial Bid” shall be that in which they appear in the “Invitation for Bid”
- 21.8 The employer shall prepare minutes of the Bid opening, including the information disclosed to those present in accordance with Sub-Clause 23.6.
- 22. Process to be Confidential
- 22.1 Information relating to the examination, clarification, evaluation, and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced. Any effort by a Bidder to influence the Employer’s processing of Bids or award decision may result in the rejection of his bid.
- 23. Clarification of Financial Bids
- 23.1 To assist in the examination, evaluation, and comparison of Bids, the Employer may at his discretion, ask any Bidder for clarification of his Bid, including breakdowns of unit rates. The request for clarification and the response shall be in writing or by cable, but no change in the price or substance of the Bid shall be sought, offered, or permitted.
- 23.2 Subject to sub-clause 25.1, no Bidder shall contact the Employer on any matter relating to his bid from the time of the bid opening to the time the contract is awarded. If the Bidder wishes to bring additional information to the notice of the Employer, he should do so in writing.
- 23.3 Any effort by the Bidder to influence the Employer in the Employer’s bid evaluation, bid comparison or contract award decisions may result in the rejection of the Bidders’ bid.
- 24. Examination of Bids and Determination of Responsiveness
- 24.1 During the detailed evaluation of “Technical Bids”, the Employer will determine whether each Bid (a) meets the eligibility criteria defined in Clause 3 and 4; (b) has been properly signed; (c) is accompanied by the required securities and; (d) is substantially responsive to the requirements of the Bidding documents. During the detailed evaluation of the “Financial Bid”, the responsiveness of the bids will be further determined with respect to the remaining bid conditions. i.e. priced bill of quantities, Technical specifications, and drawings.
- 24.2 A substantially responsive “Financial Bid” is one which conforms to all the terms, conditions, and specification of the bidding documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality or performance of the work; (b) which limits in any substantial way, inconsistent with the bidding documents, the employer’s right or the Bidder’s obligation under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Bidders Presenting substantially responsive bids.
- 24.3 If a “Financial Bid” is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation.
- 25. Correction of Errors
- 25.1 If the amount stated in the “Financial Bid” differs from the Bill of Quantity it will be corrected by the Employer as per the Bill of Quantity. Such adjusted bid price shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount the Bid will be rejected, and the Bid Security may be forfeited in accordance with Sub-Clause.
- 26. Evaluation and Comparison of Financial Bids

- 26.1 The Employer will evaluate and compare only the Bids determined to be substantially responsive in accordance with sub-clause 26.2.
- 26.2 The Employer reserves the right to accept or reject any variation or deviation. Variations and deviations and other factors, which are in excess of the requirements of the Bidding documents or otherwise result in unsolicited benefits for the Employer, shall not be taken into account in Bid evaluation.'
- 26.3 The estimated effect of the price adjustments conditions under Clause 47 of the Conditions of Contract, during the period of implementation of the Contract, will not be taken into account in Bid evaluation.
- 26.4 If the Bid of the successful Bidder is seriously unbalanced in relation to the Engineer's estimate of the cost of work to be performed under the contract, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule process. After evaluation of the price analyses, the employer may require that the amount of the performance security set forth in Clause 34 be increased at the expense of the successful Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.
- 26.5 A bid which contains several items in the Bill of Quantities which are unrealistically priced low and which cannot be substantiated satisfactory by the bidder may be rejected as non-responsive.

F. AWARD OF CONTRACT

27. Award Criteria

- 27.1 Subject to Clause 32, the Employer will award the Contract to the Bidder whose Bid has been determined
 - i) to be substantially responsive to the Bidding documents and who has offered the lowest evaluated Bid Price; and
 - ii) to be within the available bid capacity adjusted to account for his bid price which is evaluated the lowest in any of the packages opened earlier than the one under consideration. In no case, the contract shall be awarded to any bidder whose available bid capacity is less than the evaluated bid price, even if the said bid is the lowest evaluated bid. The contract will in such cases be awarded to the next lowest bidder at his evaluated bid price.
- 28. Employer's Right to accept any Bid to reject any or all Bids
- 28.1 Notwithstanding Clause 31, the Employer reserves the right to accept or reject any Bid, and to cancel the Bidding process and reject all bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Employer's action.
- 29. Notification of Award and Signing of Agreement
- 29.1 The bidder whose Bid has been accepted will be notified of the award by the employer prior to expiration of the Bid Validity period by cable, telex or facsimile confirmed by registered letter. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") will state the sum that the Employer will pay the Contractor in consideration of the execution, completion, and maintenance of the works by the Contractor as prescribed by the Contract (hereinafter and in the Contracts called the "Contract Price").
- 29.2 *The notification of award will constitute the formation of the Contract*, subject only to the furnishing of a performance security in accordance with the provision of Clauses 34.
- 29.3 The agreement will incorporate all agreements between the Employer and the successful Bidder. It will be signed by the Employer and sent to the successful bidder, within 28 days following the notification of award along with the Letter of Acceptance. Within 21 days of receipt, the successful Bidder will sign the agreement and deliver it to the Employer.
- 29.4 Upon the furnishing by the successful Bidder of the Performance Security, the Employer will

promptly notify the other Bidders that their Bids have been unsuccessful.

30. Performance Security

30.1 Within 21 days of receipt of the Letter of Acceptance, the successful Bidder shall deliver to the Employer a Performance Security in any forms given below for an amount equivalent to 5% of the Contract price plus additional security for unbalanced Bids in accordance with Clause 29.5 of ITB and Clause 52 of Conditions of Contract.

- A bank guarantee in the form given in Section 8; or
- Certified Cheque/Bank Draft as indicated in Appendix.

30.2 If the performance security is provided by the successful Bidder in the form of a Bank Guarantee, it shall be issued either (a) at the Bidder's option, by a Nationalized Indian Bank or (b) By a foreign bank located in India and acceptable to the Employer.

30.3 Failure of the successful Bidder to comply with the requirements of Sub-Clause 34.1 shall constitute sufficient ground for cancellation of the award and forfeiture of the Bid Security.

31. Advance Payment and Security

31.1 The Employer will provide an Advance Payment on the Contract Price as stipulated in the Conditions of Contract, subject to maximum amount, as stated in the Contract Data.

32. Dispute Review Expert

32.1 The Employer proposes that the Dispute Review Expert be appointed by the Project Authority at the request of either party under the Contract at a daily fee plus reimbursable expenses as fixed by the Project Authority as and when required.

33. Corrupt or fraudulent Practices

33.1 The Employer will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question and will declare the firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract with IFC Department and any other agencies, if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for the contract, or in execution.

33.2 Furthermore, Bidders shall be aware of the provision stated in Sub-Clause 23.2 and Sub-Clause of the Conditions of Contract

SECTION 2

QUALIFICATION INFORMATION

The information to be filled in by the Bidder in the following pages will be used for purposes of post qualification as provided for in Clause 4 of the Instructions to Bidders. This information will not be incorporated in the Contract.

1. For Individual Bidders

1.1. Constitution or legal status of Bidder [Attach copy]

Place of registration: Principal place of business:

Power of attorney of signatory of Bid [Attach copy]

1.2. Total value of Civil Engineering construction

2008	-	2009
2009	-	2010
2010	-	2011
2011	-	2012
2012	-	2013

1.3.1. Work performed as prime contractor, work performed in the past as a nominated subcontractor will also be considered provided the sub-contract involved execution of all main items of work described in the bid document, provided further that all other qualification criteria are satisfied (in the same name) on works of a similar nature over the last five years. ***Refer Application Form (3B).*

1.4 Information on Bid Capacity (works for which bids have been submitted and works which are yet to be completed) as on the date of this bid.

(A) Existing commitments and ongoing works: *Refer Application Form (4) (B)* Works for which bids already submitted: *Refer Application Form (4B)*

1.5 The Bidder(s) should have the following machinery and technical staff and skilled tunnel labours in hand in Manipur for physical verification. *Refer Application Form (6)*

Plant and Machinery:

- i) Excavator
- ii) Dumpers/tippers
- iii) Air compressors
- iv) Jack Hammer
- v) 250 KVA DG set
- vi) Boltec SL Bolting rig
- vii) Light vehicle
- viii) Dewatering pump
- ix) Ventilation system
- x) Concrete mixing batching plant
- xi) Concrete placer/pump
- xii) Transit mixture

- xiii) Robot type wet shotcrete machine
- xiv) JCB / Dozer

1.6 Qualification and experience of key personnel required for administration and execution of the Contract [Ref. Clause 4.5 (B) (b)]. Attach biographical data. Refer also to sub clause 4.3 (e) of instruction to Bidders and sub-clause 9.1 of the condition of contract.

Technical Staff:

- i) Graduate Engineer with minimum 10 years experience in tunnelling
- ii) Civil Diploma Engineers with 5 years experience in tunnelling
- iii) Survey engineer with 10 years experience in tunnelling
- iv) Mechanical and electrical engineers
- v) Tunnel foreman and Blasting Forman with blasting license
- vi) Skilled and unskilled tunnel labours

1.7 Financial reports for the last five years: balance sheets, profit and loss statements, auditors' reports (in case of companies/corporation), etc. list them below and attach copies.

1.8. Evidence of access to financial resources to meet the qualification requirements: cash in hand, lines of credit, etc. List them below and attach copies of support documents.

1.9. Name, address, and telephone, telex, and fax numbers of the Bidders' bankers who may provide references if contacted by the Employer.

1.10. Information on litigation history in which the Bidder is involved. [Refer Application Form 8]

1.11. Statement of compliance under the requirements of Sub Clause 3.2 of the instructions to Bidders. (Name of Consultant engaged for project preparation is – NA-)

1.12. Proposed work method and schedule. The Bidder should attach descriptions, drawings and charts as necessary to comply with the requirements of the Bidding documents. [Refer ITB Clause 4.1 & 4.3 (L)]

1.13. Program:- Detailed Program for the implementation of the contract as per the requirements of the ITB duly supported by PERT or CPM Charts shall be provided

2. Additional Requirements

3.1 Bidders should provide any additional information required to fulfill the requirements of Clause 4 of the Instructions to the Bidders, if applicable

(i) Affidavit

Shall be submitted on Rs. 100/- value non judicial stamp paper duly notarized by Notary Public or Oath Commissioner, (Judicial Magistrate, 1st Class).

(ii) Undertaking for Bid Validity

Shall be submitted on Rs. 100/- value non judicial stamp paper duly notarized by Notary Public or Oath Commissioner, (Judicial Magistrate, 1st Class).

SECTION 3

CONDITIONS OF CONTRACT

A. GENERAL

1. Definitions

- 1.1. Terms which are defined in the contract data and not also defined in the conditions of Contract but keep their defined meanings, Capital initials are used to identify defined terms.
- 1.2. The Adjudicator (synonymous with Dispute Review Expert) is the person appointed jointly by the Employer and the Contractor to resolve disputes in the first instance, as provided for in Clause 24 and 25. The name of the Adjudicator is defined in the contract data.
- 1.3. Bill of Quantities means the price and completed Bill of Quantities forming part of the Bid.
- 1.4. Compensation Events are those defined in Clause 44 hereunder.
- 1.5. The Completion Date is the date of completion of the work as certified by the Engineer in accordance with Sub-Clause 55.1.
- 1.6. The Contract is the contract between the Employer and the Contractor to execute, complete and maintain the works. It consists of the documents listed in Cause 2.3 below.
- 1.7. The Contract Data defines the documents and other information which comprise the Contract.
- 1.8. The Contractor is a person or corporate body which bid to carry out the works has been accepted by the Employer.
- 1.9. The Contractor's Bid is the completed Bidding document submitted by the Contractor to the Employer and includes Technical and Financial bids.
- 1.10. The Contract Price is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provision of the Contract.
- 1.11. Days are calendar days; months are calendar months.
- 1.12. A Defect is any part of the Works not completed in accordance with the Contract.
- 1.13. The Defect Liability Period is the period named in the Contract Data and calculated from the Completion Date.
- 1.14. The Employer is the party who will employ the Contractor to carry out the Works.
- 1.15. The Engineer is the person named in the Contract Data (or any other competent person appointed and notified to the Contractor to act in replacement of the Engineer) who is responsible for inviting Bids, supervising the Contractor, administering the Contract, certifying payments due to the Contractor, issuing and valuing Variation to the Contract, awarding extension of time, and valuing the Compensation Events.
- 1.16. Equipment is the Contractor's machinery and vehicles brought temporarily to the site to construct the works.
- 1.17. The Initial Contract Price is the Contract Price listed in the Employer's letter of Acceptance
- 1.18. The Intended Completion Date is the date on which it is intended that the Contractor shall complete the works. The Intended Completion Date is specified in the Contract Data. The Intended Completion Date may be revised only by the Engineer by issuing an extension of time.
- 1.19. Materials are all supplies, including consumable, used by the contractor for incorporation in the Works
- 1.20. Plant is any integral part of the Works which is to have a mechanical, electrical, electronic or chemical or biological function.
- 1.21. The Site is the area defined as such in the Contract Data.
- 1.22. Site Investigation Reports are those which were included in the Bidding documents and are factual interpretative reports about the surface and sub-surface conditions at the site.
- 1.23. Specification means the Specifications of the work included in the Contract and any modification or addition made or approved by the Engineer.
- 1.24. The Start Date is given in the Contract Data. It is the date when the Contractor shall commence execution of the works. It does not necessarily coincide with any of the Site Possession Dates.
- 1.25. A Subcontractor is a person or corporate body who has a Contract with the Contractor to carry out a part of the works in the Contract which includes work on the site.
- 1.26. Temporary Works are works designed, constructed, installed and removed by the Contractor

- which are needed for construction or installation of the works.
- 1.27. A Variation is an instruction given by the Engineer, which varies the work.
 - 1.28. The Works are what the Contract requires the Contractor to construct, install and turn over to the Employer, as defined in the Contract data.
 2. Interpretation
 - 2.1. In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specially defined. The Engineer will provide instruction clarifying queries about the Conditions of Contract.
 - 2.2. If sectional completion is specified in the Contract Data, references in the Conditions of Contract to the Works, the Completion Date, and the Intended Completion date apply to any Section of the work (other than references to the Completion Date and Intended Completion Date for the whole for the Works).
 - 2.3. The documents forming the contract shall be interpreted in the following order of priority:
 - (1) Agreement (2) Letter of Acceptance, notice to proceed with the works.
 - (3) Contractor's Bid (4) Contract data
 - (5) Conditions of Contract including Special Condition of Contract
 - (6) Specifications (7) Drawings (8) Bill of quantities and
 - (9) Any other document listed in the Contract Data as forming part of the Contract.
 3. Language and Law
 - 3.1. The language of the Contract and the law governing the Contract are stated in the Contract Data.
 - 3.2. Engineer's Decisions
 - 3.3. Except where otherwise specially stated, the Engineer will decide contractual matters between the Employer and the Contractor in the role representing the Employer.
 4. Delegation
 - 4.1. The Engineer may delegate any of his duties and responsibilities to other people except to the Adjudicator after notifying the Contractor and may cancel any delegation after notifying the Contractor.
 5. Communications
 - 5.1. Communications between parties which are referred to in the conditions are effective only when in writing. A notice shall be effective only when it is delivered (in terms of Indian Contract Act). All email communications during the tendering stage shall be considered as written communications.
 6. Sub-Contracting
 - 6.1. The contractor may sub-contract any portion of work, up to a limit specified in Contract Data, with the approval of the Engineer but may not assign the Contract without the approval of the Employer in writing. Sub-contracting does not alter the Contractor's obligation.
 7. Other Contractors
 - 7.1. The Contractor shall cooperate and share the site with other contractor, public authorities, utilities and the Employer between the dates given in the Schedule of other Contractor. The Contractor shall as referred to in the Contract data; also provide facilities and services for them as described in the Schedule. The Employer may modify the schedule of the other contractors and shall notify the contractor of any such modification.
 8. Personnel
 - 8.1. The Contractor shall employ the key personnel named in the Scheduled of key Personnel as referred to in the Contract Data to carry out the functions stated in the Schedule or other personnel approved by the Engineer. The Engineer will approve any proposed replacement of key personnel only if their qualifications, abilities and relevant experiences are substantially equal to or better than those for the personnel listed in the schedule.
 9. Employer's and Contractor's Risks
 - 9.1. The Employer carries the risks which this Contract states are Employer's risks and the Contractor carries the risks which this Contract states are Contractor's risks.
 10. Employer's Risks
 - 10.1. The Employer is responsible for the excepted risks which are (a) in so far as they directly affect

the execution of the works in India, the risk of war, hostilities, invasion, act of foreign enemies, rebellion, revolution, insurrection or military usurpation of power, civil war, riot commotion or disorder (unless restricted to the Contractor's employees), and contamination from any nuclear fuel or nuclear waste or radioactive toxic explosive, or (b) a cause due solely to the design of the Work, other than the Contractor's Design.

11. Contractor's Risks

- 11.1. All risks of loss of or damage to physical property and of personnel injury and death which arise during and in consequence of the performance of the Contract other than the excepted risk are the responsibility of the Contractor.

12. Insurance

- 12.1. The Contractor shall provide, in the joint names of the Employer and the Contractor, insurance cover from the Start date to the end of the Defects Liability Period, in the amounts and deductibles stated in the Contract data for the following events which are due to the Contractor's risks:

- (a) Loss of or damage to the Works, plant and Materials.
- (b) Loss of or damage to Equipment.
- (c) Loss of or damage of property (except the works, plant, materials and Equipment) in connection with the Contract; and
- (d) Personnel injury or death.

- 12.2 Policies and certificates provided for insurance shall be delivered by the Contractor to the Engineer for the Engineer's approval before the Start date. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.

- 12.3 If the Contractor does not provide any of the policies and certificates required, the Employer may affect the insurance which the Contractor should have provided and recover the premiums the employer has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premium shall be a debt due.

- 12.4 Alternations to the terms of insurance shall not be made without the approval of the Engineer.

- 12.5 Both parties shall comply with any conditions of the insurance policies.

13 Site Investigation Reports

- 13.1 The Contractor, in preparing the Bid, shall rely on site Investigation Reports referred to in the Contract data, supplemented by any information available to the Bidder.

14. Queries about the Contract Data.

- 14.1 The Engineer will clarify queries on the Contract data.

15. Contractor to Construct the Works

- 15.1 The Contractor shall construct and install the works in accordance with the Specification and Drawings.

16. The Works to be completed by the Intended Completion Date

- 16.1 The Contractor may commence execution of the works on the Start Date and shall carry out the Works in accordance with program submitted by the Contractor, as updated with the approval of the Engineer, and complete them by the Intended Completion date.

17. Approval by the Engineer

- 17.1 The Contractor shall submit Specifications and Drawings showing the proposed temporary works to the Engineer, who is to approve them if they comply with the specifications and drawings.

- 17.2 The contractor shall be responsible for design of temporary works.

- 17.3 The engineer's approval shall not alter the Contractor's responsibility for design of the temporary works.

- 17.4 The Contractor shall obtain approval of third parties to the design of the Temporary works where required.

- 17.5 All drawings prepared by the Contractor for the execution of the temporary or permanent works are subject to prior approval by the Engineer before their use.

18. Safety

- 18.1 The Contractor shall be responsible for the safety of all activities on the site.

19. Discoveries

- 19.1 Anything of historical or other interest or of significant value unexpectedly discovered on the site

- is the property of the Employer. The Contractor is to notify the Engineer of such discoveries and carry out the Engineer's instruction for dealing with them.
20. Possession of the site
- 20.1 The Employer shall give possession of all parts of the Site to the Contractor. If Possession of a part is not given by the date stated in the Contract Data the Employer is deemed to have delayed the start of the relevant activities and this will be Compensation Event.
21. Access to the Site
- 21.1 The Contractor shall allow the Engineer and any person authorized by the Engineer access to the site, to any place where work in connection with the Contract is being carried out or is intended to be carried out and to any place where materials or plant are being manufactured/fabricated/assembled for the works.
22. Instructions
- 22.1 The Contractor shall carry out all instructions of the Engineer pertaining to works which comply with the applicable laws where the site is located.
- 22.2 The Contractor shall permit the Employer to inspect the Contractor's accounts and records relating to the performance of the Contract and to have them audited by auditors appointed by the Employer, if so required by the Employer.
23. Disputes
- 23.1 If the Contractor believes that a decisions taken by the Engineer was either outside the authority given to the Engineer by the Contract or that the decision was wrongly taken, the decision shall be referred to the Dispute Review Expert within 14(fourteen) days of the notifications of the Engineer's decisions.
24. Procedure for Disputes
- 24.1 The Disputed Review Expert shall give a decision in writing within 28 days of receipt of a notification of a dispute.
- 24.2 The Dispute Review Expert shall be paid daily at the rate specified in the Contract Data together with reimbursable expenses of the type specified in the Contract Data and the cost shall be divided equally between the Employer and the Contractor, whatever decisions is reached by the Dispute Review expert. Either Party may give notice to the other to refer a decision of the Dispute Review Expert to an Arbitrator within 28 days of the Dispute Review expert's written decision. If neither party refers the dispute to arbitration within the next 28 days, the Dispute Review Expert's decision will be final and binding.
- 24.3 The arbitration shall be conducted in accordance with the arbitration procedure stated in the special conditions of contract.
25. Replacement of Dispute Review Expert
- 25.1 Should the Dispute review Expert resign or die, or should the Employer and the Contractor agree that the Dispute Review Expert is not fulfilling his functions in accordance with the provisions of the Contract, a new dispute Review Expert will be jointly appointed by the Employer and the Contractor. In case of disagreement between the Employer and the Contractor, within 30 days, the Dispute Review Expert shall be designated by the Appointing Authority designated in the Contract Data at the request of either party, within 14 days of receipt of such request.
- B. TIME CONTROL**
26. Programme
- 26.1 Within the time stated in the Contract Data the Contractor shall submit to the Engineer for approval a Programme showing the general methods, arrangement, order, and timing for all the activities in the Works along with monthly cash flow forecast.
- 26.2 An update of the Programme shall be a programme showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work including any changes to the sequence of the activities.
- 26.3 The Contractor shall submit to the Engineer, for approval, an updated programme at intervals no longer than the period stated in the Contract Data. If the Contractor does not submit an updated Programme within this period, the Engineer may withhold the amount stated in contract data from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Programme has been submitted.
- 26.4 The Engineer's approval of the programme shall not alter the Contractor's obligations. The Contractor may revise the programme and submit it to the Engineer again at any time. A revised

- Programme is to show the effect of Variations and compensation.
27. Extension of the Intended Completion Date
- 27.1 The Engineer shall extend the Intended Completion date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion date without Contractor taking steps to accelerate the remaining work and which would cause the Contractor to incur additional cost.
- 27.2 The Engineer shall decide whether and by how much to extend the Intended Completion date within 35 days of the Contractor asking the Engineer for a decision upon the effect of a compensation Event or Variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.
- 27.3 The Engineer shall within 14 days of receiving full justification from the contractor for Extension of Intended Completion Date refer to the Employer his decision. The Employer shall in not more than 21 days communicate to the Engineer the acceptance or otherwise of the Engineer's decision. If the Employer fails to give his acceptance, the Engineer shall not grant extension and the contractor may refer the matter to the Dispute Review expert under Clause 24.1.
28. Delays Ordered by the Engineer
- 28.1 The Engineer may instruct the Contractor to delay the start or progress of any activity within the Works.
29. Management Meetings
- 29.1 Either the Engineer or the Contractor may require the other to attend a management meeting. The business of a meeting shall be to review the plans for remaining work and to deal with matters raised in accordance with the early warning procedure.
- 29.2 The Engineer shall record the business of management meetings and is to provide copies of his record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken is to be decided by the Engineer either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.
30. Early Warning
- 30.1 The Contractor is to warn the Engineer at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price or delay the execution of works. The Engineer may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the contract price and completion date. The estimate is to be provided by the Contractor as soon as reasonably possible.
- 30.2 The Contractor shall cooperate with the Engineer in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Engineer.
- C QUALITY CONTROL
31. Identifying Defects
- 31.1 The Engineer shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Engineer may instruct the Contractor to search for a Defect and to uncover and test any work that the Engineer considers may have a Defect.
32. Test
- 32.1 If the Engineer instructs the contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the contractor shall pay for the test and any samples. If there is no Defect the test shall be a Compensation Event.
33. Correction of Defects
- 33.1 The Engineer shall give notice to the contractor of any Defects before the end of the Defects Liability Period, which begins at Completion and is defined in the Contract Data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.
- 33.2 Every time notice of a defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Engineer's notice.
34. Uncorrected Defects

- 34.1 If the Contractor has not corrected a Defect within the time specified in the Engineer's notice, the Engineer will assess the cost of having the Defect corrected, and the Contractor will pay this amount.
35. Bill of Quantities
- D. COST CONTROL
- 35.1 The Bill of Quantities shall contain items for the construction, installation, testing, and commissioning work to be done by the contractor.
- 35.2 The Bill of Quantities is used to calculate the Contract Price. The contractor is paid for the quantity of the work done at the rate in the bill of quantities for each item.
36. Changes in the Quantities
- 36.1 If the final quantity of the work done differs from the quantity in the bill of Quantities for the particular item by more 25 Per cent provided the change exceed 1% of initial Contract Price, the Engineer shall adjust the rate to allow for the change, duly considering.
- a) Justification for rate adjustment as furnished by the contractor.
 - b) Economies resulting from increase in quantities by way of reduced plant, equipment and overhead cost
 - c) Entitlement of the contractor to Compensation Events where such event are caused by any additional work.
- 36.2 The Engineer shall not adjust rates for changes in quantities if thereby the Initial Contract Price is exceeded by more than 15 percent, except with the Prior approval of the Employer.
- 36.3 If requested by the Engineer, the Contractor shall provide the Engineer with a detailed cost breakdown of any rate in the Bill of Quantities.
37. Variations
- 37.1 All variations shall be included in updated Programme produced by the Contractor.
38. Payments for Variations
- 38.1 The Contractor shall provide the Engineer with a quotation (with breakdown of unit rates) for carrying out the variation when requested to do so by the Engineer. The Engineer shall assess the quotation, which shall be given within seven days of the request or within any longer Period stated by the Engineer and before the Variation is ordered.
- 38.2 If the work in the variation corresponds with an item description in the Bill of Quantities and if in the opinion of the Engineer, the quantity of work above the limit stated in sub-clause 38.1 or the timing of its execution do not cause the cost per unit of quantity to change, the rate in the Bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items work.
- 38.3 If the Contractor's quotation is unreasonable, the Engineer may order the Variation and make a change to the Contract Price which shall be based on Engineer's own forecast of the effects of the variation on the Contractor's cost.
- 38.4 If the Engineer decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the variation shall be treated as a Compensation Event.
- 38.5 The Contractor shall not be entitled to additional payment for costs which could have been avoided by giving early warning.
39. Cash Flow Forecast
- 39.1 When the Programme is updated, the contractor is to provide the Engineer with an updated cash flow forecast.
40. Payment Certificates
- 40.1 The Contractor shall submit to the Engineer monthly statements of the estimated value of the work completed less the cumulative amount certified previously.
- 40.2 The Engineer shall check the Contractor's monthly statement within 14 days and certify the amount to be paid to the Contractor after taking into account any credit or debit for the month in question in respect of materials for the work in the relevant amounts and under condition set forth in sub-

- clause 51(3) of the Contract Data (Secured Advance)
- 40.3 The value of work executed shall be determined by the Engineer.
- 40.4 The value of work executed shall comprise the value of the quantities of the items in the bill of quantities completed.
- 40.5 The value of work executed shall include the valuation of variations and Compensation Events.
- 40.6 The Engineer may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.
41. Payments shall be adjusted for deductions for advance payment, retention, other recoveries in terms of the Contract and taxes at source, as applicable under the law. The Employer shall pay the Contractor the amounts certified by the Engineer within 28 days of the date of each certificate.
42. Compensation Events
- 42.1 The following are Compensation Events unless they are caused by the Contractor
- i) The Employer does not give access to a part of the site by the Possession Date stated in the Contract Data.
- ii) The Employer modifies the schedule of other contractors in a way which affects the work of contractor under the contract.
- iii) The Engineer orders a delay or does not issue drawing, specification or instruction required for execution of works on time.
- iv) The Engineer instructs the Contractor to uncover or to carry out additional test upon work which is then found to have no Defects.
- v) The Engineer does not approve of a subcontract to be let, within 15 days.
- vi) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of Letter of Acceptance from the information issued to Bidders (including the site investigation reports) from information available publicly and form a visual inspection of the site.
- vii) The Engineer gives an instruction for dealing with an unforeseen condition, caused by the Employer, or additional work required for safety or other reasons.
- viii) Other contractors, public authorities, utilities or the Employer does not work within the dates and other constraints stated in the Contract and they cause delay or extra cost to the Contractor.
- ix) The advance payment is delayed, beyond 28 days after receipt of application and Bank Guarantee.
- x) The effect on the Contractor of any of the Employer's Risks.
- xi) The Engineer unreasonably delays issuing a Certificate of Completion.
- xii) Other Compensation Events listed in the Contract Data or mentioned in the Contract.
- 42.2 If a compensation Event would cause additional cost or would prevent the work being completed before the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date is extended. The Engineer shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended.
- 42.3 As soon as information demonstrating the effect of each Compensation Event upon the Contractor's forecast cost has been provided by the Contractor, it is to be assessed by the Engineer and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Engineer shall adjust the Contract Price based on Engineer's own forecast. The Engineer will assume that the Contractor will react competently and promptly to the event.
- 42.4 The Contractor shall not be entitled to compensation to the extent that the Employer's interests are affected by the Contractor not having given early warning or not having cooperated with the Engineer.
43. Tax
- 43.1 The rates quoted by the Contractor shall be deemed to be inclusive of the sales and other taxes that the Contractor will have to pay for the performance of this Contract. The Employer will perform such duties in regard to the deduction of such taxes at sources as per applicable law.
44. Currencies: All payments shall be made in Indian Rupees.
45. Retention
- 45.1 The Employer shall retain from each payment due to the Contractor the proportion stated in the Contract data until Completion of the whole of the Works.

- 45.2 On completion of the whole of the works half the total amount retained is repaid to the Contractor and half when the Defects Liability Period has passed and the Engineer has certified that all Defects notified by the Engineer to the Contractor before the end of this period have been corrected.
- 45.3 On completion of the whole works, the contractor may substitute retention money with “on demand” Bank Guarantee.
46. Liquidated Damages
- 46.1 The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the Contract Data for each day that the Completion Date is later than the Intended Completion Date (for the whole of the works or the milestone as stated in the contract data). The total amount of liquidated damages shall not exceed the amount defined in the Contract Data. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of Liquidated damages does not affect the Contractor’s liabilities.
- 46.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Engineer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The Contractor shall be paid interest on the over payment calculated from the date of payment to the date of repayment at the rates specified in sub-clause 43.1.
- 46.3 If the Contractor fails to comply with the time for completion as stipulated in the tender, then the contractor shall pay to the employer the relevant sum stated in the Contract Data as liquidated damages for such default and not as penalty for everyday or part of the day which shall elapse between relevant time for completion and the date stated in the taking over certificate of the whole of the works or the relevant section, subject to the limit stated in the contract data. The Employer may, without prejudice to any other method of recovery deduct the amount of such damages from any money due or to become due to the contractor. The payment or deduction of such damages shall not relieve the contractor from his obligation to complete the works or from any other of his obligation and liabilities under the contract.
- 46.4 If, before the Time Completion of the whole of the Works or, if applicable, any section, a Taking – Over certificate has been issued for any part of the Works or of a Section, the liquidated damages for delay in completion of the remainder of the Works or of that section shall, for any period of delay after the date stated in such Taking Over certificate, and in the absence of alternative provisions in the contract, be reduced in the proportion which the value of the part so certified bears to the value of the whole of the Works or Section, as applicable. The provisions of this sub-clause shall only apply to the rate of liquidated damages and shall not affect the limit thereof.
47. Advance Payment :
- 47.1 MOBILIZATION ADVANCE:
- The mobilisation advance, limiting to 5% of the contract value which shall carry a simple interest @ of 13% per annum shall be paid to the firm on written request from the firm within 3 months of the date of notice to proceed with the work. The payment of mobilisation advance shall, however, be covered by a irrevocable Guarantee Bond in the standard form appended hereto as annexure – I to be furnished by the firm. The advance shall be released in instalments. The first instalment may be paid immediately after award of the work for initial mobilisation and others preliminary work, the balance shall be released in such instalment as may be considered commensurate with the progress of the mobilisation, preliminary and ancillary works, duly certified and evaluated by the engineers-in-charge.
- For evaluation of the progress of the initial mobilisation, the contractor shall furnish a programme of mobilisation period showing details of works to be done, machinery and labour to be employed to start the work as per schedule.
- The recovery of the advance along with the interest thereon @ 13% per annum shall commence after 10% of the contract value is paid for work done and shall be effected on prorata basis such that the entire advance along with interest thereon is recovered by the time 80% of the value of the work is paid to the firm.

47.2 MACHINARY ADVANCE:

The machinery advance, limiting to 10% of the contract value which shall carry a simple interest @ of 13% per annum shall be paid on the condition that the advance does not exceed 80% of the purchase price on the new plant, machinery and equipment which are procured for the work by the contractor in consultation with the project authority and brought to site of work. The advance on the new plant, machinery and equipment shall be paid to the firm after they are hypothecated to the government in the prescribed proforma appended hereto as annexure – II. No such advance shall be given in respect of machinery which the firm already purchased.

The recovery of the advance along with the interest thereon @ 13% per annum shall commence after 10% of the contract value is paid for work done and shall be effected on prorata basis such that the entire advance along with interest thereon is recovered by the time 80% of the value of the work is paid to the firm.

The plant, machinery and equipment shall be returned to the firm after recovery of the advance is completed. The contractor shall not remove the hypothecated plant, machinery and equipment from the project area without the prior written permission of the engineer-in-charge. The firm shall also be responsible for maintaining the hypothecated plant, machinery and equipment in good working condition during the entire period of hypothecation.

48. Securities

48.1 The Performance Security (including additional security for unbalanced bids) shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a bank or surety acceptable to the Employer, and denominated in Indian Rupees. The Performance Security shall be valid until a date 28 days from the date of expiry of Defects Liability Period and the additional security for unbalanced bids shall be valid until a date 28 days from the date of issue of the Certificate of Completion.

49. Cost of Repairs

49.1 Loss or damage to the work or Materials to be incorporated in the works between the start Date and the end of the Defects Correction Periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.

E. FINISHING THE CONTRACT

50. Completion

50.1 The contractor shall request the Engineer to issue a Certificate of Completion of the Works and the Engineer will do so upon deciding that the Work is completed.

51. Taking Over

51.1 The employer shall take over the Site and the Works within seven days of the Engineer issuing a Certificate of Completion.

52. Final Account

52.1 The contractor shall supply to the Engineer a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Engineer shall issue a Defect Liability Certificate and clarify any final payment that is due to the Contractor within 56 days of receiving the Contractor's account if it is correct and complete. If it is not, the Engineer shall issue within 56 days a schedule that states the scopes of the Corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Engineer shall decide on the amount payable to the contractor and issue a payment certificate, within 56 days of receiving the Contractor's revised account.

53. Operating and Maintenance Manuals

53.1 If "as built" Drawings and / or operating and maintenance manuals are required, the contractor shall supply them by the dates stated in the Contract Data.

53.2 If the Contractor does not supply the Drawings and / or manuals by the dates stated in the Contracts Data, or they do not receive the Engineer's approval, the Engineer shall withhold the amount stated in the Contracts Data from payments due to the Contractor.

54. Termination

54.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract.

- 54.2 Fundamental breaches of Contract include, but shall not be limited to the following:-
- a) The contractor stops work for 28 days when no stoppage of work is shown on the current Programme and the stoppage has not been authorized by the Engineer;
 - b) The Engineer instructs the Contractor to delay the progress of the works and the instruction is not withdrawn within 28 days;
 - c) The Employer or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
 - d) A payment certified by the Engineer is not paid by the Employer to the Contractor within 56 days of the date of the Engineer's Certificate.
 - e) The Engineer gives Notice that failure to correct a particular Defect is a fundamental breach of contract and the contractor fails to correct it within a reasonable period of time determined by the Engineer.
 - f) The Contractor does not maintain a security which is required;
 - g) The Contractor has delayed the completion of works by the number of days for which the maximum amount of liquidated damages can be paid as defined in the Contracts data; and
 - h) If the Contractor, in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.
- For the purpose of this paragraph "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution. "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Employer/Borrower, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Employer/Borrower of the benefits of free and open competition."
- 54.3 When either party to the Contracts gives notice of a breach of contract to the Engineer for a cause other than listed under sub-clause 59.2 above, the Engineer shall decide whether the breach is fundamental or not.
- 54.4 Notwithstanding the above, the Employer may terminate the Contract for convenience.
- 54.5 If the Contract is terminated the Contractor shall stop work immediately, make the site safe and secure and leave the site as soon as reasonably possible.
55. Payment upon Termination
- 55.1 If the Contract is terminated because of a fundamental breach of Contracts by the Contractor, the Engineer shall issue a certificate for the value of the work done less advance payment received up to the date of this issue of the certificate, less other recoveries due in terms of the contract, less taxes due to be deducted at source as per applicable law and less the percentage to apply to the work not completed as indicated in the Contracts Data. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor the difference shall be a debt payable to the Employer.
- 55.2 If the Contract is terminated at the Employer's convenience or because of a fundamental breach of contract by the Employer, the Engineer shall issue a certificate for the value of the work done, the cost of balance material brought by the contractor and available at site, the reasonable cost of removal of equipment, repatriation of the Contractor's personnel employed solely on the Works, and the contractor's costs of protecting and securing the Works and less advance payments received up to the date of certificate less other recoveries due in terms of the Contracts and less taxes due to be deducted at source as per applicable law.
56. Property
- 56.1 All materials on the Site, Plant, Equipment, Temporary Works and Works are deemed to be property of the Employer, if the Contract is terminated because of a Contractor's default.
57. Release from Performance
- 58.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Employer or the Contractor the Engineer shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which commitment was made.

F. SPECIAL CONDITIONS OF CONTRACT

1. LABOUR :

The Contractor shall, unless otherwise provided in the Contract, make his own arrangement for the engagement of all staff and labour, local or other and for their payment, housing, feeding and transport. The Contractor shall, if required by the Engineer, deliver to the Engineer a return in detail, in such forms and at such intervals as the Engineer may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such other information as the Engineer may require.

2. COMPLIANCE WITH LABOUR REGULATIONS :-

During continuance of the contract, the Contractor and his sub-contractors shall abide at all time by all existing labour enactments and rules made there under, regulations, notification and bye laws of the state or central Government or local authority and any other labour law (including rules), regulations bye laws that may be passed or notification that may be issued under any labour law in future either by the State or the Central Government or the local authority. Salient features of some of the major labour laws that are applicable to construction industry are given below. The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made there under, regulation or notifications including amendments. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated in the notifications/bye laws/Act/Rules/Regulation including amendments, if any, one of the part of the Contractor including his amount of performance security. The Employer/Engineer shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer.

The employees of the Contractor and the Sub-Contractor in no cases shall be treated as the employees of the Employer at any point of time.

SALIENT FEATURES OF SOME MAJOR LABOUR LAWS APPLICABLE TO ESTABLISHMENT ENGAGED IN BUILDING AND OTHER CONSTRUCTION WORK

- a) Workmen Compensation Act 1923 :- The Act provides for compensation in case of injury by accident arising out of and during the course of employment.
- b) Payment of Gratuity Act 1972 :- Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years service or more on death, the rate of 15 days wages for every completed year of service. The Act is applicable to all establishment employing 10 or more employees.
- c) Employees PF and Miscellaneous Provision Act 1952 :- The Act provides for monthly contribution by the employer plus workers @ 10% or 8.33%. The benefits payable under the Act are:
 - i) Pension or family pension on retirement or death, as the case may be. ii) Deposit linked insurance on the death in harness of the worker.
 - iii) Payment of PF accumulation on retirement/death etc.
- d) Maternity Benefit Act 1951 :- The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.
- e) Contract Labour (Regulation & Abolition) Act 1970 :- The Act provides for certain welfare measure to be provided by the Contractor to Contract labour and in case the Contractor fails to provide, the same are required to be provided, the principal Employer by Law. The principal Employer is required to take Certificate of Registration and the Contractor is required to take license from the designated Officer. The Act is applicable to the establishment or Contractor of Principal Employer, if they employ 20 or more contract labour.

- f) Minimum Wages Act 1948 :- The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act, if the employment is a scheduled employment. Constructions of building, Roads, Runways are scheduled employments.
- g) Payment of Wages Act 1936:- It lays down as to by what date the wages are to be paid, when it will be paid and what deduction can be made from the wages of the work.
- h) Equal Remuneration Act :- The Act provides for payment of equal wages for work of equal nature to Male and Female workers and for not making discriminations against Female employees in the matters of transfer, training and promotions etc.
- i) Payment of Bonus Act 1965:- The act is applicable to all establishments employing 20 more employees. The Act provides for payment of annual bonus subject to a minimum of 8.33% of wages and maximum of 20% of wages to employees drawing Rs.3500/- per month or less. The bonus is to be paid to employees getting Rs. 2500/- per month or above per month only. The Act does not apply to certain establishment. The newly set-up establishments are exempted for five years min certain circumstances. Some of the State Government has reduced the employment size from 20 to 10 for the purpose of applicability of this Act.
- j) Industrial Disputes Act 1947:- The act lays down the machinery and procedure for resolution of Industrial disputes, in what situation a strike or lock-out becomes illegal and what are the requirement for laying off or retrenching the Employees or closing down the establishment.
- k) Industrial Employment (Standing Orders) Act 1946:- It is applicable to all establishment employing 100 or more workmen (employment size reduced by some of the State and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and get the same certified by the designated Authority.
- l) Trade Unions Act 1926 :- The Act lays down the procedure for registration of trade unions for workman and employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.
- m) Child Labour (Prohibition & Regulation) Act 1986 :- The Act prohibits employment of Children below 14 years of age in certain occupation and process and provides for regulation of employment of children in all other occupants and processes. Employment of Child Labour is prohibited in Building and Construction Industry.
- n) Inter State Migrant workman's (Regulation of Employment & Conditions of Services) Act 1979 :- The Act is applicable to an establishment which employs 5 or more inter-state migrant workman through an intermediary (who has recruited workman in one state for employment in the establishment situated in another state). The Inter State migrant workman in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical maid, traveling expenses from up to the establishment and back, etc.
- o) The building and other Construction workers (Regulation of Employment and Conditions of service) Act 1996 and the Case Act of 1996 :- All the establishment who carry on any building or other construction work and employs 10 or more workers are covered under this Act. All such establishments are required to pay excess at the rate not exceeding 2% of the cost of construction as may be modified by the Government. The Employer of the establishment is required to provide safety measures at the building or construction work and other welfare measures, such as Canteens, First Aid facilities, Ambulance, Housing accommodations for workers near the work place etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.
- p) Factories Act 1948 :- The act lays down procedure for approval of plans before setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power engaged in manufacturing process.

3. ARBITRATION (GCC CLASUSE 25.3)

The procedure for arbitration will be as follows:-

- (a) In case of dispute or difference arising between the Employer and a domestic contractor relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Arbitrations and Conciliation Act, 1996. The parties shall make efforts to agree on a sole arbitrator and only if such an attempt does not succeed and the Arbitral Tribunal consisting of 3 arbitrators.
- (b) The Arbitral Tribunal shall consist of three Arbitrators on each to be appointed by the Employer and the Contractor. The third Arbitrator shall be chosen by the two Arbitrators so appointed by the Parties and shall act as presiding Arbitrator. In case of failure of the two Arbitrators appointed by the parties to reach upon a consensus within a period of 30 days from the appointment of the Arbitrator appointed subsequently, the presiding Arbitrator shall be appointed by the Project Authority of IFC Deptt, Manipur.
- (c) If one of the parties fails to appoint its Arbitrator in pursuance of sub-clause (a) and (b) above within 30 days after receipt of the notice of the appointment of its Arbitrator by the other party, then the Project Authority of IFC Deptt, Manipur shall appoint the arbitrator.
- (d) Arbitration proceedings shall be held in Imphal only, and the language of the arbitration proceedings and that of all documents and communications between the parties shall be in English.
- (e) The decisions of the majority of arbitrators shall be final and binding upon both parties. The cost and expenses of Arbitration proceedings will be paid as determined by the arbitral tribunal. However, the expenses incurred by each party in connection with the preparation, presentation etc. of its proceedings as also the fees and expenses paid to the arbitrator appointed by such party or on its behalf shall be borne by each party itself.
- (f) Performance under the contract shall continue during the arbitration proceeding and payments due to contractor by the owners shall not be withheld, unless they are the subject matter of the arbitration proceedings.

SECTION 4 CONTRACT DATA

Items marked “N/A” do not apply in this Contract.

1. The Employer : ADDL. CHIEF ENGINEER – II,
Irrigation & Flood Control Department, Manipur.

Address : PWD COMPLEX, Khuyathong, Imphal – 795 001.
Email :- adlce2ifcd@gmail.com.
Name of authorized Representative:- Superintending Engineer
Thoubal Circle No-II, IFC Deptt, Manipur
2. The Engineer: Executive Engineer
Thoubal Project Division No. VI,
IFC Deptt, Manipur.
Name of authorized Representative:- Assistant Engineer,
Sub Division No.-II
Thoubal Project Division No. VI
IFC Deptt, Manipur.
3. The Dispute Review Expert appointed jointly by the Employer and Contractor is
Name : To be Appointed by the Project Authority as and when the
need arises.
Address :
4. The Start Date shall be 15 (fifteen) days from the date of issue of the Notice to proceed with the work
5. The intended completion Date for the whole of works is 24 (*twenty four*) months after start of work.
6. The site is located at Kamchingjin at Nongdam village, Imphal East District, Manipur. The site is in hilly terrain and has high rainfall. The working season starts in late September or early October and last up to late April or May (Intermittent & pre monsoon rains are expected during the working season).
7. The name and identification number (ACE-II/IFC/7-50/2013-14/137 Dt. 30/08/2014
Contract is :-

8. The work consist of :

(A) *Tunnel Work*

Site clearance; setting-out and layout; construction and set up of site office and colonies i/c work shop and machinery yards, construction of approach roads, Collection of materials and machineries, exploration and examination of the sub soils along the tunnel alignment, excavation of earth works, construction of portals at the tunnel exits, underground excavation with or without blasting, Rock bolting, set up for shotcrete concrete, reinforcement, formworks and placing of concrete, ventilation, all aspects of quality assurance of various components of the works; rectification of the defects in the completed works during the Defects Liability Period; and other item of work as may be required to be carried out for completing tie works in accordance with the drawings and provisions of the contract to ensure safety.

(B) *Other Items*

Any other items as required to fulfill all contractual obligations as per the Bid documents.

9. The following documents also form part of the Contract:
10. The law which applies to the Contract is the law of Union of India
11. The language of the Contract documents is English
12. Limit of subcontracting 50% of the Initial Contract Price
13. The Schedule of other Contractors
14. The Schedule of Key Personnel As per Annex.-II to Section I
15. The minimum insurance cover for physical property, injury and death is Rs.5 lakhs per

- occurrence with the number & occurrences limited to four. After each occurrence, contractor will pay additional premium necessary to make insurance valid for four occurrences always.
16. Site investigation report
17. The Site Possession Dates shall be 15 (fifteen) days from the date of issue of letter to start the work.
18. Fees and types of reimbursable expenses to be paid to the Dispute Review Expert
(To be fixed by Project Authority of Thoubal Multipurpose Project)
19. Appointing Authority for the Dispute Review Expert –
Project Authority of Thoubal Multipurpose Project
20. The period for submission of the program for approval of Engineer shall be 21(twenty one) days from the issue of Letter of Acceptance.
21. The period between program updates shall be 45 (Forty five) days.
22. The amount to be withheld for late submission of an updated Program shall be 1% of contract value.
23. The following events shall also be Compensation Events:
 - i. Substantially adverse ground conditions encountered during the course of execution of work
 - ii. not provided for in the bidding document
 - iii. Removal of underground utilities detected subsequently
 - iv. Significant change in classification of soil requiring additional mobilisation by the contractor, e.g. ordinary soil to rock excavation,
 - v. Removal of unsuitable material like marsh, debris dumps, etc not caused by the contractor
 - vi. Artesian conditions
 - vii. Seepage, erosion, landslide
 - viii. River training requiring protection of permanent work
 - ix. Presence of historical, archeological religious structures, monuments interfering with the works
 - x. Restriction of access to ground imposed by Civil, judicial, or military authority
24. The currency of the Contract is Indian Rupees.
25. The formula (s) for adjustment of prices are: Incorporated in the Condition of contract as defined in Clause 47.1 Conditions of Contract
26. The proportion of payments retained (retention money) shall be 6% from each bill subject to a maximum of 5% of final contract price:
27. Amount of liquidated damages for delay in completion of works For Whole of work(1/2000)th of the Initial Contract Price, rounded off to the nearest Thousand, per day.
28. Maximum limit of liquidated damages for delay in completion of work 10 per cent of the Initial Contract Price rounded off to the nearest thousand
29. The amounts of the advance payment : Incorporated in the Condition of Contract
30. The Schedule of Operating and Maintenance Manuals _____ N/A
31. The following events shall also be fundamental breach of contract: “The Contractor has contravened Sub-clause 7.1 and Clause 9 of GCC.”
32. The percentage to apply to the value of the work not completed representing the Employer’s additional cost for completing the Works shall be 20 (Twenty) per cent.

SECTION 5

TECHNICAL SPECIFICATION

1. GENERAL

1.1 These specifications shall apply to all such works as are required to be executed under the contract or otherwise directed by the Engineer. In every case the work shall be carried out to the satisfaction of the Engineer and shall conform to grades and cross sections shown on the drawings or as indicated by the Engineer. The quality of the work and materials shall comply with the requirements set forth in the succeeding sections. Where the drawings and specifications describe only a portion of the work only general terms and not in complete details, it shall be understood that only the best general practice is to prevail. Materials and workmanship of the best quality are to be employed and that the instructions of the Engineer are to be fully complied with and shall be binding on the contractor. The contractor shall be fully responsible to ensure that the finished works are free from any defects, weakness, cracks etc.

1.2 CODES OF PRACTICE AND SPECIFICATIONS:

1.2.1 The abbreviations mentioned elsewhere for standard specifications and code of practices shall be considered to have the following meaning.

IS	:	Indian Standard of the Indian Standards Institution.
IRS	:	Indian IFCD Standard Specifications and Code of Practices.
IRC	:	Indian Roads Congress.
RDSO	:	Research, Designs and Standards Organisations (Ministry of IFCD).

1.2.2 Wherever a reference is made to any of the standard specifications and code of practice it shall be taken as a reference to the latest versions/revision of the same and shall include all the ERRATA/corrections made in the same from time to time.

1.3 MEASUREMENTS

1.3.1 All measurements shall be made in the metric system. Different items of works shall be measured in accordance with the procedures set forth in the relevant sections read in conjunction with G.C.C. and special conditions of the contract.

1.3.2 All measurements and computations, unless otherwise indicated shall be carried nearest to the following limits.

i)	Length and breadth	10 mm
ii)	Height, depth or thickness of earthwork, C.C. work	5 mm
iii)	Area	0.01 Sqm.
iv)	Cubic contents	0.01 Cum.

1.4 Site clearance wherever involved shall be undertaken and the same shall be considered incidental to the earthwork items and rates for the same shall be deemed to be inclusive of all clearing operations.

1.5 Specifications not specified in the tender documents for this work, shall be in accordance with Indian IFCD Unified Standard Specification Volume-I & II 2010 edition corrected up-to-date and the contractor shall be bound by them for the performance of the contract.

2.0 Earthwork

2.1 The changes mentioned in the tender documents are field changes are meant guidance only. For the purpose of payment, actual lengths will be measured on ground.

2.2 It shall be the responsibility of contractor to ensure that no work on the embankment or cutting is commenced until the existing ground levels at different cross sections have been recorded and such records of levels have been jointly signed and dated by the contractor and the Engineer or his authorized representative. Cross-sectional profiles plotted on the basis of the recorded ground levels shall also be jointly signed by the contractor(s) and the Engineer. The points at which the cross sectional ground levels are to be recorded and the extent of leveling work to be done shall be decided by the Engineer. The contractor may bring to the notice of the Engineer such additional cross-sections that in his opinion should be taken for

- proper assessment of quantities. Such representation, however, should be made before the commencement of any earthwork. The Engineer's decision thereon shall, however, be final and binding on the contractor.
- 2.2.1 Contractor shall sign every page of the level book and cross section sheets where original ground and final level of completed work are recorded in token of his acceptance of these levels and cross sections for the purpose of computation of quantities of payments. No dispute whatsoever shall be entertained on this account.
- 2.3 Contractor shall clear all shrubs and jungles on the existing ground up to a distance of 3m from the proposed toe of the embankments. All tree stumps will have to be uprooted from the area to be covered by the formations embankment will not be paid for separately and the rate of earthwork includes such uprooting of tree stumps.
- 2.3.1 No extra payment will be admissible for filling up the hollows left after uprooting of tree stumps in the area covered by the embankment. Initial ground levels as represented by the cross sections taken before commencement of work will not be deemed to be vitiated, and will hold good for the assessment of the earthwork quantities, even though there may be some loss of earth in marshy/bed area due to shrinkage.
- 2.4 Benching has to be done on the existing banks where embankment is to be formed. No extra payment for benching in either case will be admissible.
- 2.5 The type of soil to be used in the embankment which will be brought from out-side the IFCD land will be got approved from the Engineer in advance. Organic clay, silts, peat and shrinkable soils of low bearing capacity shall not be used for making the embankment.
- 2.6 Contractor should set out the work according to the plan and as directed by the Engineer or his representative. Reference pegs are to be made permanent and kept clear of all obstructions. He should obtain the approval in writing from the Engineer, for the correctness of the setting out and the reference marks, before commencing the actual execution of the works.
- 2.6.1 All over 12.5 m along the proposed embankment, profiles shall be erected to enable smooth execution of the earthwork in layers. No extra payment will be admissible for this.
- 2.7 While carrying out the filling work the contractor will take all necessary precautions to see that no infringement is caused, with signaling and other installations and structures for the smooth movement of traffic along the IFCD track in and outside station limits. In course of doing work if infringements are likely to arise he shall intimate the Engineer in advance of his/their programme in writing so that necessary arrangements can be provided for carrying out such items.
- 2.8 The side slopes will be as designs and drawings approved by the Engineer.
- 2.8.1 If any blasting operations are necessary, they are to be carried out in accordance with the provisions under Standard Special Conditions for blasting and explosive as contained in General Conditions of Contracts, and Indian IFCD Unified Standard Specification Volume-I & II 2010 edition with up-to date corrections.
- 2.9 No extra payment towards cost of bailing or pumping out water from borrow pits or cutting or foundations excavation will be made. In case the embankment is to be made for such work, it should be clearly understood that the rates quoted are inclusive of all charges for such items incidental to earth work.
- 2.9.1 SPECIFICATIONS FOR FORMING EMBANKMENT WITH MECHANICAL COMPACTION.
- 2.9.2 After site clearance all pockets and depressions left in the soil, if any, shall be made and compacted.
- 2.9.3 Earthwork shall be done in layers not exceeding 300 mm in thickness in the loose state, and compacted preferably at or near the optimum Moisture Content (OMC) with suitable rollers to obtain the density specified in para 2.11.3(a) & 2.11.3(b). The number of passes of the rollers and the optimum thickness of such layer will be fixed after carrying out field trails with the roller proposed to be used, from time to time, and from location to location, the main criteria being to obtain the maximum density achievable uniformly.
- 2.11.3 (a) Coarse grained soils shall be compacted to get a maximum density Index (relative density) of 70% as obtained in accordance with IS: 2720 (Pt.XIV-1983).

- 2.11.3 (b) All other types of soils when compacted shall attain at least 98% of the max. dry density as determined using heavy compaction in accordance with IS: 2720 (Pt.VIII) 1983 followed by field trials as per IS : 10379-1982 which shall form the basis for actual densities with the approval of the Engineer.
- 2.11.4 Where the moisture content of the borrow soil in any layer is above OMC, it shall be left for drying for a suitable period to bring down the moisture content very near to OMC before rolling is commenced. If the soil is dry, water shall be sprinkled either in the borrow pit or over spread layer, as per convenience, in order to attain a moisture content near to OMC, before rolling is commenced. Where the natural moisture content of the borrowed soil is high, compaction at higher moisture contents upto plastic limit can be allowed with the permission of Engineer. However, its effect on the design must be analysed and, if necessary, bank profile should be revised.
- 2.11.5 Each layer shall be compacted to the desired density over the entire width commencing from the two sides, before another layer is started.
- 2.11.6 While compacting, it shall be ensured that there is a maximum overlap of 15 cm before each run of the roller.
- 2.11.7 Care shall be taken during the compaction operation to slope the surface of the bank to facilitate the siding and to minimise the absorption of rainwater, particular attention being given to prevention of pounding.
- 2.11.8 The density of each layer of compacted soil shall be ascertained by testing an adequate number of soil samples as decided by the Engineer.
- 2.11.9 The quality of works shall be determined by considering the mean density of the samples in each layer. The mean density shall be equal to or exceed the minimum specified density. Shall the density be less than the minimum specified by more than 2% further rolling shall be done at the appropriate location.
- 2.11.10 The contractor shall be allowed to pay a further layer of soil only after compaction of preceding layer has been satisfactory.
- 2.11.11 The top of the formation shall be finished to a slope of 1 in 30 away from the centre.
- 2.11.12 In bank filling above or against structures such as bridges, the materials shall be deposited in layers not more than 200 mm in thickness sloping away from the structure with each layer carefully tamped. Only the best available materials approved by the Engineer shall be used for this purpose.
- 2.11.13 Beyond the theoretical profile of bank an extra width of 50 cm shall be rolled either side which after finishing the bank up-to final height shall be dressed by removing the loose earth on account of rollers not able to compact the soil at the edge of the formation width.
- 2.11.14 The additional earth, after finishing the bank up-to final height shall be removed and spread at the toe of the bank with proper slope for drainage. No extra payment will be made for providing and subsequent removal of this extra earth and contractor is to quote his rates accordingly.
- 2.12 No hand roller or hand ramming is permitted. However, where it is physically not possible to use the mechanical roller, the compaction may be done by using hand roller or hand hammer/tamper with prior written permission of the Engineer, in which case thickness of layer to be restricted to 150 mm in loose state, so as to achieve the prescribed degree to compaction.
- 2.13 Necessary arrangement for the will testing at site will have to be organised by the contractor in accordance with these specifications as directed by the Engineer and no extra payment will be made to him on this account. The contractor shall also establish a self sufficient laboratory for soil testing and quality control testing.
- 2.14 **SETTING UP SOIL TESTING LABORATORY AT SITE**
In each contract section field soil testing laboratory should be set up (Contractor should purchase equipments for soil testing) to carry out soil testing.
- 2.15 Under mentioned soil tests should be carried out:-

- i) MDD & OMC of soil.
 - ii) Liquid limit and plastic limit test (for classification of soil),
 - iii) Sieve analysis to classify soil as coarse grained or fine grained soil,
 - iv) Field density of compact soil in each layer at an interval of 50 m this should be minimum 98% of MDD as determined using heavy compaction in accordance with IS: 2720 (Pt.VIII) 1983.
 - v) In each of coarse grained soil density index (relative density) of compacted soil in accordance with IS: 2720 (Pt.XIV) – 1983.
- 2.16 List of equipments required for soil testing
- i) Equipment for liquid limit and plastic limit test,
 - ii) Modified proctor test mould,
 - iii) Tube reamer weight 4.90 kg. Drop height 450 mm.
 - iv) Infra red lamp and torsion balance meter,
 - v) IS sieve Nos. IS 100, 63, 20, 10 and 4.75 for coarse grain sieve analysis and 2mm, 1.0 mm, 600 micron, 800 micron, 425 micron, 212 micron, 150 micron & 76 micron IS sieves for fine grain sieve analysis.
 - vi) Chemical balance with weight box.
 - vii) Physical balance with weight box.
 - viii) Knife,
 - ix) Tray,
 - x) Crucibles,
 - xi) Weight,
 - xii) Measuring cylinder,
- 2.17 List of Equipment for Field Compaction Test.
- i) Core cutter with Dolly-Volume 10 (x) cum,
 - ii) Reamer,
 - iii) Moisture meter (Complete set)
 - iv) Physical balance with weight,
 - v) Knife,
 - vi) Tray.
- 2.18 *Soil should be used on embankment only after passing by AEN/XEN after conducting tests. Soil testing should be done from borrow pits and graph should be plotted. Test results should be signed by IOW/AEN/SEN.*
- 2.19 *Under mentioned registers should be maintained at site and contractor's signature obtained.*
- i) MDD & OMC of soil
 - ii) Sieve analysis of soil
 - iii) Plastic limit and liquid limit of soil,
 - iv) Record of passing soil by XEN
 - v) Field compaction result layer-wise at 50 m interval.
 - vi) Earthwork calculation registers
 - vii) Site order book.
 - viii) Log book of daily work done.
 - ix) Any other register required for work.
- All above register should be submitted to Dy.CE/CON alongwith each CC bill.
- 2.20 PEGGING OUT OF ALIGNMENT
- 2.21 The alignment should be marked on the ground from apex to apex of adjoining curves, so that there is no possibility of having lateral shift in alignment produced from two ends. On straight pegs should be fixed at 50 m interval and on curve it should be fixed at 25 m interval and at all TPs.

- 2.22 Top of sub-bank should normally be 30 cm above HFL but depending to the site conditions the height of sub-bank should be decided by XEN in charge of the work. The top level of sub-bank should be decided before starting the work so that toe line can be marked correctly.
- 2.23 Earthwork should not be started in bank and sub-bank till dag belling at toe line is done and it is checked by XEN. Dag belling of toe line should be done at a distance of 1 metre from actual toe of bank/sub-bank. Height of sub-bank should be decided before dug belling is done so that toe line (including sub-bank) can be marked correctly. Dag belling of toe should be done considering 50 cm. Extra width for main bank (which is to be dressed later on), in case of sub-bank extra width should be considered for main bank as well as for sub-bank i.e. total extra width of 100 cm.
- 2.24 MEASUREMENT AND PAYMENT.
- 2.24.1 It should be clearly noted that the payment for earth filling shall be made on the basis of net quantity after deduction of shrinkage from the Gross quantity.
- 2.24.2 The percentage of deductions due to shrinkage shall be made as under unless otherwise stated in the description of the works :
- (i) for earth filling with mechanical compaction. 5% (Five percent)
 - (ii) for earth filling without mechanical compaction. 10% (Ten percent)
- 2.24.3 The gross quantity will be arrived from the cross sectional areas after plotting the final formation levels of finished formation over the original ground levels. The total height of filling (including the shrinkage) to be done shall be decided by the Engineer. Extra quantity of earth filling beyond the required width and height (including the shrinkage) and beyond the toes will not be paid. The toes of the bank shall be as per final slope for a required profile on the basis of formation levels shown in the longitudinal section. The contractor should quote his rate accordingly.
- 2.24.4 In case earthwork is done under water in isolated locations rates quoted by the tenderer must take into account all possibilities of base settlement in marshy area etc. after making necessary investigation and payment shall be made only on final cross sections. No additional payment or any claim will be accepted.
- 2.24.5 If bandelling etc. is required for earthwork under water to be contained, the rate for earthwork would cater for this.
- 2.25 The "Turving of bank" will not be commenced before slopes are dressed to the specific section and without the written permission of the Engineer. It will consist of sods not less than 7.5 cm in thickness and 23 cm square, well beaten into the slope of the bank, and laid in manner so that their edges are in close contact and form a level and compact surface. The contractor shall be responsible to ensure that the turf grows properly. In the event of its not doing so, he will replace such parts, as have not grown at his won expenses.
- 2.26 When the earth for making of formation is borrowed from adjacent private lands contractor must ensure that minimum distance of borrow pit in private land from the toe of new bank is at least equal to the height of bank plus 3.0 metres.
- 2.27 Under no circumstances incomplete work will be taken over by the department. The contractor shall notify sufficiently in advance his intention of handing over a particular stretch of completed/finished work so as to enable recording final levels.
- 3 EXCAVATION FOR STRUCTURES.
- 3.1 Pits trenches for foundations of bridges, culvert wells, apron and other structures shall be taken out to the levels and dimensions shown on the approved drawings or to such other levels and dimensions as the Engineer may direct. The bottom of all excavations shall be carefully levelled and stopped on benches as directed by the Engineer. Any pocket of soft or loose materials and fissures in the bottom pits and trenches shall be removed and the cavities so formed filled or grouted with concrete as directed by Engineer. When any excavation has been done and trimmed to the required levels and dimensions, the Engineer shall be informed

- accordingly so that he may inspect the complete pit or trench and no excavation shall be filled in and covered with concrete until it has been inspected and the contractor has been authorised to proceed with work. All surplus excavation not required for refilling shall be deposited in embankments, or otherwise disposed off as directed. The work shall include all necessary sheeting, shoring, bracing, drawing and pumping out water, removal of all logs, stumps, grabs and other deleterious matters, obstructions, necessary for placing the foundations.
- 3.2 When required by the Engineer, materials in the last 500 mm of depth of the excavations shall not be removed until immediately before the concrete is to be placed.
- 3.3 All excavation for structures shall generally be as small as practicable, consistent with the proper construction of work. Any excavation taken out to a greater depth than that required shall be back filled with concrete of the foundation grade at the cost of the contractor.
- 3.4 Where water is met with during excavation due to stream flow, seepage, sorings, rain or other reasons, the contractor shall take adequate measures such as bailing, pumping, constructing diversion channel, drainage channel, bonds and other necessary works to keep the foundation trenches dry and other necessary and to protect the green concrete against damage by eruption or sudden rising of water level. Approval of the Engineer to any method adopted for the adequacy of dewatering and protection arrangements and for the sound safety of the work shall be required.
- 3.5 Refilling of foundation pits and trenches shall be carried out only after the foundation and structure works within the excavation have been inspected and approved by the Engineer. Unless otherwise directed by the Engineer all fillings shall consist of approved materials. All space between foundation concrete and the sides of excavation shall be refilled to the original surface, using approved plant, in single layers not exceeding 250 mm loose thickness which shall be watered and completed to a dry density not less than that of the adjoining soil strata. Timber sheeting and other excavation support shall be carefully removed as the filling proceeds but the removal of such supports will not relieve the contractor of his responsibility for the stability of the works.
- 3.6 MEASUREMENTS OF PAYMENT
- 3.6.1 Excavation for structures shall be measured in cubic metres, limited to the dimensions shown in the approved drawing or as directed by the Engineer keeping in view practical necessity for proper execution of the work. Foundation sealing, de-watering including pumping shall be deemed to be incidental to the work and no extra payment shall be payable for this work.
- 3.6.2 For any special treatment of foundation such as grouting of cavities and fissures, extra payment will be made at mutually agreed rates.
- 3.7 RATES
- The contract unit rate for the item of earthwork in excavation for structures shall be paid in full for carrying out the required work including full compaction to –
- i) Setting out including all ancillary works like pegging and supply of pegs etc.
 - ii) Construction of necessary sheeting, shoring and bracing and then subsequent removal.
 - iii) Removal of all logs, stumps, grubs and other deleterious matters and obstructions for placing foundations including trimming of bottom of excavations.
 - iv) Foundation sealing, de-watering including pumping.
 - v) Back filling upto the top of foundation clearing up the site and disposal of all surplus materials within leads upto 200 m inclusive of all leads, descents etc.
 - vi) All labour, materials, tools, constructions plants, safe guards and incidental

necessary to complete the work as per specification.

- 4.0 MATERIALS FOR STRUCTURES
All materials to be used in the work shall be in conformity with the requirement laid down hereunder. All other materials not specified herein fully are required to be used in the work conforming to the appropriate code described under clause 1.2.1. These materials shall only be used on being approved by the Engineer or his representative and in case being rejected shall be removed from site and replaced at his own expenses by the Contractor.
- 4.1 BINDING WIRE
Binding wires used for binding the reinforcement shall be of approved quality soft annealed iron wire not less than 1 mm (18 SWG) size, conforming to IS : 280.
- 4.2 REINFORCEMENT STEEL
- 4.2.1 All structural steel for bridges shall conform to IS : 2062 – 1992. Grade 'B' type.
- 4.2.2 Reinforcement to be used in RCC/ PSC bridge works shall conform to IS: 1786 , 1979
- 4.2.3 High Tensile prestressing steel (strands) used for PSC girders shall conform to IS: 6006-1983 class-I type.
- 4.3 TIMBER
The timbers used for structural purpose whether permanent/semi permanent or temporary work shall conform to IS: 883.
- 4.4 WATER FOR CONCRETE AND MORTAR
Water shall be clean and free from injurious amount of deleterious materials. Normally portable water from an approved source may be considered satisfactory for washing aggregates, mixing and curing concrete, and shall comply with the provision of IS: 456.
- 4.5 AGGREGATE FOR CONCRETE
- 4.5.1 General – The aggregates (coarse and fine) for concrete shall comply in all respects with IS: 383 and shall be obtained from a source approved by the Engineer.
- 4.5.2 Aggregate which are not clean are to be washed to the satisfaction of the Engineer or his representative in water of quality as described in Clause 4.4. If the Engineer so directs, the contractors shall provide and operate a washing plant to ensure adequate supply of clean aggregates within the approved grading limit. All such washed aggregates shall be stored and drained for at least 24 hours before being used for concreting.
- 4.5.3 The coarse aggregate, unless otherwise specified or authorised by the Engineer shall not be delivered to the site. All aggregates shall be protected from dust contamination by methods approved by and to the satisfaction of the Engineer or his representative.
- 4.6 SAMPLES AND TESTS
- 4.6.1 GENERAL : The samples of all the materials proposed to be used by the contractor in the work shall be got tested by the contractor in an approved laboratory and necessary test certificates including manufacturers certificates of tests, proof sheets, mill sheets etc. showing that the materials have been tested in accordance with and conform to the requirements of the appropriate IS Codes and other relevant Standard Specifications or these specifications, shall be supplied in original free of charges on request to the Engineer or his representative.
- 4.6.2 Samples of the following materials shall be submitted to the Engineer or his representatives free of charge for testing and approval.
 - i) Coarse and fine aggregate,
 - ii) Any other materials as directed by Engineer.
- 4.6.3 Samples provided to the Engineer or his representatives for their retention are to be kept in levelled boxes suitable for storage. Materials or workmanship not corresponding in character and quality with approved samples shall be rejected.
- 4.6.4 Samples required for testing and approval must be supplied giving sufficient time

- to allow for such testing and approval, due allowance being made to the fact that if samples are rejected further samples shall be required. Delay to the works arising from the late submission of samples shall not be acceptable as a reason for delay in the completion of the work.
- 4.6.5 The testing of the materials may be carried out by the IFCD in any laboratory of its choice if required. If the materials are not found to comply with the various provisions laid down in the relevant IS Codes. Other relevant Standard Specifications or these specifications, the same shall be rejected irrespective of the test certificate submitted by the contractor.
- 4.6.6. In addition the Engineer shall have the right to require the contractor at any time to draw samples of aggregates or any other materials from stock piles on the site or any other locations to be drawn in accordance with IS-2386 and tested in laboratory approved by the Engineer in accordance with the appropriate clause of IS : 2386 at the cost of the contractor.
- 4.6.7 Tests for the determination of impurities in the sand shall be made once daily until the Engineer is satisfied that the specified compression strength is being regularly obtained, such tests shall be made once weekly and at other times as directed by the Engineer.
- 4.6.7.1 The cement and steel brought by the contractor will also be tested from each lot as directed by the Engineer or his representative. The contractor will also furnish original purchase bills. Random samples shall also be taken to assess the weight per metre of steel. The payment shall be on the actual weight basis taking advantage of tolerance in the IS: Code.
- 4.6.8 **ADDITIONAL TESTS**
In addition to the tests required under clause hereof the Engineer or his representative may order tests to be carried out by an independent person appointed by him at such place or in such laboratory as he may determine in accordance with the appropriate clause of IS: 2386 or IS: 2586 and the cost of such tests shall be borne by the contractor.
- 4.6.9 The results of all such tests as described herein above and later or in succeeding paras shall be forwarded to the Engineer or his representative for his retention as record.
- 4.6.10 **INSPECTION OF MATERIALS**
- 4.6.10.1 Wherever the Engineer or his representative gives notice to the contractor that materials are to be inspected off the site, the contractor shall, having regard to the location of the materials and the nature of the inspection, test or examination required, give to the Engineer or his representative at least one week's notice of such materials being ready for inspection, test or examination.
- 4.6.10.2 Delay to works arising from the late submission of such notice will not be acceptable as reason for delay in the completion.
- 4.6.11 **REJECTION OF MATERIALS**
- 4.6.11.1 Materials shall be tested before leaving the manufacturer's premises, where appropriate. Materials may as well be tested on the site and they may be rejected if found not suitable or not in accordance with the specifications notwithstanding the results of tests at manufacturer's works or elsewhere or test certificates.
- 4.6.11.2 The Engineer or his representative shall have the right to order at any time, that any aggregate or other construction materials which do not meet with his approval shall not be used in the works and such rejected materials shall be removed from the site by the contractor at his own expenses, notwithstanding any prior approval which might have been given earlier.
- 4.6.11.3 In case of default on the part of the contractor in removing rejected materials within the time specified in notice, the Engineer shall be at liberty to have them removed by other means at the cost of the contractor.
- 4.6.12 **STORAGE OF MATERIALS**
- 4.6.12.1 All materials to be used in permanent works shall be stored on rocks, supports,

- stock piles in bins under cover etc. as appropriate, to prevent deterioration or damage from any cause whatsoever to the satisfaction of the Engineer or his representative.
- 4.6.12.2 The contractor shall at all times maintain on the site such quantities of each type of aggregates as are considered by the Engineer or his representative to the sufficient to ensure continuity of works.
- 4.6.12.3 Each type and grading of aggregate shall be stored in separate tacks on a hard floor having sufficient slope to ensure adequate drainage of surplus water. Wet and washed aggregate shall be kept in storage for at least 24 hours to ensure adequate drainage before being used for concreting.
- 4.7 CEMENT
- 4.7.1 In general, for all mass and reinforced concrete works, ordinary port-land cement conforming to IS : 269 shall be used. However, *IFCD* reserves the right to ask the contractor at any time for using other varieties of Standard cement complying with the relevant IS Codes or any other Standard Specifications and the contractor shall use the same. Two or more types of cement in one member of the structure shall not be allowed.
- 5.0 CEMENT CONCRETE WORKS
- 5.1 GRADE OF CONCRETE
- 5.1.1 Nominal mix concrete is to be used where it is shown in the drawings or as directed by the Engineer.
- 5.2 STRENGTH REQUIREMENT OF CONCRETE
- 5.2.1 In designation of concrete mix, letter 'M' refers to mix and the number of the specified 28 days work cube compressive strength of that mix on 150 mm cubes expressed in N/mm sq.
- 5.2.2 The compressive strength requirements for various grades of concrete shall be as given in table below :-
- | S/ | Grade of concrete | Compressive work test strength in N/mm sq. Of 150mm cubes after mixing conducted in accordance with IS : 516 | |
|------|----------------------------|--|-----------------|
| N | | Min. at 7 days | Min. at 28 days |
| i) | M10 (Nominal mix.1:3:6) | 7 | 10 |
| ii) | M15 (Nominal mix 1:2:4) | 10 | 15 |
| iii) | M20 (Nominal mix 1:1 ½ :3) | 13 | 20 |
| iv) | M25 (Controlled mix 1:1:2) | 17 | 25 |
| v) | M30 (Controlled mix) | 20 | 30 |
| vi) | M40 (Controlled mix) | 27 | 40 |
| vii) | M45 (Controlled mix) | 30 | 45 |
- 5.2.1 Where the strength of a concrete mix as indicated by tests, lies in between the strength of any two grades specified in table above, such concrete shall be classified for all purpose as concrete belonging to the lower of the two grades between which its strength lies.
- 5.3 TESTS AND STANDARDS OF ACCEPTANCE
- 5.3.1 PRELIMINARY TESTS FOR CONTROLLED CONCRETE
- 5.3.1.1 Design of the mix shall be carried out by the contractors in his own laboratory in presence of the Engineer/representative.
- 5.3.1.2 Trial mixes shall be made using samples of the aggregates cement and water, typical of those to be used in the works,
- 5.3.1.3 Should the strength shown by the preliminary tests prove to be below the figures specified in para 5.2.2 the contractor shall make such changes in proportions as are required to bring the concrete upto the required strength.
- 5.3.1.4 Wherever mix has been approved, no variations shall be made in the proportions, the original course of the cement and aggregates or in the type, size and grading zone including water cement ratio without the consent of the Engineer who may

- require further tests to be made.
- 5.3.1.5 For controlled concrete, the concrete mix shall be so designed as to attain in preliminary tests strength of at least 35 percent higher than that required on work given in table under Clause 5.2.2.
- 5.3.1.6 **WORKS STRENGTH TESTS FOR CONCRETE**
- 5.3.2.1 The contractor shall be held responsible for ensuring that the crushing strength of the concrete as placed is not less than the designed strength as per approved plans.
- 5.3.2.2 **SAMPLING AND STRENGTH OF DESIGNED CONCRETE MIX**
- GENERAL**
- Samples from fresh concrete shall be taken as per IS 1199 and cubes shall be made cured and tested at 28 days in accordance with IS 516.
- In order to get a relatively quicker idea of the quality of concrete, optimal tests on beams for modulus of rupture at 72+ 2h or at 7 days or compressive strength test at 7 days may be carried out in addition to 28 days compressive strength test, For this purpose the values should be arrived at based on actual testing. In all cases the 28 days compressive strength specified in Table 2 shall alone be the criterion for acceptance or rejection of the concrete
- FREQUENCY OF SAMPLING**
- Sampling Procedure**
- A random sampling procedure should be adopted to ensure that each concrete batch shall have reasonable chance of being tested that is, the sampling should be spread over the entire period of concreting and cover all mixing units.
- Frequency**
- The minimum frequency of sampling of concrete of each grade shall be in accordance with the following

Sl No	Quantity of concrete in the work, cum	Number of samples
1	1-5	1
2	6-15	2
3	16-30	3
4	31-50	4
5	51 and above	4 plus one additional sample for each additional 50 cum or art thereof.

Note: At least one sample shall be taken from each shift. Where concrete is produced at continuous production unit such as ready mixed concrete plant, frequency of sampling may be agreed upon mutually by suppliers and purchasers.

TEST SPECIMEN

Three test specimens shall be made for each sample for testing at 28 days. Additional samples may be required for various purposes such as to determine the strength of concrete at 7 days or at the time of striking the form work, or to determine the duration of curing, or to check the testing error. Additional samples may also be required for testing samples cured by accelerated methods as described in IS 9103. The specimen shall be tested as described in IS 516.

TEST RESULTS OF SAMPLE

The test results of the sample shall be the average of the strength of three specimens. The individual variation should not be more than +15 percent of the average. If more the test results of the sample are invalid.

- 5.3.2.3 The contractor shall provide at his own expense all necessary labour, materials including cement moulds, equipment for sampling and all other ancillaries required in preparing specimens etc. as given in clause 5.3.2.2 and arrange to carry out test on these specimens in his own field laboratory. The contractor shall test these specimens in presence of the representative of the Engineer. Duplicate results shall be maintained under the joint signature of the contractor and the Engineer's representative. One set of the result being kept with the contractor and the other with

- the Engineer's representative.
- 5.3.2.4 All work shall be carried out under the supervision of a qualified and competent Engineer of the contractor who shall supervise proportioning, placing and compacting of concrete at all stages.
- 5.3.2.5 The Engineer reserves the right to take samples of concrete test cubes independently at his own discretion. The contractor shall provide all facilities at his own expense in preparation of such samples and concrete test tubes such as labour materials including concrete moulds, equipment for sampling and all other ancillaries required in their preparation. Contractor shall also arrange to transport these specimen to the laboratory selected by IFCD at his own cost. Contractor shall depute his representative during testing who shall sign the test results as a token of contractor's acceptance.
- 5.4 **STANDARD OF ACCEPTANCE**
The average strength of the group of cubes cast for each day shall not be less than the specified work cubes strength. 20 percent of the cubes cast for each day may have values less than the specified strength, provided the lowest is not less than 85 percent of the specified.
- 5.5 **PROPORTIONING CONCRETE**
- 5.5.1 Ordinary concrete mix shall generally be specified by volume. Volume of ingredients shall be worked out taking 50 kg. Of cement as 0.035 cum in volume. While measuring aggregates by volume, shaking, ramming or hammering shall not be done. Allowance for bulking of damp sand be made as IS : 2386 (Part-III).
- 5.5.2 Proportion of ingredients required for ordinary concrete containing one 50 kg bag of cement for different grades of concrete is given below :-

Grade of concrete	Mix by volume
M 10	1:3:6
M 15	1:2:4
M 20	1:1.5:3
M 25	1:1:2

5.6 **WORKABILITY OF CONCRETE**

Optimum quantity of water shall be mixed just to produce a design concrete of required workability. Workability shall be such that the concrete surrounds and properly grips all reinforcement. The degree of consistency, which shall depend upon nature of work and method of vibration of concrete, shall be determined by regular slump tests to be carried out by the contractor at his cost. Usually for mass concrete in R.C.C. works where vibrations are used the slumps shall be within 10 mm to 25 mm. The frequency of such tests and the natures of slumps shall be maintained within the limits specified by the Engineer. The Engineer also reserves the right to carry out slump tests independently at his own discretion.

5.7 **CONTROLLED CONCRETE**

- 5.7.1 The proportions of the ingredients shall be taken by weight from the stock piles collected at site and already approved on the basis of preliminary tests. Care shall be taken that the supply of properly graded aggregate of uniform quality is maintained till the completion of works except where it can be shown to the satisfaction of the Engineer that the supply of properly graded aggregate of uniform quality can not be maintained till the completion of works. Grading of aggregate shall be controlled by obtaining them in the right proportions as required. Grading of coarse and fine aggregate shall be checked as frequently as possible and as determined by the Engineer.
- 5.7.2 Cement shall have to be weighed from bulk stocks at site and not by bags, it shall be weighed separately from the aggregates.
- 5.7.3 Water shall either be measured by volume in calibrated buckets or weighed. All necessary equipment shall be maintained in a clean and serviceable condition. Their

- accuracy shall be periodically checked.
- 5.7.4 To maintain the specified water cement ratio constant and at its correct value, moisture contents in both fine and coarse aggregates shall be determined with reference to IS : 2386 (Part-III) and amount of mixing water shall then be adjusted suitably.
- 5.8 MIXING CONCRETE
- 5.8.1 All concrete shall be mixed at site in a drum type mechanical mixer in first class working condition. Mixing shall be continued till materials are uniformly distributed and a uniform colour of the entire mass is obtained and each individual particle of the coarse aggregate shows complete coating of cement mortar. The mixing shall in no case be less than 2 minutes after all the ingredients have been put into the mixer.
- 5.8.2 Mixer which has been out of use for more than 30 minutes shall be thoroughly cleaned before putting in a new batch. Mixing plant shall be thoroughly cleaned before and after use. A standby mixing plant equivalent to that in use, shall be provided and maintained ready for immediate use during any break down.
- 5.9 FORM WORK
- 5.9.1 The term form work includes all temporary or permanent form essential for forming the concrete, together with all temporary construction props, bracings required for the support. In general the erection and removal of form work shall be in accordance with the provision given under clause 9.2 of I.R.S. Concrete Bridge Code (April, 1982 edition).
- 5.9.2 CONSTRUCTION & PREPARATION OF FORM WORK FOR BRIDGES
- 5.9.2.1 Forms for concrete shall be made of either metal or timber suitably lined and of substantial and rigid construction true to shape, alignment and dimensions as shown on the approved drawings.
- 5.9.2.2 Forms shall be mortar tight and shall be made sufficiently rigid by the use of ties and bracings to prevent any displacement, deflection or movement of any kind. They shall be strong enough to withstand of the construction, all pressure, ramming and vibration, movement of persons, materials and plant during and after placing the concrete. Special measures shall be taken to ensure that the form work does not hinder the shrinkage of concrete because without this cracking could occur before the form work is removed.
- 5.9.2.2.1 When the forms are ready for commencing concreting, the contractor shall inform the Engineer or his representative to inspect and accept the forms as to their strength, alignment and general fitness. Being satisfied with the form work Engineer then may allow the contractor for puring concrete but such inspection and permission shall not relieve the contractor of his responsibility for safety of men, machinery, materials and for results obtained.
- 5.9.3 REMOVAL OF FORM WORK
- 5.9.3.1 The consent of Engineer or his representative shall be obtained in all cases before removing any form work but such permission shall not relieve the contractor of his responsibility in respect of any injury or damage to the concrete work arising from the removal of the forms.
- 5.9.3.2 Forms shall be so constructed and fitted as to be removable in sections in the desired sequence without damaging the surface of concrete or disturbing other sections.
- 5.9.3.3 Due consideration ;shall be given to the local conditions, character of structure, the weather, climate and temperature and other conditions that influence the setting of concrete before removal of form work.
- 5.9.3.4 Where internal metal ties are permitted, they shall be extracted or cut without causing any damage to concrete and remaining holes filled with mortar. No permanently embedded metal part shall have less than 25 mm clear cover to the finished concrete surface. The contractor shall make good, at his own expense, any injury or damage to the concrete work arising from removal and striking of forms and supports.
- 5.9.3.5 The form works shall be cleaned and made good to the satisfaction of the Engineer

- before reuse. The cost of all form work shall be deemed to have been included in the rate for cement concrete items of work and shall not be paid separately.
- 5.10 **TRANSPORT, PLACING AND COMPACTION OF CONCRETE**
- 5.10.1 The method of transporting and placing concrete shall be approved by the Engineer or his representative. All concrete shall be so transported and placed that no contamination segregation or losses of its constituent materials take place.
- 5.10.2 All form work and reinforcement, contained in it shall be cleaned and made free from standing water, dust, snow or ice immediately before placing of concrete. No concrete shall be placed in any part of the structure until the approval of the Engineer or his representative has been obtained. Concrete shall be compacted in its final position within 30 minutes of its discharges from the mixer. Concrete when deposited shall have a temperature of not less than 4.5 degree C and not more than 38 degree C.
- 5.10.3 Except when otherwise agreed to by the Engineer or his representative, concrete shall be deposited in horizontal layers to a compacted thickness of not more than 450 mm when internal vibrators are used and not exceeding 300 mm in all other cases. In no case concrete shall be allowed to be dropped from a height of more than 2 metres.
- 5.10.4 When concrete is conveyed by chutes the plant shall be of such size and design so as to ensure practically continuous flow. Slope of the chute shall be so adjusted that the concrete flows without the use of excessive quantity of water and without segregation of its ingredients. The delivery end of chute shall be as close as possible to the point of deposit. The chute shall be thoroughly flushed with water before and after each working period and the water used for this purpose shall be discharged outside the form work.
- 5.10.5 All concrete shall be compacted to produce a dense homogeneous mass with the help of vibrators except in case of concrete poured under water, where vibrator cannot be used. To ensure thorough and properly compacted concrete the contractor shall carry out a necessary compacting factor tests at his own cost at such frequency and the value of compacting factor to be maintained as decided by the Engineer. The contractor shall have to carry out other tests like Penetrometer and Vee Bee Consist meter tests or any other tests as directed by the Engineer at his own cost. The Engineer, however, reserves the right to carry out such tests, independently at his own discretion. Sufficient vibrators in serviceable condition shall be kept at site so that spare equipment is always available in the event of break-downs. Internal vibrators shall be capable of producing not less than 10,000 cycles per minute and external or form vibrator not less than 3,000 cycles per minute. Vibration shall not be applied through reinforcement, and where vibrator of the immersion type is used, contact with reinforcement and all inserts shall be avoided as far as practicable.
- 5.11 **CONCRETING UNDER WATER**
- 5.11.1 The methods, equipment, materials and proportions of the mix to be used shall be got approved by the Engineer or his representative before concreting under water. Greatest care shall be taken to prevent the cement being washed out and the concrete shall be deposited by means of a tremis or using the skip boxes system. Pumping shall not be done while concrete is being placed or until 24 hours thereafter.
- 5.11.2 The deposition of concrete should be done continuously until it has been brought to the required height. The top surface shall always be kept as nearly level as possible to prevent formation of scum.
- 5.12 **FINISHING**
- 5.12.1 Immediately after the removal of forms, all exposed bars or bolts passing through RCC member and used for shuttering or any other purpose shall be cut inside the RCC member to a depth of at least 25 mm below the surface of the concrete and resulting holes be closed by cement mortar.
- 5.12.2 If in the opinion of the Engineer, the pockets/honey combs in the structure are found

- to such an extent or character as to affect the strength of the structure materially or endanger the life of the reinforcement, he may declare such concrete defective and order for its removal and replacement at the expense of the contractor.
- 5.13 CURING
- 5.13.1 All concrete shall be protected immediately after compaction and during hardening from harmful effects of rain, funning water, sunshine, frost and driving winds, shocks, vibrations, traffic and rapid temperature changes. All exposed faces of concrete shall be kept continuously wet by applying water or covering with wet sacking, hessian etc. for a period of not less than 14 days from the date of deposition.
- 5.14 CONSTRUCTION JOINTS
- 5.14.1 All construction joints horizontal or vertical shall be at predetermined position according to approved drawing or as directed by the Engineer. Prior to commencement of fresh concreting over any construction joint which has set but not hardened, the removal of laitance and roughening shall be done by wire brushing and washing and care shall be taken to avoid dislodgement of coarse aggregates.
- 5.14.2 At construction joints where the concrete has et hard, any skin or laitance shall be thoroughly hacked, swept cleaned and washed with clean fresh water. The surplus water shall be removed immediately before depositing fresh, concrete. The neat cement, grout shall be followed by 13 mm thick layer of cement mortar of same proportion as in concrete and the concreting resumed immediately thereafter. The first batch of fresh concrete shall be forced hard on to the mortar layer and the set faces, angles and corners by means of compacting tools, vibrators etc. and the damping effect on vibration in such position shall be allowed for.
- 5.14.3 Construction joints shall be avoided as far as possible in case of structure, specially at tensile zones. Where unavoidable, concreting shall be carried out continuously upto such joints which shall preferably be transverse to the line of main compression. However, in all cases, the position of construction joints shall be predetermined and got approved by the Engineer.
- 5.15 REINFORCEMENTS
- 5.15.1 All reinforcement shall be cleaned thoroughly by removing loose scales, oil, grease or other deleterious materials. The contractor shall obtain the approval of the Engineer or his representative to the reinforcement when fixed in position before any concrete is deposited in the forms.
- 5.15.2 Bars shall be bent cold or straightened in a manner to the satisfaction of the Engineer or his representative. Bars bent during transport or handling shall be straightened before using on work. They shall not be heated to facilitate bending. Welding shall be done as per IS Code of practice or IRS Concrete Bridge Code as applicable.
- 5.15.3 PLACING AND MAINTENANCE OF REINFORCEMENT IN POSITION
- 5.15.3.1 All reinforcement bars shall be cut and Standard hooks for M.S. rounds made at ends and accurately placed in position as shown on the approved drawings and shall be securely held in position before and during concreting by annealed binding wire (as specified in Clause 4.1) and by using dense concrete spacer blocks prepared and cured as directed by the Engineer or his representative, or metal chairs, metal spacers, supporting wires or other approved device at sufficiently close intervals. Bars representative, or metal chairs, metal spacers, supporting to get displaced during concreting or any other operation over the work. Metal supports shall not extend to the surface of the concrete, except where shown on the drawings, pieces of broken stone or brick and wooden blocks shall not be used.
- 5.15.3.2 As far as possible, bars of full length shall be used. Where bars are required or permitted to be lapped by the Engineer, or his representative, the over laps shall be staggered for different bars and located at points, along the span where neither shear nor bending moment is maximum. The concrete cover measured over the reinforcing bars shall be in accordance with the approved drawings.
- 5.16 MEASUREMENT FOR PAYMENT
- 5.16.1 The work of cement concrete shall be measured in cubic metres. The volume

- occupied by reinforcement shall not be deducted in R.C.C. works. The measurement shall also be for the purpose of computing cement consumption. Reinforcement shall be measured in length (running metre) separately for different diameters as actually used in work including overlaps, hooks ends and inclusive of chairs, supports as actually placed and incorporated in the work. From the length so measured the weight the reinforcements shall be calculated in quintals on the same basis on which steel is supplied to the contractor by the IFCD.
- The weight of binding wire shall not be taken into account in computing the reinforcement quantity. This measurement shall be only for the purpose of working out reinforcement consumed in the work.
- 5.17 **SETTING OF FIELD LABORATORY BY CONTRACTOR**
- 5.17.1 The contractor shall set up a field laboratory of his own at work site as a part of concrete work and shall be kept open for use and inspection by the IFCD at any time.
- 5.17.2 All the pressure gauge and other machines, equipment and measuring instruments shall be got checked and calibrated regularly as directed by the Engineer, by an independent agency and the adjustment certificate furnished to the Engineer. The contractor shall render all reasonable assistance and help in making such checks and tests etc. The cost of all checks and calibrations shall be borne by the contractor. The cost of all tests for materials and cubes shall also be borne by the contractor. Alternatively, the contractor shall arrange to get the cubes and their materials, as required tested at his own cost, in approved laboratory to the satisfaction of the Engineer.
- 6.0 **ABUTMENTS, PIERS AND R.C.C. BOXES**
- 6.1 The abutments, piers, pier caps are to be constructed of concrete grades as mentioned in the approved drawing. The individual members are to be monolithic with the parent member
- 6.2 **WEEP HOLES**
- Sufficient Nos. of weep holes including provision of Asbestos pipes (in the weep hole portion only) in abutments, wing and return walls is to be provided as shown in the approved drawing or as directed by the Engineer with contractor's own labour, materials etc. No extra payments will be admissible for provision of the weep holes in the bridges and no deduction from quantity of concrete shall be made for weep holes.
- 7.0 **SLOPE PITCHING AND APRON**
- For pitching the slopes of banks, bridge floors, apron on bridge approaches, hand packed rough stones weighing between 30 kg and 50 kg with not less than 150 mm size shall be used in such a manner as to provide maximum interlocking amongst the individual stones. The size to be adopted should suit the total thickness required as per drawings. The work should be carried out as to provide uniform slopes and curvature around abutments. The rates also include provision of steps shown in plan and pitching work under water wherever required.
- 8.0 **PACKING BEHIND ABUTMENT**
- Boulders to be used behind abutment, wing and return walls, shall be collected from approved quality of stone to angular shape and shall not be less than 150 mm size in any direction and shall have its maximum dimension not less than 250 mm and shall weigh not less than 12 kg and not more than 55 kgs. The hand packing should be done in sections as shown in the drawing or as directed by the Engineer.

**SPECIAL CONDITIONS
&
SPECIAL SPECIFICATIONS FOR TUNNEL WORK**

SCOPE OF WORK:

Name of work: TMP, L-Earth Works (SH: Construction of RCC Tunnel for Water transmission system of Thoubal Dam from RD 9,380m to 10,220m)

The principal items of work to be executed under this contract are:

- 1.0 E/W in excavation in all soils i/c all types of shales, lifts, i/c disposal of excavated earth within an average lead of 2 km as per direction of the Engineer-in-Charge i/c the cost of shoring, shuttering, dewatering etc. complete..
- 1.1 Underground excavation for tunnel , including temporary provision at the portal for the start of tunnel excavation like canopy structure (False portal) etc. trolley refuge niches, maintenance niches, MVS niches and like and for the connection of remaining parts of access tunne (approx 85m) with the main tunnel, including drilling, blasting or other means of excavation, including widening of top heading footing, breaking of shortcrete lining in temporary invert, provision of surface drainage, construction ventilation, lighting arrangement during construction, temporary backfilling for traffic in tunnel, profiling/reprofiling of tunnel as per approved cross sections, removal and disposal of excavated material including temporary backfill to dumping site with all lifts and leads upto 2 km from portal/shaft head as per approved drawings & specification or as directed by Engineer. a) Excavation in Rock Class III, IV & V
- 1.2 Extra for tunnel excavation due to excessive water inflow i) Water inflow more than 50 l/sec
- 1.3 Extra for transportation of spoils over 2 km from the portal/shaft head but upto lead of 10 km
- 1.4 Supply, drilling and installation and grouting of SN type rock bolts of the specified length, $F_y > 200$ KN (slope, tunnel support and face bolts) as per approved drawings & specifications or as directed by Engineer. The rate shall include costs of all materials, labour, equipments, etc. required for the complete job. i) 3 m long.
- 1.5 Steel work welded in built up sections, framed work in cutting, hoisting, fitting in position & priming coat of red lead paint a) In beams & joists with connecting plates or angles cleats as in main & cross beams, hip & jack rafters, purlins connected to common rafter and the like.
- 1.6 Shortcreting with SFR shotcrete as per specification & drawings or as directed by the Engineer in charge including all materials except cement, labour, equipments etc. required for complete job (i) 75mm thick shortcrete lining in tunnel
- 1.7 Cement concrete for reinforced concrete for sub-structures i/c cost of form work complete as per drawing and technical specifications. – RCC M 30 & PCC M 20
- 1.8 Reinforcement for R.C.C. work i/c bending, binding and placing in position complete. - Tor Steel bar
- 1.9 Drilling of grout holes of suitable dia. as per direction of the engineer-in-charge etc. complete.
- 1.10 Cement grouting with bentonite as per direction of the Engineer-in-charge complete.
- 1.11 Providing gates as per design and specification
- 2.0 GENERAL INFORMATION: -
- 2.1 APPROACHES: - Name of work: TMP, L-Earth Works (SH: Construction of RCC Tunnel for Water transmission system of Thoubal Dam from RD 9,380m to 10,220m).
- 2.2 CLAIMATIC CONDITIONS:
The monsoon rains tend to be prolonged in the region.
- 3.0 DECLARATION: The information given in clause 2.0 to 2.2 is for general guidance only. The tenderers are advised to visit the site themselves and make themselves aware and conversant of all the data relating to site including availability and rates of all labour and materials, service road, land for camp sites and arrangements for water, climatic conditions, labour laws, power situation, water availability, transport problems etc.
- 4.0 DRAWINGS FOR CONSTRUCTION OF TUNNELS BY UNDERGROUND EXCAVATIONS & CUT AND COVER METHODS:
- 4.1 Trolley refuges and man refuges shall be as per requirements and as per approved drawings. The cross-section of the tunnels and cut and cover in any portion shall be as per the clearance laid down in the “Schedule of Dimensions” for single line broad gauge electrified section. The construction of tunnel and cut and cover if any shall be as per drawings.
- 4.2 The Project Authority reserves the right to modify the plans and drawings as referred to in

the special data and specifications without assigning any reasons as and when considered necessary by the Project Authority. The rates quoted and accepted against the Schedule of Rates shall hold good irrespective of any changes, modifications, alterations, additions & in the locations of structures and detailed drawings, specifications and / or manner of executing the work.

4.3 It should be specifically noted that, if any additional drawings not included in the tender papers are required during execution of the work, the same will be supplied to the contractor on demand. No compensation, whatsoever, on this account, shall be payable by the Department.

4.4 No claim whatsoever will be entertained by the Project Authority on account of any delay or hold up of the works arising out of delay in approval of drawings, changes, modifications, alterations, additions & omissions & the site layout plans or detailed drawings.

5.0 LIST OF CODES TO BE FOLLOWED:-Construction shall be as per various codes of practice of BIS, IRS and IRC; some of them are mentioned below for guidance. The following list is for guidance and is by no means exhaustive and provisions of relevant codes even not mentioned below shall be binding on the contractor. In case of contradictions between provisions of various codes or between codes and clauses mentioned in this documents, the decision of the Engineer-in-charge shall be binding and final on the contractor.

- (i) IS 5878 (various parts) - Codes of Practices relating to Tunneling and Underground Excavations
- (ii) IS: 4081 – 1967-Safety Code of Blasting and related Drilling Operations.
- (iii) IS: 4576 – 1978-Safety Code of practice for Tunneling.
- (iv) IS: 9103 Admixtures for Concrete.
- (v) IS: 9012 Recommended practice for Shotcreting.
- (vi) IS: 3764-Safety Code for excavation work.
- (vii) IS: 7293-Safety Code for working with construction machinery.
- (viii) IS: 2062 Structural Steel Codes.
- (ix) IS: 823 Manual Metal Arc Welding Codes.
- (x) IS: 456 Code of Practice for Plain and Reinforced Concrete 2000.
- (xi) IS: 1893 Criteria for Earthquake Resistant Design of Structures.
- (xii) IS: 800 Code of Practice for use of Structural Steel.
- (xiii) IS: 2720 Code of Practice for Soil Investigation (All parts).
- (xiv) IS: 1343 Code of Practice for Pre-Stressed Concrete.
- (xv) Indian Congress specifications for Road & Bridges.
- (xvi) Indian Explosive Act 1984.
- (xvii) Indian Explosive Rules 1940 / 1983.
- (xviii) Indian IFCD ways & works Manual.
- (xix) IS: specification for fine and coarse aggregate from natural sources for concrete IS: 383 of 1970 with up to date correction slips.
- (xx) IS 816-1969: Code of Practice for use of metal arc welding for general construction in mild steel (first revision) (Amendments 2)
- (xxi) IS 1200 part XXV – 1971: Method of measurement of building and civil engineering works: Part 25 Tunneling (Second Revision) (Amendment 4)
- (xxii) 10262 code of practice for concrete mix design.

- Notes:
- (i) The latest edition of all the codes of practice along with their up to date correction slips shall be applicable. (As revised upto the date of opening/negotiation of the present tender).
 - (ii) In absence of relevant provision of specification in above-mentioned IRS/IRC/BIS Codes, the reference shall be made to best available Engg. Practice / International codes as per direction of Engineer-in-charge.
 - (iii) The decision of Chief Engineer/Const. Regarding the interpretation of specifications shall be final and binding on the contractor.

- (iv) All relevant codes shall be made available by the contractor at site at his own cost.
- 6.0 SITE INSPECTION REGISTER: -A site inspection register shall be maintained by the Engineer or his authorized representative in which the contractor will be bound to sign, day to day entries made by the Engineer in Charge or his representative. The Contractor is required to take note of the instructions given to them through the Site Inspection Register and comply with the same within a reasonable time. The Contractor shall also arrange to receive all the letters etc. issued to him at the site of works.
- 7.0 SAFETY: -
- 7.1 The Contractor at his own cost shall provide upon the works to the satisfaction of the Engineer in Charge and at such places as he may nominate, proper and sufficient life saving, fire fighting and first aid appliances which shall at all times be available for use.
- 7.2 All the safety precautions for open and underground excavation as per relevant ISI codes as well as 'Safety Manual' published by National Hydroelectric Power Corporation, Delhi shall be observed by the contractor / tenderer.
- 7.3 Besides above the contractor/tenderer shall be bound to carry out the other instructions of Engineer-in-charge which the Engineer-in-charge may deem necessary for safety arrangements.
- 7.4 The contractor's responsibility for safe working shall not be conditioned by any instructions as may be given to him by Engineer-in-charge and the contractor/ tenderer shall on his ascertain and adopt all necessary precautions.
- 7.5 The cost of all safety arrangements including cost of all labour and material, tools and plants and shuttering/ scaffolding/ shoring wherever required is deemed to have been included in various rates quoted in schedule of items, rates and quantities and nothing extra is payable under this contract.
- 7.6 High tension lines and Sources Electro Magnetic Radiation: Work in vicinity of High Tension Lines and Sources Electro Magnetic Radiation: Special precaution are necessary, specially so when blasting is to be carried out, in the vicinity of high tension electric lines and sources of electro magnetic radiation. All rules and procedures laid down by Electricity Authority in this regard shall be strictly followed.
- 8.0 VENTILATION: The whole of the tunnel shall be properly ventilated by artificial ventilations so as to keep reasonable dust free conditions and supply of fresh air during the period of work inside the tunnel. Contractor shall provide and operate necessary equipment at his own cost.
- 9.0 LIGHTING: The whole of the approaches, tunnel face and inside the tunnel where plants and machinery is operational and where labourers are working shall be adequately lighted by Electric light by the Contractor at his own cost.
- 10.0 SETTING UP FIELD LABORATORY: The Contractor shall be required to set up a Laboratory manned by a qualified Technician & Geologist for conducting following test on the soil and rock samples. The cost for setting up laboratory and testing should be taken into account while quoting rate; no separate payment will be made for this. Following tests will be conducted as required by site in charge:
- 10.1 SOIL & OVERBURDEN (Undisturbed and representative samples are to be collected as per instruction of site in charge):
- i) In Situ Density
 - ii) Natural Moisture Content
 - iii) In Situ Dry Density
 - iv) Specific Gravity
 - v) Saturated Density
 - vi) Grain Size Analysis
 - vii) Atterberg Limits
 - viii) Triaxial Compression for C & ϕ
- 10.2 Rock Samples:
- i) Uniaxial Compressive Strength of intact rock material

- ii) Slake Durability
- iii) Shear Strength of main joints
- iv) Modulus of Deformation
- 11.0 **COMMUNICATION FACILITIES: -**
- 11.1 The contractor shall install and maintain communication facilities in good working order at all times during the period of the work at or near the working face of the tunnel shaft etc., and other points so as to afford prompt communications over such telephone. The contractor shall also install, maintain and operate such other communication and signal facilities as may be necessary for safe and efficient execution of the work. All such facilities shall be subject to the approval of the Engineer-in-charge. Authorized employees of Government shall have free use of such communication and signal facilities.
- 11.2 The entire cost of providing and maintaining such a communication and signal system shall be deemed to have been included in the unit rates tendered for underground works in schedule of item rates and quantities.
- 12.0 **CONSTRUCTION OF TUNNELS BY CUT AND COVER & EARTHWORK IN EXCAVATION IN CUTTING:**
Construction of Tunnel by the Cut and Cover Method will be executed at the locations mostly in the approaches where adequate cover is not available
- 12.1 **SCOPE: -**
- 12.1.1 Excavation in all types of soil and rocks including rock requiring blasting to proper line, level, grade and dimensions as required and maintaining the same till taken over by IFCD.
- 12.2 Back filling with selected earth over the BOX structures of Cut and Covers portion.
- 12.3 Works required ensuring safety. Temporary works, dewatering, setting of works etc.
- 12.4 The contractor should commence work systematically from one or more points in consultation with the Engineer-in-charge and maintain continuous progress completing the cuttings in continuous length in all respects including leveling and dressing.
- 12.5 The contractor at his own cost shall provide, fix and be responsible for the maintenance of all stakes, templates, profiles and mark points, burjies, monuments, center line pillars, reference pillars etc. and shall take all necessary precautions to prevent their being removed, altered or disturbed and will be responsible for the consequences of such removal, alterations or disturbance and their efficient reinstatement. Contractor will also preserve the samples of strata wherever asked for in such a manner so as to enable assessment of the type of strata encountered. This work will be done within the quoted rates and nothing extra will be paid on this account.
- 12.6 No trees falling outside the toe of the bank /cutting shall be allowed to be cut. All excavated stone of average size 300 mm and above will be the property of the IFCD and it should be collected and stacked in suitable location as per direction of the site in charge. This work will be done within the quoted rates and nothing extra will be paid on this account.
- 12.7 Generally only L-section of the alignment will be supplied to the contractors. The profile of cutting with side slopes and side drains shall; be as per approved plans. The formation level shall be reckoned to be the level of the center of the cutting. Suitable berms where the depth of cutting is more shall have to be provided as per the direction of the Engineer.
- 12.8 The widths, side slopes of cutting may be changed by the Engineer, if so found necessary for the stability of the cutting. The contractor shall have no claim whatsoever on account of change in side slopes or formation widths. The decision of the Engineer for determining the slopes initially or subsequently and for modifying the slopes and formation widths shall be final and binding and no claim whatsoever shall be entertained by IFCD.
- 12.9 The dumping site for disposing off cut spoils including rocks shall be so chosen by contractor so that it is away from Rly. Land enough to avoid any falling back of soil back to Rly. land. Such dumping site shall be taken on lease / purchase by contractor at his own cost and nothing shall be payable to him on this account.
- 13.0 **BACK FILLING, SIDE FILLING & CONSOLIDATION:**
The contractor shall programme his works in such a way that the excavation material approved for back filling goes immediately for the purpose. If this is not found feasible for

any reason and when so decided by the Engineer, the contractor shall arrange for suitable back filling material at his own cost and for which nothing extra will be paid for the same. Work of back filling should be commenced only when the Engineer-in-charge permits the same.

The space between RCC section of Cut and Cover and trench shall be filled with approved excavated material / granular material in layers of 300mm thickness and shall be fully consolidated manually.

Top of RCC Cut and Cover shall be filled in layers as approved by Engineer-in-charge with selected excavated material, approved up to the desired height as directed by the Engineer. Payment will be made under relevant Item of schedule of items, rates and quantities.

The contractor shall take special and particular care to consolidate the ground, where utilities are to be transferred so that no settlement occurs to these utilities

14.0 RATES: -

The tendered rate against Item of Schedule of Rates and quantities for open excavation in cutting will be applicable to all classes of soils and rocks under all the conditions and include all operations, incidental charges & royalty etc. The tendered rates payable for various items of open excavation for leading and disposal of surplus earth shall be as per Schedule of Rates and includes the cost of all labours, materials, equipment all lead, lift, and ascent, descent, nallah crossing including that for temporary works, safety arrangements, temporary stabilization of slopes outside the Rly. Land for safe execution of the work, setting out, clearing of site, benching in ground, maintenance of slopes and formation till taken over by IFCD.

Wherever in the opinion of the Engineer it is considered necessary to adopt controlled blasting the same shall be resorted to and for which no extra payment shall be made.

15.0 ON ACCOUNT PAYMENT: - On account payments for earthwork in excavation of cutting in approaches of tunnel will normally be made only for such lengths of cutting as in the opinion of the Engineer have been finally excavated to the full profile in terms of the conditions of the contract. The contractors are therefore, advised to complete the cutting to the full profile and proceed systematically in consultation with the Engineer so as to facilitate on account bills. On account payments may, however, be made at the discretion of the Engineer for incomplete cutting under special circumstances. Such on account payments will be made to the extent of 90% of the total quantity of work done. The Engineer- in - charge will decide whether such payments are to be made and his decision in regard to this will be final and binding on the contractor.

16.0 FINAL PAYMENT: - Final payment of the balance amount due (exclusive of the security deposit) will be made after the completion of the entire work and on the certification of the Engineer that the work has been completed in all respects and found satisfactory.

17.0 UNDERGROUND EXCAVATION AND SUPPORTS:

Tunneling by Underground excavation will be done where adequate cushion / cover is available. The decision of Site in Charge in this regard shall be final and binding.

17.1 SCOPE: -Underground excavation shall generally include but not limited to following items / operations as per approved drawings and or as directed by the Engineer-in-charge:

17.1.1 The underground excavations will also include the following categories:

- i) Boring in any type of soil/rock.
- ii) Subsequent enlargement of fully excavated section.
- iii) Excavation by controlled blasting, line drilling, pre-splitting, multiple drift etc.
- iv) Excavation by heading and benching etc.

17.1.2 Drilling and Controlled Blasting (if required) in all types of strata actually met with.

17.1.3 Drilling by drilling jumbos where directed by Engineer-in-charge to reduce the cycle time.

17.1.4 Where blasting is prohibited by Engineer-in-charge, drilling and excavating by mechanical excavators.

17.1.5 Removal, conveyance and disposal of the excavated materials as and where directed by the Engineer-in-charge.

17.1.6 Lighting and ventilation arrangements required for construction arrangement and including their safe operations.

- 17.1.7 Providing communication facilities required for successful completion of the tunnel work.
- 17.1.8 Providing necessary arrangements and facilities for inspection and measurements at any time as and when required by the Engineer-in-charge.
- 17.1.9 Providing all tools, plants, labour and material necessary and ancillary works thereto for satisfactory completion of the work.
- 17.1.10 Construction and maintenance of all haul roads, ramps etc. for mucking.
- 17.1.11 Any steel structure required for drilling and other operation etc.
- 17.1.12 Any other connected work in connection with above.
- No extra payment shall be given to temporary spreading finer materials (obtained by excavation) in the invert floor to form approximate level surface for track and for use as working floors.
- The nature and character of soil / rock likely to be met within the underground excavations is indicated in the para 2.3 above. The IFCD does not, however, take any responsibility for any variations that may be detected in actual excavations.
- 17.2 SETTING OUT: -
- 17.2.1 Setting Out of the tunnel shall be done strictly as per IS: 5878 (Part I) –1971 with up to date amendments. Suitable permanent bench marks shall be established near the portals and adits of tunnels and shafts and cut and cover etc. as the work progress, center line, marks shall be made on pegs inserted into the roof of tunnels, cut and cover and other hollow cuts at convenient intervals to the satisfaction of the Engineer-in-charge for checking alignment, grades levels etc. and also the dimensions of the “minimum excavation lines”. The contractor shall at all times remain responsible for the sufficiency and accuracy of all such bench marks, central line pegs and reference points.
- The cost of these shall be deemed to have been included in the rates tendered for work.
- 17.2.2 ACCURACY OF ALIGNMENT, GRADES, and LEVELS ETC: -
- IFCD shall establish bench marks and fixed reference points, with the value of the levels and the co-ordinates, or at least two reference points on the alignment at either portal or a benchmark in working area and supply plans showing the position co-ordinates and levels of the salient points the various underground works to the contractor. The contractors shall make arrangements to protect and safe guard such points/benchmarks and preserve same up to completion of work. The contractor shall provide free of cost all facilities like labour and latest instruments etc. and all facilities to the Engineer-in-charge to check the alignment, grades levels etc. whenever and anytime they are asked for. Such checking by the Engineer-in-charge shall not absolve the contractor from his responsibility of maintaining the accuracy of the work. Any discrepancy or error detected during the course of excavations and/or at the end of the work when the faces meet shall be set right by the contractor at his own cost in a manner satisfactory to the Engineer-in-charge. The department will have the right to demand at the site from the contractor at his cost, all instruments considered necessary for proper control of line and level like electronic total station, automatic levels, laser distos, theodolites etc.
- 17.2.3 The contractor shall provide suitable rig and make all necessary arrangements to the satisfaction of the Engineer-in-charge for moving the rig along the alignment and grade of the tunnel, shaft etc. to check the dimensions of minimum excavation lines, lining etc. as and when required by the Engineer-in-charge.
- 17.3 DRILLING AND BLASTING: - Contractor shall comply with all statutory rules and regulations in regard to procuring, transporting, storing and using explosive that may be required for this work. Utmost care will be taken to ensure safety of all labour/staff or general public while handling the explosives.
- 17.3.1 The drilling and blasting shall be generally as per provision of I.S: 5878 (Part –II) 1979.
- 17.3.2 The contractor shall submit proposed method of drilling and blasting for underground excavation. This shall consist of the scheme of excavation, the pattern and type of holes to be drilled, quantity of explosives to be used and fixing method etc. No underground excavation shall commence without prior approval of the Engineer.
- 17.3.3 Approval by Engineer of any schemes etc., above does not absolve the contractor of his responsibility in any way.

- 17.3.4 Controlled Drilling and Blasting: Wherever in the opinion of the Engineer it is considered necessary to adopt controlled blasting the same shall be resorted to and no extra payment shall be made.
- 17.3.5 The Contractor shall make the arrangement for supply, transport, storage and safe custody of the explosives at his own cost. IFCD will only give assistance by issuing the necessary certificates/letters as required by the concerned government department for giving license for the use of explosives and its supply.
- 17.4 Ventilation, Lighting, Mucking and Dewatering:
- 17.4.1 Contractor shall make arrangement for Ventilation, Lighting, Mucking and Dewatering as laid down in IS: 5878 (Part II/Sec2) –1971. Adequate Safety requirements, in regard to ventilation, lighting, mucking and dewatering of tunnel, shall be taken as specified in IS: 4756 – 1968.
- 17.4.2 The capacity of the ventilation plant should be adequate enough to allow starting of mucking operation, commensurate with the schedule progress of work. The cost of furnishing, installing, maintaining and operation of the ventilation, lighting, mucking and dewatering system & arrangement for measuring the concentration of the poisonous gases shall be deemed to have been included in the unit rates tendered in the Schedule of Rates for the underground excavation.
- 17.5 Drainage and pumping:
- 17.5.1 All water from the underground excavation shall be satisfactorily drained away and pumped out if necessary. In case, any underground springs are met with, the water from them shall be so led away as not to damage or endanger any work. The pumps to be used shall be operated either by compressed air or electric motor, and not by any type of internal combustion engine unless specifically permitted. Drainage of all tunnels, shafts etc, excavated will be by gravity preferably. The cost of drainage by gravity during construction will be considered included in the rate accepted for the various items in the Schedule of Rates for the underground excavation. If a channel has to be excavated outside the lines of excavations shown, the contractor may excavate such channel with the approval of the Engineer-in-charge. This channel has to be filled back by the contractor with concrete as specified for the back filling of tunnels. The excavation and back filling of such channel carried out by the contractor shall be at his cost. When, however, the water has to be pumped out, the contractor shall install the necessary pumps and pipes as may be approved by the Engineer-in-charge in writing the cost for which will be paid separately through the items provided in schedule of works. The channels or the pumping unit shall be maintained satisfactorily till 21 days after concrete back fill is laid.
- 17.5.2 The underground and the water emanating from the construction sites required to be pumped out may be contaminated with dust, cement, slurry, dirt, sand etc. The pumping arrangements to be provided shall be suitable for such drainage work. It shall be seen that at no location there is pooling of water, which has the potential to obstruct the work. The contractor must also take all precautions essential to prevent water from the open area flowing into the tunnels so as to keep the work sites including the face of the tunnel free from water during all seasons of the year.
- 17.6 EXCAVATION LINES AND RATES:
- 17.6.1 The tunnels, shafts, etc, shall be excavated to the lines and grades shown in the drawings, or as directed by the Engineer-in-charge. The 'Excavation Lines' indicated on the drawings are, minimum excavation lines, within which no unexcavated material of any kind shall be allowed to remain, The 'Payment Lines' are the outside limits up to which the contractor will be paid regardless of the fact whether the limits of actual excavation fall inside or outside these lines except in the case of natural cleavages etc. in rock unless specifically provided herein below. Unless specifically mentioned otherwise the 'Payment Lines' will be taken normally or radially to the centerline as the case may be 150mm beyond the 'minimum' excavation lines.
- 17.6.2 Any enlargement beyond the 'Payment Line' considered necessary by the contractor for the convenience of his work may be done by him with the prior approval of the Engineer-in-charge. This shall be filled back with concrete of class similar to the backfill concrete. All

- works carried out for such enlargement including the backfill will be purely at the contractor's cost.
- 17.7 **OVERBREAK:**
Any excavation carried out or which takes place inadvertently beyond the 'Payment Line' shall be deemed to be an 'overbreak'. In case cavity and chimney formation occur during the pendency of the contract, they shall be deemed to be covered in this definition of the 'overbreak'.
- 17.8 **Geological over break:**
"Geological overbreak" consists of that portion of the over break outside a line parallel to and 300mm beyond the "Payment Line", the occurrence of which, as per the decision of Engineer-in-charge, is an unavoidable result of adverse geological conditions due to concealed joints, faults and other structural defects in rock and not due to lack of reasonable care and skill in excavation on the part of the contractor. *This definition of 'geological overbreak' shall be applicable for the term "geological overbreak" used elsewhere in this document.*
- 17.8.1 **Reporting of Geological over break:**
An occurrence report of 'overbreak' extending outside a line parallel to and 300mm beyond the "Payment Line" shall be prepared and forwarded by contractor immediately after its occurrence to Engineer-in-charge so that Engineer-in-charge may evaluate the cause of such overbreak and decide if such overbreak shall be defined as "geological overbreak".
- 17.9 **Measurement & Payment:**
Except as otherwise provided herein, no overbreak beyond "Payment Line" shall be measured for payment.
Measurement for payment of "geological overbreak" will be made of the volume of rock removed between a line parallel to and 300mm beyond the 'Payment Line' and the actual excavated rock profile.
- 17.10 Payment for "geological overbreak" shall be made at 30% (Thirty percent) of the basic rates for tunnel excavation.
- 17.11 When the excavation of tunnel is in progress, if directed by Engineer-in-charge, contractor shall backfill portions of "over break" and "geological over break" as defined in para 17.7 and 17.8 by concrete of suitable quality as approved by Engineer-in-charge. Measurement and payment of such a backfill concrete shall be regulated in accordance with relevant provisions made under item of concrete.
- 17.12 Cavity and chimney formation, if occurred during execution of work, shall be dealt as per provisions applicable to "over break" and "geological over break" depending upon which portion of cavity and chimney formation lies in areas of "over break" and which portion lies in areas of "geological over break".
- 17.13 The contractor shall use every precaution to avoid excavation beyond the payment lines marked on the drawings. All drilling and blasting shall be carefully and skillfully performed so that the material beyond the required lines is not shattered. No blasting that might damage the rock shall be permitted and any damage done in the rock by blasting shall be repaired by and at the expense of the contractor and in a manner satisfactory to the Engineer-in-charge.
- 17.14 **SUBSEQUENT INCREASE OR REDUCTION IN DIMENSIONS: -**
- 17.15 If during the progress of excavation of any particular element of the work it is required to increase or reduce the cross – sectional dimensions of the excavations from those shown in the typical cross- sections on the drawings, the contractor shall on being so directed by the Engineer-in-charge, excavate the further portion to such increased or reduced dimensions at the same unit rate as tendered for the particular work. The Engineer-in-charge will establish fresh, minimum, excavation line and the 'Payment Line' shall be 150mm beyond such fresh 'minimum' excavation line. The excavation already done shall also be enlarged to the increased dimensions if so ordered by the Engineer-in-charge. The quantity measured under this item will be between the original Payment Line and the new Payment Line, which will be fixed by Engineer-in-charge. The quantity paid for geological over

- breaks due to natural cleavages etc. will, however, be excluded. This will not, however, apply to the excavation of soft layers of rock already excavated and intended to be plugged back with concrete. The payment covered under this clause shall be governed by relevant item of Schedule of Rates.
- 17.16 All excavation shall be so done that the rock around the periphery of the excavated final section shall not be shattered, loosened or otherwise weakened. Large over-breaks will be avoided by suitable means such as light charges, ream holes or similar measures. The cost of this measure shall be considered as included in the accepted rate of excavation. In a special location, where specifically indicated or ordered by the Engineer-in-charge in writing, the use of explosives shall be discontinued and the rock excavated by line drilling, broaching, barring, chiseling, wedging etc., as may be approved and directed by the Engineer-in-charge. The payment of such excavation will be made under relevant item of Schedule of Rates and no separate rate is admissible for purpose of calculating the quantity to be paid thus the depth of excavation shall be taken as 300mm (three hundred millimeters) from minimum excavation line.
- 17.17 **SCALING OF ROCK: -**
After face is blasted, gases removed and the face ventilated, all loose, or loosened rock from the top and side shall be removed by approved methods to avoid danger to workmen and equipment. Later, if any loose or loosened rock is noticed anywhere in the excavation, it shall be removed expeditiously. As the excavation advances trimming of rock surface remaining within the excavations lines shall be undertaken simultaneously. In no case shall trimming be postponed and left to be tackled last. This work if left to be done later takes lot of time and may involve avoidable delay resulting in postponement of completion dates. The cost of such scaling and removal of loose or loosened rock, trimming etc., shall be considered as included in the unit rate for excavation.
- 17.18 **ADITS AND SHAFTS: -**
If for adhering to the prescribed time schedule, additional faces are to be opened and adits are found necessary, the contractor may arrange to execute the work accordingly after obtaining the written approval of Engineer. In such cases the basic rate for excavation for adit as also the tunnel excavation carried out through the adit will be the same.
If provision of a vertical shaft is found necessary, the basic rate admissible for tunnel excavation will be enhanced as under:
- | | | |
|----|--|---|
| | For tunnel excavation involved in sinking the vertical or near vertical shaft. | 50% Extra over basic rate of excavation in tunnel |
| ii | For excavation of main tunnel through the shaft | 0% (i.e. no enhancement) |
- 17.19 **TEMPORARY SUPPORTS: -**
17.19.1 By temporary supports it is meant support whether of timber or steel required to support the underground excavated section during excavation but which can be removed before or during the concrete lining. Contractor shall erect temporary supports, when so desired by the Engineer-in-charge. It shall be the contractor's responsibility to bring in writing to the notice of the Engineer-in-charge location where the contractor may consider the provision of temporary supports necessary. Consequence, if any for his failure to do so in good time, shall be the sole responsibility of the contractor.
The methods, the extent of supporting, sizes and spacing of supports etc., shall be approved by the Engineer-in-charge.
- 17.19.2 The supports may be of steel or timber and shall be removed before placing the concrete lining. No payment whatsoever will be made for temporary supports and this item is to be catered for in the rates quoted. If, however, some steel supports are allowed to be left embedded in concrete, they will be paid at the rate applicable for permanent supports instead of temporary supports. Such supports shall not, however, be left in place unless on specific direction of the Engineer-in charge in writing. In case temporary supports of timber and other materials except steel is allowed to be left embedded in concrete, neither extra payment on that account for the same or deduction in volume of concrete on that account shall be made.
- 18.0 **IMMEDIATE SHOTCRETING AND SHOTCRETING WITH STEEL FIBRES (SFRS)**

- 18.1 Description: -
Work consists of the production and application of Shot Crete with or without steel fibre to the specified thickness at the locations required, using wet Shot Crete machine with required materials, equipment, tools and labour necessary to perform the preparation, application and the clean up pertaining thereto.
- 18.2 Definition: -
Shot Crete, for this work, shall be defined as spraying premixed Portland cement concrete as per approved design with admixtures including Silica fumes if required and additives (i.e. water reducing agents, thixotropic agent, accelerators etc.) from a spray nozzle by means of compressed air using wet Shot Crete machine with Robot arm. When steel fibers and micro silica are added to shotcrete, it shall form SFRS. Shot Crete/SFRS shall be applied in accordance with relevant ACI/ASTM/EFNARC specifications/guidelines.
- 18.3 Rebound is defined as the constituents of Shot Crete /SFRS that rebound from surface during the application of Shotcrete /SFRS.

18.4 Materials:

Ingredients of ShotCrete / SFRS include (i) Cement, (ii) Aggregate, (iii) Admixtures, (iv) Silica Fume and (v) Steel Fibres. Specifications of ingredients are given below:

i)	Cement: Cement (OPC Gr. 43/53) or as directed by Engineer-in-charge shall be used.
ii)	Aggregate: Aggregate shall conform to the requirements of relevant IS code or as directed by Engineer-in-charge. The aggregate size shall not exceed 10 mm. The grain size distribution of aggregate shall be as under:
Sieve size (mm)	Percentage passing through sieve
	Minimum %
	Maximum %
10	100
8	90
4	73
2	55
1	37
0.5	22
0.25	11
0.125	4

The aggregate shall be well graded and no fraction shall constitute more than 30% of the total mass.

- iii) Admixtures:-Only proven admixtures which meet the requirement of the specification on field trials and satisfactory performance on other projects already constructed in India and elsewhere shall be used to ensure a homogeneous mix and better dispersions of various constituents of ShotCrete / SFRS. A two-component system to control the consistency shall be used to ensure good workability and low rebound. The admixture system shall produce slump killing effect and thixotropic consistency thus adhering in thick layers without trickling and subsequently reducing the fibre rebound. The contractor shall submit along with the design a certificate for satisfactory performance of admixtures and chemical compatibility between two components from user department and manufacturer.

Admixture shall consist of following:

- a) Water reducing/thixotropic agents: This shall be added at the batching plant/concrete mixture to keep the Shotcrete /SFRS mix workable during transportation and to ensure pumpability at an acceptable low W/C ratio. The chloride contents shall not exceed 0.1% by weight.
- b) Accelerators: Accelerator shall meet the following requirements: -
- Only liquid accelerator shall be used.
 - Water glass (sodium silicate) shall not be used unless in a modified polymer based form approved by the Engineer-in-charge.
 - Only the minimum quantity of the accelerator necessary shall be permitted in normal shotcreting operations subject to maximum dosage of 5% by weight of cementitious material.
 - Accelerator should have pH value less than 12.
 - Accelerator shall be selected such that at the chosen dosage for use in the works, the decrease in strength at 28 days compared with the base concrete without any accelerators shall not exceed 20%. There shall be no further reduction in strength of the shotcrete mix between 28

and 90 days.

- vi) Accelerator shall have the property to provoke sharp slump loss and shotcrete should have thixotropic consistency as it hits the substrate to reduce the fibre rebound.

- iv) Microsilica (Silica Fumes):

Microsilica produced / manufactured by only approved supplier as approved by Engineer in charge shall be used for the work. It should be as per specifications of the supplier confirming to relevant ASTM/Canadian Standards. The doze of silica fumes shall be 5 to 7% of cement weight subject to site conditions. Silica fumes shall have bulk density between 500 to 700 Kg. Per Cum. Few important requirements of Canadian code are reproduced below for guidance:

A CHEMICAL REQUIREMENT

SN	Description/ Property	Specification	Frequency of Test
1	Content of SiO ₂	More than 85%	Lot or 100 MT (or as directed by engineer in charge)
2	Content of SiO ₃	Less than 1%	Lot or 100 MT (or as directed by engineer in charge)
3	Loss on Ignition	Less than 6%	Lot or 100 MT (or as directed by engineer in charge)

B PHYSICAL REQUIREMENT

1	Accelerated Pozzolonic Activity index with Portland Cement at 7 days (Min % age of control)	More than 85%	Lot or 100 MT (or as directed by engineer in charge)
2	Increase in drying shrinkage of Mortar Bars at 28 days (Max %age joints)	5%	Lot or 100 MT (or as directed by engineer in charge)
3	Reactivity with cement reduction of mortar expansion at 14 days (Min % age)	80%	Lot or 100 MT (or as directed by engineer in charge)

C. METHOD OF TESTS

SN	Chemical Tests	Reference Standards
1	Silica (SiO ₂)	ASTMC 114
2	Sulphur trioxide	CSCAN 3A5
3	Moisture content	ASTMC 311
4	Loss in ignition.	ASTMC 311
5	Pozzolonic Activity Index 7 days	ASTMC 311 (Section 29 – 32)
6	Pozzolonic Activity Index 28 days	ASTMC 311 (Section 29 – 32)
7	Slag Activity Index	ASTMC 311 Clause 6
8	Soundness	ASTMC 311 (Section 25)
9	Drying shrinkage	ASTMC 311 (Section 22-24) (except that for testing silica fume use 500 g. of Portland cement 50 gm. of silica fume and 1325 gm. of sand in test mixture)
10	Reactivity with cement alkalis	ASTMC 441
11	Fineness	CSN CAN 3-A5
12	Relative density	ASTMC 311 (Section 20)
13	Uniformity of air content	ASTMC 311 (Section 27 & 28)

The contractor shall submit test certificate from a reputed laboratory / supplier certificate for all ingredients brought and intended to be used in Shot Crete / SFRS by him. Engineer-in-charge may however get the samples of these materials tested independently at contractor's own cost. The cost of such test shall be deemed to be included in the quoted rates.

- v) **STEEL FIBRES:**

The steel fibres to be used in SFRS shall be of high tensile steel, either cold rolled or cold drawn

wires. Fiber shall be dry and free from oil, grease and chlorides. The fiber shall be in accordance with ASTM A 820-85. However, some of the control parameters are given below for guidance:

- a Length of steel fibers: - 25mm – 40mm.
- b Geometric shape: - The steel fibers shall have suitably deformed profile to ensure proper matrix of SFRS mix end to develop better and anchorage with no fibre balling.
- c Aspect ratio: -(Length/diameter) 45-75
- d Fiber tensile strength: - Not less than 1000 Mpa.
- e Quantity of steel fibres: - Approximately 50 Kg / Cum in the sprayed (In situ fibre contents)concrete (subject to design requirements)
- f The mixing procedure adopted by the contractor should be such that there is no fibre balling.

I STRENGTH CRITERIA:

The final product shall meet the strength criteria as per relevant EFNARC / ACI standards. The frequency of testing shall be as specified in the codes or as directed by Engineer in charge. The strength requirements for SFRS/Plain ShotCrete are given below:

A. Steel Fibre Reinforced Shot-Crete;

The SFRS shall meet the following strength requirements:

SN	Description	Days after which testing done	Required Strength (MPA)
1	Compressive Strength on Cylindrical Cores	3	10
2	Compressive Strength on Cylindrical Cores	28	20
3	Flexural Strength	28	3.8
4	Toughness	28	2.4

B. Plain Wet Concrete

The mix shall be designed to give the following strength requirements.

SN	Description	Days after which testing done	Required Strength (MPA)
1	Compressive Strength on Cylindrical Cores	3	10
2	Compressive Strength on Cylindrical Cores	28	20
3	Flexural Strength	28	3

18.5	MIX DESIGN: The contractor shall submit mix design to meet the strength as specified for prior approval of Engineer In Charge prior to commencement of Shot Crete / SFRS. Mix design should give following details:	
a	Ordinary portland cement	Kg.
b	Micro silica	Kg.
c	Natural fine aggregate	Kg.
d	Crushed coarse aggregate	Kg.
e	Crushed fine aggregate	Kg.
f	Steel fibres	Kg.
g	Water reducer/thixotropic agent	Kg.
h	Accelerator	Kg.
i	W/C ratio	
j	Slump	
k	Density (Wet)	
l	Compressive strength on on cylindrical cores.	3 days/7 days/28 days
m	Equivalent cubes strength	28 days
n	Flexural strength	28 days

o	Toughness	28 days
18.6	<p>TEST PROCEDURE:</p> <p>Tests of SFRS/Shotcrete shall be done as per relevant ASTM / JSCE / EFNARC standard or as directed by Engineer-in-charge. All equipment for testing shall be arranged by the contractor at his own cost. Some of the tests of the Shot Crete / SFRS are given below for guidance:</p>	
18.6.1	<p>COMPRESSIVE STRENGTH:</p> <p>The specimen cylindrical cores measuring minimum 75 mm dia or as directed by Engineer-in-charge or concrete cubes 100 mm size, shall be drilled / sawn / extracted out of prepared test panels. Panels for testing shall be at least 600 X 600 mm in size and shall be of thickness as per design. The panel shall be prepared by Shotcreting into vertical moulds, which shall be constructed of steel or other non-water absorbent material and shall have side splayed out moulds at 15 degree to prevent the entrapment of rebound.</p>	
18.6.2	<p>Flexible strength and toughness properties:</p> <p>Flexural strengths and toughness properties shall be measured in accordance with Japanese standard JSCE/ASTM standards. The beam shall be cut out from splayed panels. The beam shall be stored in water for a minimum of 3 days after sawing and immediately before testing and kept moist during testing.</p>	
18.7	<p>PLACING EQUIPMENT:</p> <p>Contractor should have wet Shot Crete machine with Robot arm, which can do Shot Creting efficiently without any wastage of working hours. The machine should be able to place the Shot Crete & SFRS as per design mix.</p> <p>The air supply system shall be capable of supplying air at the pressure and volumes needed for the efficient operation of the machine. No air supply system shall be used that delivers air contaminated by oil or that is incapable of maintaining constant pressure.</p> <p>In addition, a separate air hose and blowpipe shall be available to remove dust & rebound during Shot Crete application.</p>	
18.8	<p>METHOD OF APPLICATION: -</p> <p>Only wet mix method shall be used for the purpose spraying Shotcrete/SFRS.</p> <p>Water cement ratio shall be 0.45 (maximum) by weight of cementations material.</p> <p>The workability shall be measured by slump test and should be between 10 to 15 cms. The slump shall also be checked after interval of 15 minutes, which should within prescribed limits. The Shot Crete older than 2 hours and having slump not within prescribed limits shall not be used unless treated with hydration control additives.</p> <p>The required workability shall be ensured before transporting the mix for execution at batching plants / transit mixer itself.</p> <p>Surface shall be suitably prepared by scaling followed by cleaning with compressed air and water under pressure through nozzle. All surfaces shall be wet and clean at the time of applying SFRS / Shotcrete.</p> <p>Before filling the mix in the hopper of the Shot Crete machine, slurry shall be mixed and put into the concrete hose.</p> <p>The application procedure of SFRS/Shot Crete shall be developed in the field to give minimum rebound, minimum shrinkage to the satisfaction of Engineer-in-charge.</p> <p>The nozzle shall be held at a predetermined distance approximately one metre but in no case greater than 1.5 metre from the surface to the covered, and positioned so that the stream of flowing material shall be applied as early as possible at right angles to the surface to be covered. Nozzle shall be held in steady motion so that the Shot Crete is applied uniformly to build up the required thickness of layer. Acceptable Shot Crete shall consist of dense and uniform concrete without rebound, inclusions, segregation or discernible weakness of bond between layers. The nozzlemen shall apply shotcrete with a uniform consistency in order to minimize binding cohesion and density, minimize rebound and segregation and present sagging of applied Shot Crete.</p> <p>Shot Crete shall always be started from the bottom to avoid rebound material getting locked in.</p> <p>The first 50 mm thick layer of SFRS shall be applied uniformly and before applying</p>	

- SFRS, local depressions shall be filled with plain Shot Crete or as directed by Engineer-in-charge.
 Before laying the second layer of SFRS, the first layer shall be allowed to take its initial set and have loose materials removed.
 Care shall be taken to ensure that no air pockets formed behind the SFRS during application of SFRS.
 All applied SFRS / Shotcrete shall be kept wet for at least 7 days to ensure proper curing of the Shot Crete. Sufficient air shall be added to the nozzle to get good compaction and higher compressive strength.
 All necessary precautions shall be taken to ensure that there is no damage to the instrument installed in rock and the drainage holes do not get plugged.
- 18.9 Proficiency of WORKMEN:
 Nozzleman shall have previous experience in the application of shotcrete on atleast two projects of comparable nature and shall work under immediate supervision of a foreman or instructor with at least five years of experience. Proficiency of workmen will be checked by Engineer-in-charge before allowing them to work.
- 18.10 Control of WATER:
 Water flow and seepage shall be controlled in such a manner that detrimental effects are completely and permanently eliminated. The contractor may drain such water by pipes chases or other appropriate methods approved by the Engineer-in-charge.
- 18.11 Safety MEASURES:
 Alkali hydroxides and other chemicals contained in Shot Crete admixtures are moderately toxic and can cause skin and respiratory irritation unless adequate safety measures are undertaken. In applying Shot Crete containing toxic admixtures, the nozzlemen should have air to breathe, which shall be free of toxic or objectionable material. Gloves and necessary protective clothing shall be worn to protect against dermatitis.
- 18.12 Measurement and PAYMENT:
 Measurement for payment of Shot Crete/SFRS shall be made of volume in cubic metres of Shot Crete / SFRS placed computed by multiplying the payment area by the specified (i.e. the design) thickness. The payment area shall be defined as under: -
- ii When excavated profile does not extend to portion of 'geological overbreak' as defined in para 17.8, payment area shall be projection of irregular area on to the Payment Line as defined in para 17.6.1 i.e. Payment Line perimeter multiplied by length along the tunnel.
 - iii When excavated profile extends to portion of 'geological overbreak' as defined in para 17.8, an imaginary line parallel to 'Payment Line' shall be drawn in such a way that it depicts average line of the actual excavation. In case perimeter of such an imaginary line is less than or equal to the perimeter of a line parallel to and 300mm beyond 'Payment Line' the payment area shall be calculated by considering perimeter of Payment Line only as described in para (ii) above. However, in case perimeter of such an imaginary line is more than the perimeter of a line parallel to and 300mm beyond 'Payment Line', the Payment area shall be calculated by multiplying the perimeter of such an imaginary line with length along the tunnel.
 - iv Where Shot Crete is used only for filling of local depressions before applying SFRS, measurement and payment of Shot Crete shall be made on the basis of actual volume of concrete deposited to obtain the required thickness of Shot Crete.
 - v Shot Crete placed by the contractor in excess of thickness shown on the Drawings or as specified by Engineer-in-charge shall not be measured for payment.
 - vi Rates being quoted for Shotcrete / SFRS should include cost of all materials including cost of cement & providing and incorporating admixtures or other additives in Shot Crete / SFRS.
 - vii Wire mesh as per specifications shall be arranged by contractor at his own cost himself and is provided for in schedule of items, rates and quantities.
 - viii No separate payment shall be made for Shot Crete /SFRS consumed in rebound and / or wasted Shotcrete /SFRS. The cost of various ingredients of rebound / wastage is deemed to be included in the unit price of Shotcrete / SFRS.

- 19.0 **SUPPORTING BOLTS: -**
Where, in the opinion of the Engineer-in-charge blocks of rock are likely to get loose and fall down, the contractor shall arrange and install supporting bolts. Such supporting bolts are expected to be needed mostly in the roofs only. It shall however be the sole responsibility of the contractor to bring in writing to the notice of the Engineer-in-charge, the location where the contractor may consider it necessary to provide supporting bolts. The final decision about installation of supporting bolts at any location and the total quantity thereof shall however, vest with the Engineer-in-charge.
Specification for rock bolts are detailed below: -
- 19.1 **ROCK BOLTING:**
Where in the opinion of the Engineer-in-charge the rock is highly jointed and blocks of rock are likely to get loose and fall down, the contractor shall install supporting rock bolts. Such rock bolts are expected to be needed mostly in the roof & side walls. The location and number of such bolts may be determined after discussion and joint inspection with the Engineer-in-charge. It shall, however, be the sole responsibility of the contractor to bring in writing to the notice of the Engineer-in-charge the location where contractor may consider it necessary to provide supporting bolts.
Geological conditions and fractured nature of rock shall be the main determining factor for establishing necessary lengths of bolts, the pattern, spacing and the area to be bolted. Systematic pattern of bolting is shown on the drawing. However, the pattern of bolting is subject to change at the discretion of Engineer in charge.
- 19.2 **INSTALLATION OF ROCK BOLTS (25 mm HYSD bars) :-**
The contractor shall drill 38mm to 45mm diameter holes in roof or the sides of the excavation at locations and to depths as directed or approved by the Engineer-in-charge. These would vary in different situations and locations. The rock bolts shall be fabricated as per approved drawings. The contractor shall carry out drilling and fixing including grouting of rock bolts with approved grout mix using cement, sand and admixtures for quick setting of grout. The admixtures shall be conforming to relevant codes and as approved by Engineer-in-Charge. Admixtures shall be provided by the contractor at his own cost, which shall be deemed to be included in the quoted rates.
Prior to installation of rock bolts, holes shall be flushed out until the return water is clear. The contractor then shall pour / inject sufficient cement grout into the hole such that when the bolt / dowel is fully inserted into the hole, it will displace the grout, leaving the annulus completely filled with grout. When necessary, due to inclination of hole, contractor shall place the grout in the hole using perforated metal sleeves acceptable to Engineer – in - Charge. The grout mix to be used shall have following properties:
- i Maximum water cement ratio to be limited to 0.4 to ensure barrier against corrosion and other aggressive agents and stress. The grout shall be workable 1:1 cement / sand mix.
 - ii Thixotropic consistency to make grouts suitable for vertical holes.
 - iii Minimum strength development of 12 MPa in 24 hours. 28 days strength of grout mix shall not be less than 30 MPa.
 - iv It should have enough workability for easy pumping and placement.
The bolt / dowel shall be protected against disturbance for a minimum time of 48 hours after installation or more as required by Engineer-in-charge.
After the grout has gained adequate strength, washer plates shall tighten against the rock face, so as to induce positive compression in rock mass around the bolts.
Alternatively the contractor may be permitted to use commercial epoxy grouts manufactured by reputed manufacturers of construction chemicals, if it substantially reduces the setting time for the grout and expedites work.
The contractor shall maintain on site a reserve supply of rock bolts/dowels complete with accessories.
All bolts within 10m of a blasting operation shall be checked within 6 hours of blasting and re-tightened.
- 19.3 **PULL OUT TEST ON INSTALLED ROCK BOLTS:**
The contractor shall perform pull out tests on rock bolts selected by the Engineer-in-charge. The number of such pull out tests shall not exceed 1 in every 100 bolts. The bolts shall resist

a pull out tension satisfying design requirements. If any rock bolt fails due to improper workmanship or material defect, the Engineer-in-charge may order a test for all adjacent rock bolts, and all rock bolts so failing shall be replaced and re-tested at the contractor's expense. The design requirement for 25mm dia rock bolts shall be 9 tonnes pull or higher at failure unless otherwise specified.

The contractor shall supply testing apparatus and necessary operator and labourers to operate it. testing apparatus shall be equipped with a gauge which shall give the applied load at all times during the testing operation. All testing shall be done in the presence of Engineer-in-charge or representative. The cost of the testing shall be included in the quoted rates. The Engineer-in-charge reserves the right to ask for pull out tests in any location where he deems it necessary.

19.4 MEASUREMENTS AND PAYMENT:

Payment for furnishing and installing rock bolts shall be made as per linear length of the steel rod installed inside the drilled holes and not per meter of drilling and the rate tendered shall include the cost of fabrication of rock bolt, drilling of hole, grouting, materials etc., tightening the bolts to the required torque and also the temporary timber supports and all other works in connection therewith. Any bolt furnished and installed of a length less than 3.0m deep at the direction of the Engineer - in - Charge shall be paid for as actual length inside the rock.

Rock Bolts which because of blockage, caving or loose cannot serve their intended purpose shall not be paid for.

20.0 PERMANENT SUPPORTS:

20.1 Permanent tunnel supports are those supports erected during the excavation of the tunnel and shaft which will be left permanently in the tunnel and shafts forming part of the finished tunnel. At the discretion of the IFCD the method of providing permanent steel supports in the tunnel may be altered or deleted.

20.2 **Fabrication of permanent tunnel supports:**

- i The main members in the permanent steel supports for tunnel shall normally be sawn to exact lengths and holes drilled to template. The butt and footplates may be sheared to sizes and shall be carefully cut and holes accurately drilled, so that when the members are in position the holes shall be truly concentric.
- ii Rolled steel joists shall be cold bent to radius indicated in the drawing and the butt and footplates shall then be welded in. When finished, the support shall be true to profile and free from all kinds of twists and open joints and the material shall not be defective or strained in any manner.
- iii No bolthole shall be more than 1/16" larger than the diameter of the bolt. Sizes of the bolts used shall be in accordance with drawing.
- iv Fabrication of the steel support shall be done in accordance with the drawings. Workmanship and finish shall be comparable to the best general practice in modern steel fabrication shop. All ring beam segment shall be fabricated in such a manner that required number of segment selected at random might be easily assembled and bolted together to form a complete support of specified dimensions. Finished diameters of the holes in the beams, butt plates splice plate or wall plates joints etc. shall not be less than that shown in the drawing which is more by 1.5mm than normal diameter of the bolt. The holes will be drilled and reamed with the parts to be bolted in assembled position.
- v All welding work carried out in the fabrication of steel supports shall conform to IS: 823-1964 (Code of Procedure for Manual Metal Arc Welding of Mild Steel) as amended from time to time.
- vi Welding shall be by the electric arc welding process using a method, which excludes the atmosphere from the molten metal. Welding shall conform to the applicable provision of IS: 816-1956 "Code of practice for use of Metal Arc Welding for general construction in Mild Steel". Inspection of Weld shall be done as per IS: 822 – 1970.
- vii Surface to be welded shall be free from loose scales, slag rust, grease, paint and any other foreign material except that mild scale, which withstands, a vigorous wire brushing, may remain. Joint surface shall be free from fines and tears, preparation of edge by gas cutting shall whenever practicable be done with a mechanically guided torch.
- viii All welding shall be structurally safe. Only qualified welders shall be allowed to weld. For this purpose, the Engineer-in-charge or his authorized agent shall periodically test the welders.

- A welder shall be allowed to do fillet weld only on such locations for which he is qualified. For the above test IS 817-1967 "Code of practice for Training and Testing of Metal Arch. Welder" shall be applicable.
- 20.3 The dimensions and number of the foot blocks, lagging, spreaders, wedges and blocking, where not shown on the drawings shall, in all cases, be as necessary to serve their functions and for safety. The material used for foot block, lagging, blocking and spreader shall be of Contractor's steel, payment for which will be made in the relevant item of Schedule of Rates. All equipment including welding material shall be arranged and provided by the contractor at his own cost and nothing extra shall be paid.
- 20.4 The contractor shall assemble, complete set of steel supports in a horizontal position before dispatch from the work, any of the support as may be required by the IFCD for the purpose of checking.
- 20.5 No painting of any sort is to be carried out on the steel support.
- 20.6 Erection of supports: The section and spacing to which supports shall generally be erected is shown in approved drawing. Actual section and spacing at which arch ribs and posts are to be erected will be decided by the Engineer as the work is in progress to suit ground conditions. The decision of the Engineer-in-charge will be final and binding on the contractor.
- 20.7 When the break out is affected in two portions as aforesaid the wall plate on both sides shall first be erected correct to line and level and secured in position on timber packing. The length of wall plates will depend upon the "safe bridge action period of the rock" i.e. the time that can be allowed to elapse after blasting and before the steel support are erected, the cycle of operations and the advance to be obtained in one cycle. Wall plates laid on either side shall be connected loose to the previously laid wall plates by means of gusset plates and bolts. Arch rib shall then be guyed up and lined and leveled & connected to the previously erected arch rib by means of the tie rods and nuts at both ends.
- 20.8 *In case of "over break" that are judged as due to defective workmanship of the contractor, no payment will be made for any new steel work erected by the contractor for rectification of the damaged supports and no compensation will be paid on this account. Any extra steel required for rectification / replacement of damaged permanent supports shall be arranged by the Contractor at his own cost.*
- 20.9 Any protective measure required for preventing / damage to support already carried out should be done by the contractor at his cost or the work has to be carried with controlled blasting in order to avoid such damages. The contractor will not be entitled for any compensation on this account.
- 20.10 *Repair / Replacement of the support if necessary due to negligence on the part of the contractor will be done entirely at the cost of the contractor.* Nothing contained in this para shall prevent the contractor from erecting, at his own expenses permanent supports heavier than approved by the Engineer-in-charge, nor shall it be construed to relieve the contractor from the sole responsibility for the safety of the excavation or the liability for injuries or deaths of persons or damage to property.
- 20.11 The materials, bolts, nuts and washer will conform to the relevant IS specification for the intended use and shall be arranged and provided by contractor at his own cost. The sequence and method of excavation shall be selected so as to enable the installation, of the necessary supports, before the bridge action period for the excavated profile has expired. The quantity for this substantially depends upon the strata encountered during the excavation. *The contractor will not be entitled for any claim for such variations until the increase of quantity is finalized by the competent authority. The tentative spacing and number of support are shown in the approved drawing. The detailed plan will be supplied to the contractor from time to time for different types of rock encountered and contractor will be required to provide the support as per these drawings.*
- 20.12 The steel support shall be installed with proper workmanship, true to the line and grade and as directed by the Engineer-in-charge and shall be maintained by the contractor in proper condition and alignment until the concrete lining is placed against them.
- 20.13 The contractor shall correct improper installation of supports within 48 hours after the defects are brought to his attention.
- 20.14 In supported sections of the tunnel, the contractor shall securely brace the support with spreader, blocking and wedges as per approved drawing or as directed by Engineer at site
Where it is necessary to place structural struts across the invert, the struts shall be placed as shown

- on the approved drawings or as directed.
- 20.15 Due to insufficient or improper support in certain rock condition the load and side pressures may increase *as per actual site condition*. The additional steel provided by way of strengthening shall be measured for payment as a steel support against relevant item of schedule rates and quantities. The back packing materials shall form part of the first stage concrete of lining and therefore, will not be paid for separately.
- 21.0 **CEMENT CONCRETE: -**
- 21.1 **SCOPE OF WORK: -** Construction of RCC Tunnel from RD 9,380m to 10,220m for Water transmission system from Thoubal Dam to Chingkheiching (Two Packet System).
The work covered by this section consists of furnishing all materials equipment and labour for the manufacture, transport, placing finishing and curing of concrete in the portal structures, lagging and back fill concrete behind R.C.C. lagging and for construction of mass CC / RCC work in cut and cover construction tunnels and shafts. The item of concrete is split up into several items according to the class of concrete to be used and its location and will be measured and paid for accordingly.
- 21.2 All concrete works whether Plain or RCC should conform to IS 456 - 2000 and the relevant India Standards Specifications as directed by the Engineer. Payment of cement concrete and RCC will be made under relevant schedule of items, rates and quantities.
- 21.3 All concrete shall be mixed in an approved concrete mixing machine and such cement concrete should be vibrated by use of mechanical vibrator and nothing extra over an above the quoted rates for mass concrete will be payable for these operation unless mentioned specifically.
- 21.4 The contractor will have to arrange the material required for providing weep holes or other drainage holes at his cost. The cost should include supplying and fixing of 75 mm AC or PVC pipes as per approved drawings. No deduction of volume of weep holes / drainage holes for the purpose of calculations of volume of concrete payable shall be done.
- 21.5 Butt joints are to be provided at places at the direction of the Engineer. 12mm thick mud plaster will be done on one of the surfaces of the concrete. No extra payment for this plaster or any deduction in the quantities of concrete will be made and the rates for mass cement concrete will be inclusive of this plaster.
- 21.6 Welding of reinforcement will not generally be permitted except in special circumstances under the written approval of the Engineer in accordance with the relevant I.S codes.
- 21.7 The exposed surface of mass cement concrete and RCC work shall be rendered smooth and even. Nothing extra will be payable for rendering the exposed surface smooth, the cost of which will be considered as having been included in the rates quoted for mass CC/RCC items.
- 21.8 **PROPORTIONING OF CONCRETE: -**
The exact proportions in which the different ingredients are to be used for different parts of the work shall be as per mix design as approved by the Engineer-in-charge.
- 21.9 **BATCHING AND MIXING EQUIPMENT: -**
All aggregates shall be batched by weight. The contractor shall have to install batching plant of the requisite capacity to maintain the required progress on different items of work. The batching plant shall be capable of determining accurately by direct weighing the prescribed amounts of the various ingredients including water, cement, admixtures etc. and each individual size aggregate entering the concrete and combining them to give them a uniform mix within the prescribed time and discharging the mix without segregation. The equipment and its operation shall at all the times are subject to the approval of the Engineer-in-charge.
- 21.10 **HANDLING: -**
The measured materials leaving the batches must be properly and carefully handled so that batches reaching the mixers will be as uniform and complete as and when released by the measuring equipment. This is particularly important when dry batches are transported by truck or otherwise to portable mixers near the work. The handling equipment shall be subject to the approval of the Engineer-in-charge. Loss of materials during transferring batches from truck to mixer should be avoided so also incomplete discharge from trucks resulting in deficiency in that batch and loss of cement due to dusting and scattering.
- 21.11 **MIXING: -**
All concrete shall be thoroughly mixed in the batching plant in a tilt batch mixer of approved type,

size and design so as to positively ensure uniform distribution of the components throughout the mass during the mixing operations. In no case shall the mixing be done for less than two minutes. Each mixer and its operation shall be subjected to the approval of the Engineer-in-charge and if, at any time, produces unsatisfactory results, the same shall be promptly repaired or replaced to the satisfaction of the Engineer-in-charge.

Each mixer shall be equipped by the contractor with a mechanically operated timing and signalling (or looking), device, satisfactory to the Engineer-in-charge for indicating and measuring the completion of the required mixing period. Arrangement shall also be made to the check revolutions of the mixer. Dust and other undesirable substances shall be completely excluded. The mixers shall not ordinarily be loaded beyond their rated capacity or operated in excess of the speed recommended by the manufacturer.

It is particularly important in charging the mixer that the ingredients (cement, sand and coarse aggregate) shall be arranged in the charging hopper in such a manner that proportional amounts of each will be in all parts of the stream as it flows into the mixer and that the period of flow of each is about the same.

The mixer should be capable of ready discharge of concrete of the lowest slump, which can be consolidated by vibration. Separation of coarse aggregate from mortar (which commonly results when the concrete is discharged from the moist mixers) shall be avoided by proper arrangement of the discharge so that the concrete will fall vertically not diagonally into whatever container is to receive it.

The mixing plant shall be capable of being easily modified to add air entraining or other admixtures. If necessary each mixer shall be equipped with suitable means for indicating and recording concrete consistency. The sensitivity of the meter shall be such that the effect of a change in steps of 25mm (one inch) shall be readily discernible. The consistency meters operating on the principles of measuring the electrical input at the mixer motors shall not be acceptable.

21.12 CONVEYING :-

Concrete shall be conveyed from mixer to form as rapidly as practicable by methods, which will prevent segregation and/or loss of ingredients. In case such separation occurs inadvertently, concrete shall be remixed before being laid in place. The distance between the mixer and the place of concreting as also mode of transport of concrete shall be subject to the prior approval of the Engineer-in-charge. It shall be deposited in its final position as early as practicable but always within a period of 30 minutes after mixing. When the initial set has taken place in a batch of concrete before it is placed in position, such concrete shall be rejected and taken away from the site to a distance and disposed off as ordered by the Engineer-in-charge. No claim in this respect shall be entertained.

Methods of conveying concrete to any part of the structures wherein the concrete is loaded into chutes, belt conveyor or other similar equipment and carried in a thin continuously exposed flow to the form will not be permitted except for very limited or isolated sections of the work and only when approved in writing by the Engineer-in-charge. The conveyance of concrete shall preferably be done by Agitator Cars/Transit Mixer.

During hot or cold weather, concrete shall be transported in deep containers (the deep containers, on account of their lower ratio of area to mass reduce the ratio of loss of water by evaporation during hot weather and loss of heat in cold weather).

21.13 FORM FOR CONCRETE: -

Forms to confine the concrete and shape it to the required lines shall be used wherever necessary. All exposed concrete surface having slopes 1 to 1 or steeper, shall be formed unless otherwise directed where the character of the natural material cut in, to receive concrete is such that it can be trimmed to the prescribed lines, the use of forms will not be required.

The forms shall have sufficient strength and rigidity to hold the concrete and to withstand the necessary pressure ramming and vibration without deflection from the prescribed lines. In all cases formwork shall be approved by the Engineer-in-charge before the concrete is poured but the contractor shall at all times be solely responsible for its sufficiency, strength and stability. The surface of all forms in contact with the concrete shall be clean, rigid, tight and smooth.

- Suitable devices shall be used to hold corners, adjacent ends, and edges of panels or other forms together in accurate alignment. The forms and their joints should be tight enough to obviate any danger of loss of mortar, which may result in honey combing, or loss of water that may cause the streaking.
- Immediately before any concreting is commenced, all forms shall be carefully examined to see that all wood, shavings, sand dust and other refuse have been removed by brushing or by washing with a hose, and all traps and temporary doors are made good.
- 21.14 **MATERIALS: -**
- Forms shall be of wood, steel or other approved material except that the sheeting for all exposed surfaces where lining is not specified shall unless otherwise permitted or directed be of tongue and groove lumber of uniform width unless otherwise specifically authorised. Forms of like character shall be used for similar exposed surfaces in order to produce a uniform appearance. The type, size, shape, quality and strength of all materials from which forms are made and design of the forms shall be the sole responsibility of the contractor but subject to the approval of the Engineer-in-charge.
- In general, forms for permanently exposed surfaces shall consist of or shall be lined with matched or dressed edge grain lumber of appropriate thickness free from loose or cracked knot.
- Where lumber forms are used, the laying shall be in the direction, which will blend architecturally into the lines of the structures as decided by the Engineer-in-charge.
- Metal forms or metal lined forms will be permitted for permanently exposed surface only when an entire surface is to be built completely with such forms.
- Curved and special forms shall be of a character that will result in smooth concrete surface. They shall be designed and constructed so that they will not warp or spring up during erection or placing concrete.
- Forms to be used more than once shall be maintained in a serviceable condition and shall be thoroughly cleaned and smoothened before being reused. When metal sheets are used for lining forms, the sheets shall be placed and maintained on the forms with the minimum amount of wrinkles, humps or other imperfection, the use of sheet metal to cover imperfections in the lining of lumber faced forms for surfaces that will be permanently exposed to view shall not be permitted. Where plywood or hardboard is used for form lining, the joints between the sheets shall be smooth and as perfect as practicable and no patching of the plywood or hardboard would be permitted for permanently exposed surfaces. Minor imperfection in the plywood may be corrected by the use of plastic wood secured firmly in place and sand papered smooth.
- 21.15 **TIES: -**
- The use of stay wires, metal rods or other similar devices embedded in the concrete for holding forms will be permitted if the ends of the rods are so arranged as could subsequently be removed to a depth of not less than 50 mm (two inches) from the surface of the concrete without injury to the concrete provided that for walls to be subjected to water pressure on one side and to be water tight. The rods shall not be continuous throughout the wall. Complete removal of the embedded rods will not be permitted. Removal of embedded fasteners or the rods shall be such as to leave holes of regular shapes for reaming. All holes left by removal of fasteners from the ends of rods shall be immediately reamed with suitable toothed reamers so as to leave the surface of the holes clean and rough and complete filled with dry patching mortar and the surface finished to match the adjacent concrete. Wire ties will be permitted when specifically approved and shall be cut off flush with the surface of the concrete after the forms are removed. Wire ties shall not be used when permanently exposed finished surfaces are required.
- 21.16 **ERECTION AND REMOVAL: -**
- Shortly before placing concrete the surface of all form shall be oiled with a suitable non-staining oil, not harmful to concrete, so as to prevent sticking of concrete and facilitate removal of forms. Forms for unexposed surfaces may be thoroughly wetted in lieu of oiling, immediately before placing the concrete.
- For use of wood forms, the oil should be capable of penetrating the wood and remaining

sufficiently oily to eliminate sticking and of preventing absorption of water and consequent warping. Almost any of the light colored and light oiled straight petroleum oils, are acceptable for use on wood.

Compounded oils composed essentially of petroleum oils and other oils and animal or vegetable origin and gums or resin which are heavier in body and frequently darker than straight petroleum oils will be used in the case of steel lining forms. The oils should be applied by brush, spray or swab and the forms should be covered fully and evenly without excess of drip. Care should be taken to prevent oil from getting in the surface of construction joints or on the reinforcing bars. Special care should be taken to oil thoroughly the form strips for narrow groove seats, window doors and elsewhere so as to prevent swelling of the forms and consequent damage to concrete prior to removal of forms.

Immediately before concrete is placed, precaution shall be taken to see that all forms are in proper alignment and that forms anchor and ties are thoroughly secure and light. Where forms of continuous surfaces are placed in successive units, the form shall sit tightly over the surface so as to prevent leakage from the concrete and to maintain accurate alignment of the surface.

The contractor shall strengthen or modify the formwork, when the Engineer-in-charge, considers it necessary and as directed by him. Forms should be left in place until their removal is authorised and shall be removed with care so as to avoid any injury to the concrete. All forms shall be entirely removed from a pour to permit, inspection before being reset for their next lift. Unless authorised, suitable mouldings shall be placed to level all exposed edges, at construction joints, and any other edges shown on the drawings or as required by the Engineer-in-charge. The final detailed drawings will show any formed recesses, slots, block outs and similar construction details, which have to be taken into account in fixing the form work cost of forming the recess shall be deemed to have been included in the overall rate of the item.

The contractor shall take into account all the cost of formwork while quoting for the rates of the concrete work items, and no separate payment shall be due to the contractor for the erection etc. of the formwork to the specification herein detailed.

21.17 **PLACING CONCRETE: -**

No mortar or concrete shall be placed except in the presence of the Engineer-in-charge or his duly authorised subordinate. Concrete shall be placed only in locations where authorised and no concrete or mortar shall be placed until the form work, installation of embedded parts, preparation or surface and necessary clean up have been done and checked and certified by the Engineer-in-charge or his authorised representative as being in conformity with specifications and drawings. Earth foundations on which concrete is to be laid shall be firm, drained soil, free of any soft mud or other objectionable and on which there is no standing or running water. Rock surface or rigid masonry or concrete surface upon or against which concrete is to be placed shall be fresh, clean, solid and free from oil, mud, rock, loose, semi detached or unsound fragments, objectionable quoting and debris and sufficiently rough to assure satisfactory bond with the concrete.

Immediately before placing concrete all such surfaces shall be thoroughly cleaned by the use of high velocity air or water jets, sand blasting, steel brooms, picks or other effective means satisfactory to the Engineer-in-charge.

All pools of water from the surface on which concrete is to be placed shall be cleaned to ensure proper bonding of fresh concrete with the rock surface. The method of disposal of water employed in working site shall be subject to the approval of the Engineer-in-charge. All concrete placing, equipment and methods be subject to the approval of the Engineer-in-charge. Continuous adequate telephone communication shall be provided by the contractor between the concrete mixing plant and placement location during the placement of all concrete.

Sufficient mixing and placing capacity should be provided so that the work may be kept alive and free from cold joints. Formed concrete should be placed in the horizontal layer not deeper than 0.30 m avoiding inclined layers and construction joints.

To get a monolithic placement, it is important that each layer be shallow enough so that previous layer is still soft and the two layers be vibrated together. Concrete shall not be allowed or caused to flow horizontally or on slope in the forms. Concrete placing on slope should begin at the lower end of the slope and progress upward, thereby increasing

compaction of concrete. Pneumatic placement of the concrete shall be avoided unless usual high velocity discharge is used to appoint where no separation and scattering of the concrete occur.

The most important consideration of handling and placing concrete is that of avoiding separation of coarse aggregate from the concrete. Obvious groups and clusters of separated coarse aggregates are objectionable. They should be removed before the concrete is placed over them, otherwise they may cause serious imperfection in the finished work. Hence, particular attention should be paid to the tendency for objectionable separation to occur at the point of discharge so that uniformity and homogeneity of concrete placement and good workmanship will be ensured.

Concrete shall not be dropped from excessive heights. The concrete shall drop vertically into the centre of whatever container receives it. To protect these rods, spacers and embedded features from damage and to prevent displacement of reinforcement, concrete fall in forms should be confined in a suitable drop chute.

21.18 **CONSTRUCTION JOINTS:**

The position of construction joints shall be subject to the approval of the Engineer-in-charge. The concrete of the earlier pour shall be hacked to produce rough surface or green cut with air water jet after the concrete has hardened sufficiently (4 to 6 hours after vibration) as directed by the Engineer-in-charge. Before placing new concrete, the surface should be restored to the condition existing immediately, after hacking or green cutting by means of another washing with air water jet, vigorous brushing etc.

The contractor to the satisfaction of the Engineer-in-charge shall clean all the joints. All intersection of construction joints with concrete faces that will be exposed to view shall be made straight, level and plumb. All exposed construction joints shall be subjected to the approval of the Engineer-in-charge. Surfaces of the construction joints of which have been permitted to dry by reason of the succeeding layer not placed within the specified moist during period, shall be kept moist for at least 72 hours prior to placing the succeeding layers.

When the work has to be resumed on a surface which has hardened, such surfaces shall be roughened and new concrete placed after taking all measures mentioned in the para below:

Disturbance of surface concrete at the joint shall be avoided during the early hardening period. Before placing the succeeding layer, the surface of the concrete of the construction joints shall be thoroughly cleaned and loose defective or fractured concrete shall be removed satisfactorily.

21.19 **WATER DISPOSAL: -**

The method used for disposing of the water from washing the surfaces shall be such as would not stain discolor or otherwise affect exposed surface.

21.20 **DEPOSITION OF CONCRETE:**

The method and equipment used for placing concrete shall be such as will permit the delivery of concrete of the required consistency into the work without objectionable delay, segregation, porosity or loss of workability.

All surfaces of forms and metal work including reinforcement bars that has become encrusted with dried mortar or grout from concrete previously placed, shall be cleaned of all such mortar or grout before the surrounding or adjacent concrete is placed. Concrete shall be deposited in continuous horizontal layers varying in thickness of approximately 300 mm (12").

21.21 In reinforced concrete work the thickness of the layers shall be reduced to 150mm to 300 mm (6" to 12") or as directed. In congested parts care shall be taken to see that all the bars are properly embedded and no voids are left. On flat, horizontal surfaces, however, the congestion of steel near the forms makes concrete placing difficult, a mortar of the same cement and sand ratio as is used in the concrete shall be first deposited to cover the forms.

21.22 After the surfaces having been prepared to the satisfaction of the Engineer-in-charge, all approximately horizontal surfaces of rock and construction joints shall be cast with cement slurry of water cement ratio approximately of 0.60 by weight or less as specified, it shall then be covered with layers of mortar approximately 50 mm (2") to 75 mm (3") thick for rock surface and approximately 15mm thick for construction joints. The mortar shall have the same property of cement and sand and the water cement ratio as the regular concrete mixtures unless otherwise prescribed by the Engineer- in charge. The consistency shall be suitable for placing

- and working in the manner herein after specified. The mortar shall be spread uniformly and thoroughly with stiff brooms into all irregularities of the surfaces. Concrete shall then be immediately laid upon the fresh mortar.
- 21.23 No concrete shall be placed in running water or during high winds, dust, storms, excessive heat and similar condition without prior approval of the Engineer-in-charge. The Engineer-in-charge shall further, have the right to disallow the placing of concrete during such conditions and the contractor shall comply with such directions. No claims shall lie against IFCD on account of such action by the Engineer-in-charge in this behalf.
- 21.24 **RATE OF PLACING: -**
 Concreting shall be continued without avoidable interruption until the structure of section is completed or until a satisfactory construction joint can be made. Concrete shall not be placed faster than the placing crew can compact it properly. In placing thin members and columns, precautions should be taken against rapid placement, which may result in movement or failure of the form due to excessive lateral pressure. An interval of at least 24 hours unless otherwise approved or directed by the Engineer-in-charge, should elapse between the completion of columns and walls and the placing of slabs, beams or girders supported by them.
 The rate of deposition shall be such so as to have no objectionable effect on placement of concrete, particularly near the forms and in and around embedded equipment where the rate shall not exceed the limit placed by the Engineer-in-charge.
 The contractor shall be entitled to no additional payments over the tendered rates by reasons of any such limitations on the placing of concrete.
- 21.25 **CONSOLIDATION: -**
- i Consolidation of newly placed concrete shall ordinarily be done with internal vibrators. The equipment for vibrations should have adequate power and shall be of high frequency, rugged and reliable. Operators should be experienced, competent dependable and energetic. Ample standby units and parts as well as systematic servicing should be provided. Vibrators should not be used to cause concrete to move more than a short distance laterally, otherwise fine material runs ahead and separates from the coarse aggregate.
 - ii Re-vibration shall be resorted to only after specific instructions are given by the Engineer-in-charge.
 - iii Where vibrations is used to full advantage of consolidation or newly placed concrete, no supplementary roddings or other working of concrete is necessary. At corners, obstructions, block outs, locations with congested reinforcement, special care shall be taken to attend to these places with ample, properly applied additional vibration or rodding as the case may be.
 - iv Succeeding layers of concrete shall not be placed until the previously placed layer is thoroughly compacted as lift, the coarse particles of the aggregate in the surface shall be embedded while the concrete is being vibrated but the surfaces left with the desired degree of roughness. Disturbance of the surface concrete at construction joint during early stages of hardening shall be avoided. Necessary traffic on new concrete shall be on timber walkways constructed so as not to cause injury to the concrete.
 - v When smooth surfaces are required, for all surfaces, which will be permanently exposed to the weather, and for all surfaces next to embedded metal work around which it is desired to prevent leakage, the adjacent concrete shall be properly vibrated, spaded or tamped. For formed concrete surfaces to be exposed to high velocities of water, special precautions shall be taken to prevent or to minimize surface pitting without resorting to cover manipulation of the concrete.
- 21.26 **REMOVAL OF DEFECTIVE CONCRETE: -**
 Concrete which is not placed and compacted in accordance with these specifications and is found to have lower strength, density etc., than specified, as determined from test samples or core samples, shall be removed and replaced by the contractor at his cost. The entire cost of removing and replacing such rejected concrete shall be borne by the contractor including the cost of all materials required in the replacement. Cost of cement for rejected concrete shall be recovered from the contractor.
- 21.27 **REMOVAL OF FORMS: -**
 The length of time that the forms should remain in place shall be as per relevant codal

provision or as decided by the Engineer-in-charge, with reference to weather conditions, shape and position of the structure or structural members and the nature and amount of dead and live loads. The following minimum intervals of time shall, generally be allowed between placing concrete and stripping of forms but the period shall be increased in case of wet weather and also at the option of the Engineer-in-charge.

For normal Portland cement: -

i	Beams side walls, columns (unloaded)	3 days
ii	Slabs and arches (props left under)	4 days
iii	Props to slabs and arches	10 days
iv	Beams soffits (props left under)	8 days
v	Props beams	21 days
vi	Mass concrete	2 days

These minimum periods, are by experience known to be safe and no claims shall be entertained against the project authority for damage caused owing to the periods not being sufficient. The contractor, may where he so desires, extend the above to longer intervals. This shall not, however, constitute any reason for any claim or extension of time.

If the contractor desires to remove the forms earlier than the period stated above by addition of cement and/or suitable admixtures in the concrete, so as to gain early strength without affecting long term strength, the question will be examined by the Engineer-in-charge in each case and his decision in the matter shall be final and binding. The cost of all such additions and admixtures shall be on contractor's account.

In no case should forms be removed until there is assurance that removal can be accomplished without dipping, or defacing the concrete surface. Further more heavy live loads should not be permitted until after the concrete has reached its design strength. The exact period shall be fixed by the Engineer-in-charge and shall be binding on the contractor. The forms should be removed with great caution and without jarring the structure or throwing heavy forms upon the floor. In order to achieve this and wedges and clamps shall be used whenever practicable instead of nails.

In order to avoid excessive stress in the concrete that might result from dwelling of the forms, wood forms for wall openings shall be loosened as soon as this can be accomplished without damage to the concrete. Forms for the openings shall be constructed so as to facilitate such loosening.

The contractor shall be solely responsible for any damage that may be caused by negligence, lack of proper precautions etc. in the matter of removal of forms and shall make the same good at his own cost to the satisfaction of the Engineer-in-charge.

21.28 REPAIR OF CONCRETE: -

Repairs of concrete shall be performed by skilled workmen and in the presence of the Engineer-in-charge or his responsible representative. The contractor shall correct all imperfection on the concrete surfaces as necessary to produce surfaces that shall conform to the required standards. All materials procedures and operations used in the repair of concrete shall be subject to approval by the Engineer-in-charge.

Surfaces of concrete finished against forms shall be smooth and free from projections. Immediately upon the removal of forms and within 24 hours thereof, wherever practicable, all unsightly re-digest or fins shall be removed and any local bulging on exposed surfaces shall be remedied by tooling and rubbing. All holes left by the removal of fasteners from the tie rods, shall after being reamed with a toothed reamer, be neatly filled with dry patching mortar.

All honey-combed, porous, fractured or otherwise defective concrete and surface concrete in which, in the opinion of the Engineer-in-charge additions, are required to bring it to the prescribed lines shall be removed by chipping concrete. The chipped openings shall be sharp edge and keyed, and shall be filled to the required lines with fresh concrete or as found suitable.

Where concrete is used for filling, so mentioned above, the defective concrete is removed and good concrete exposed but in no case less than 100mm (4") in depth and the concrete will be reinforced if and as directed by the Engineer-in-charge. Concrete filling shall also be used, for all holes passing entirely through concrete sections.

Dry patching mortar shall consist of one part of cement to 2 parts of sand by volume and just enough water so that the mortar as used will stick together on being molded into a ball by slight pressure of the hands and will not free water when so pressed but will leave the hands damp. The mortar shall be fresh when placed, and any mortar that is not used within 30 minutes, after preparation shall be removed at the contractor's cost.

The mortar shall be placed in layers not more than 25mm (1") thickness after being compacted and each layer shall be thoroughly tamped to the satisfaction of the Engineer-in-charge. Each layer except the last shall be roughened thoroughly to provide an effective bond with the succeeding layers. The last of finishing layer shall be smoothed to form a surface continuous with the surrounding concrete. Patching mortar shall be used for filling behind reinforcement for filling holes that extend completely through a concrete section. Guniting shall be used for holes too wide for dry patch mortar filling and too shallow for concrete filling.

All patches shall be bonded thoroughly to the surface of the chipped openings and shall be sound and free from shrinkage cracks and trummy areas.

21.29 CURING AND PROTECTIONS: -

All concrete shall be protected against injury until final acceptance. Exposed finished surfaces of concrete shall be protected from the direct rays of the sun for at least 72 hours after placement. Fresh exposed concrete shall also be protected from the action of the rains flowing water and mechanical injury. No fire shall be permitted in direct contact with concrete at any time. Concrete in which Portland cement is used shall be kept continuously moist for not less than 14 days for normal concrete and 21 days for concrete containing pozzolonas by covering with water saturated materials or a system of perforated pipes mechanical sprinklers or porous hose or by any other approved method. Curing period where special cement may be used shall be specified by the Engineer-in-charge. Construction joints shall be cured in the same way as the other concrete and shall also if practicable be kept moist for at least 72 hours prior to the placing of additional concrete upon the joint. Horizontal surfaces shall be cured by sprinkling water or by covering with damp sand or may be cured by the use of wet quilts or mutts, which will satisfactorily supply the required curing water. If damp sand or quilt is used for curing, it shall later be completely removed. The time of applying damp sand shall be specified by the Engineer-in-charge before which curing will be carried out by other approved methods.

The methods of keeping formed concrete surface moist shall be continuous, sprinkling or spraying of water as may necessary to prevent any portion of the surface from drying the specified period.

The water and other methods of curing shall be so handled as not to stain concrete surfaces, which shall be exposed.

The actual methods of curing adopted shall be subject to the approval of the Engineer-in-charge. The contractor shall have on hand and ready to install before actual concrete placement is started, all equipment needed for adequate curing and protection at all locations of concrete placement.

21.30 In limited areas and for special purposes the use of an approved and properly applied compound may be permitted at the discretion of the Engineer-in-charge to restrict the evaporation of the mixing water. Such curing compound shall be of the surface membrane type, which will thoroughly seal the surface. Curing compound shall not be used on joints where bonding is required.

The curing compound shall be used as directed by the Engineer-in-charge. The cost of curing compound and all operations involved in its use shall be on contractors account.

21.31 Finished concrete surface shall be protected from stains and surfaces or edges likely to be injured during the construction period shall be kept properly protected by leading forms in place or erecting protective covering to the satisfaction of the Engineer-in-charge.

21.32 In case the curing operations are inadequate or unsatisfactory, the Engineer-in-charge shall be entitled to take such steps as he may deem necessary to make good to deficiencies and defects at the contractor's risk and cost.

21.33 DAMAGED OR DEFECTIVE CONCRETE: -

Concrete damaged from any cause and any concrete which shall be found defective by reason of the contractor's operations at any time before the completion and final acceptance of the

work shall if and where he directed be removed and replaced by the contractor with acceptable concrete as directed by the Engineer-in-charge and all the risk and cost of such operations including the cost of such removed concrete shall be borne by the contractor.

Record of Concreting Operations

A systematic joint record in the form as approved by the Engineer-in-charge shall be maintained to record the details regarding use of cement, number of units and location in which concrete or mortar is used etc. This record shall be signed by the Engineer-in-charge or his authorised representative at the site in token of having scrutinised and verified the correctness of the entries made in the joint record. If the contractor fails to scrutinize and verify the entries and sign, the joint record as scrutinised, the entries verified and signed by the Engineer-in-charge or his representative shall be taken as final and binding on the contractor.

21.34 MEASUREMENTS AND PAYMENT: -

Measurement and payment shall be made on the basis of the actual volume of the concrete placed but limited to the quantity upto the payment line indicated in drawings. No deduction shall be made for the space occupied by reinforcement and other metal work, electric conduit lines etc. The quantities of all holes and passages and embedded parts greater than 0.05 Sqm in cross-section shall however be deducted from the total quantity to arrive at the concrete work for payment. *The Over Break / Cavity due to contractors fault formed beyond the Pay Line shall be filled up by the contractor with back fill concrete and no payment for such extra concrete will be made. In case of "Geological Overbreak" the concreting will be paid at the tendered rate.*

No payment will, however, be made for embedding fixtures or providing other installations, electric conduits etc. All labour materials, plants, etc., involved in providing cement slurry and mortar on rock surface and construction joints shall be deemed to be included in the unit rate to be paid for concrete.

21.35 TESTS: -

21.35.1 The Contractor shall set up at his cost a fully equipped concrete testing laboratory, where facilities and equipment for concrete mix design, cube testing, setting time of cement etc. are available.

21.35.2 Concrete samples and cement samples shall be tested in this laboratory as and when required at no extra cost in the presence of Engineer –in – charge or his authorized representative at such frequent intervals and as such specimens of work as stipulated by the engineer – in – charge. The results of such tests should be made available to the Engineer – in – charge as and when done. However, if the contractor fails to get the above tests done at his cost, the engineer-in-charge may order to get these tests done at Rly. laboratory or any other approved laboratory at Contractor's cost and recover the cost including supervision and incidental charges from contractor's on account bills.

21.35.3 Test cubes required as per the code shall be manufactured and supplied free of cost by the contractor and shall submit a mix design for verification and approval before the work is taken up.

21.35.4 The contractor shall provide all necessary facilities materials and labour for these tests as the Engineer-in-charge may consider necessary for which no separate payment shall be made.

22.0 REINFORCEMENTS: -

22.1 The Contractor shall supply the reinforcing steel rates for which will be paid as per Schedule of Rates. Steel reinforcement bars shall be placed in the concrete wherever shown in the drawings or where directed by the Engineer-in-charge.

22.2 If more than one grade of reinforcing bar is furnished, the contractor shall take proper precautions satisfactory to the Engineer-in-charge to obviate the use of wrong grade or reinforcing bars in any part of the work. For any mistakes, the contractors shall be solely responsible and shall make good mistake at his own risk and cost.

22.3 Before steel reinforcement is placed in position the surface of the reinforcement shall be cleaned of rust, scale, dirt, grease or other objectionable foreign substances. Every flaky rust all mill scale that can be removed by firm rubbing with burlap or equivalent treatment is considered objectionable. In storing bars of the same size, length, shape and grade shall be

- assembled in racks and marked distinctively.
- 22.4 Before the reinforcement bars are fixed in position, it shall be verified that they are of the specified sizes, cut and bent in accordance with the drawings and specifications. They shall be accurately placed and secured in position by means of concrete blocks, metallic chairs, hangers, spacers of other suitable approved devices at sufficiently close intervals, so that they will not either sag between support or be displaced during the placing of the concrete or by any operation on the work.
Special care shall be exercised to prevent any disturbance, which may be caused to the reinforcement that has already been placed in position. The reinforcement after being placed in position shall be maintained in a clean condition until it is completely embedded in concrete.
- 22.5 Metal reinforcement shall not be straightened or bent in a manner that will injure or weaken the materials; bars with kinks or bends not shown on the plans shall not be used. Bars shall be bent cold to the shape and dimensions shown in the drawing or as directed using a bar bender operated by hand or power to attain the proper radius of bends as per relevant codal provisions.
- 22.6 Heating of reinforcement bars to facilitate bending shall not be used without prior approval of the Engineer –in-charge.
- 22.7 The longitudinal bars shall be straight and fixed parallel to each other and to the sides of the form as shown or directed. The ties links and stirrups connected to the bars shall be neatly drawn so that the bars are properly braced. The inside of their curved parts shall be in actual contact with the bars around which they are needed to fix and their position shall be exactly as shown in the drawings or directed by the Engineer-in-charge.
- 22.8 Wire for tying reinforcement shall be of soft annealed steel of approved quality. Metal bars supports and spacers should not be placed in concrete in intimate proximity with each other nor be joined by a conductor especially in the continued presence of moisture, unless it is known that no galvanic action will result.
- 22.9 Reinforcement may be fixed in position by means of another rods or supporting and hanger rods as approved by the Engineer-in-charge. In difficult locations, tack welding of bars at isolated spots may be permitted to keep these bars in position.
- 22.10 Bar splices as indicated in the drawings will be used, unless modifications therein are approved by the Engineer-in-charge. Splices in points of maximum stress shall, however, be avoided. Splices in adjacent bars should be staggered as directed by the Engineer-in-charge. Lap length of bars shall be as specified in the relevant I.S. Code. This length may be changed by the Engineer-in-charge in special locations.
- 22.11 Sufficient concrete coverage as indicated in the drawings, should be provided to protect reinforcement from corrosion. All protruding bars from concrete or masonry to which other bars are to be attached and which will be exposed to action of the weather for an indefinite period should be protected from rusting by a thin coat of neat cement grout. Accurate record shall be kept at all the times of the number, size lengths and weights, of bars placed in position for different parts of the work.
- 22.12 PAYMENT: -
- 22.12.1 Before starting concreting, the contractor shall make certain that the measurement of the reinforcements placed in has been recorded and that the Engineer-in-charge has certified to the correctness of reinforcement used. Failure to do so might mean no payment or payment (full or partial or Nil) at the discretion of the Engineer-in-charge for the reinforcement concerned.
- 22.12.2 Unit weights to be used in determining weight of steel computed shall be as per standard weight of the bar / section given in I.S Codes. However in case of any variation found at the time of use actual sample weight shall be taken and certified by the Engineer to be used in determining the steel consumed on work.
- 22.13 WELDING OF REINFORCEMENT BARS: -
- 22.13.1 Wherever the Engineer-in-charge shall so direct or wherever the contractor proposes to adopt welding for joints in reinforcement in place of lapping, the contractor shall prepare at least three samples of butt welds as directed by Engineer-in-charge. These specimens shall be got tested in a recognized laboratory by the Engineer-in-charge. If the results are satisfactory the Engineer-in-charge may allow welding in place of lap joints. The decision

- of the Engineer-in-charge in this regard will be final and binding on the contractor. The joints shall be butt-welded by electric arc method. The ends of the bars shall be cleaned of all loose scale, rust, grease or other foreign materials and all welding of reinforcement bars used in reinforced concrete construction or as directed by the engineer-in-charge.
- 22.13.2 Weld will be considered unsatisfactory if it fails to sustain tensile stress of at least 90% of the tensile strength of the bar in which the weld has been made. The contractor shall make all necessary arrangements at his cost for carrying out the tests as directed by the Engineer-in-charge.
- 23.1 Anchors in rocks, wherever indicated on the drawings or directed by the Engineer-in-charge, holes shall be drilled into rock to receive anchors for anchoring to the rock, concrete or masonry structures or parts, thereof. The type of dimensions of the anchor bars, locations, diameter and depths of anchor bar hole shall be as shown in the drawings or as directed. The diameter of each anchor bar hole shall be 38mm (1-1/2") i.e. a hole drilled by an ordinary jackhammer used for excavation etc. The rate quoted in the Schedule of Rates shall be for this diameter of the holes. In special locations, it may be necessary to provide holes of larger diameter and the rate of drilling will be worked out in accordance with relevant specifications for drilling. Anchors to be thoroughly cleaned before being placed in the drill holes. Wherever practicable anchors shall be installed before the concrete is placed except when otherwise provided for or permitted. Drilling for the installation of anchors in the concrete shall not be carried out except with prior approval of the Engineer-in-charge. Where the installation of anchors prior to placing the concrete is practicable satisfactorily formed openings shall be provided or holes drilled for the purpose and the anchors grouted in the openings.
- 23.2 The cost of fixing anchors in concrete either at the time of concreting or later on shall be included in the rate of concrete accepted for the items concerned. The cost of drilling holes in concrete where directed by the Engineer-in-charge shall, however be paid at the same rate as quoted for corresponding items of drilling holes in rock.
- 24.0 **RANDOM RUBBLE MASONRY (USING BOULDERS) HAMMER DRESSED: -**
Random Rubble Masonry (using boulders) will be provided, in the toe walls, bunds for pitching panel in training works, guide bunds, breast walls and catch water drains etc. or as may be directed by the Engineer. This masonry will be provided according to Chapter-IV (B) (iv) of Northeast Frontier IFCD, Standard Specification 1993. (Materials and Works). River boulders and large pebbles will be allowed to be used in this masonry.
- 25.0 **TOOLS AND PLANTS AND TRANSPORT: -**
- 25.1 The contractor will be entirely responsible to arrange all necessary machinery, tools and plants and their spare parts required for efficient and methodical execution of the work and transport them to the site of work. Delay in procurement of such items due to their non-availability on account of import difficulties or any other cause whatsoever will not be taken as excuse for slow or non-performance of the work.
- 26.0 **PUBLISHING ARTICLES ETC: -**
The tenderer/contractor or his/their consultant shall not publish any paper / article / booklet or any sketch/photograph of any work connected with the items under this contract without written permission of GM/CON/NF IFCD.

ADDITIONAL SPECIAL CONDITIONS OF CONTRACT
(SAFETY RULES)

- 1.1 Suitable scaffolds should be provided for workmen for all works that cannot be safely done from the ground or from solid construction except for such short periods work as can be done safely from ladders. When a ladder is used an extra labour shall be engaged for holding the ladder and if the ladder is used for carrying materials as well, suitable foot holds and handholds shall be given an inclination not steeper than 1 to 4 (1 Horizontal to 4 Vertical).
- 1.2 Scaffolding or staging more than 3.5 metres above the ground or floor, swung or suspended from an overhead support or erected with stationery support shall have a guard rail properly attached, bolted, bracketed and otherwise secured at least 1 metre high above the floor or platform of such scaffolding or staging and extending along the entire length thereof with only such opening as may be necessary for the delivery of materials. Such scaffolding or staging shall be fastened as to prevent it from swaying from the building or structure.
- 1.3 Working platform gangways and stairways should be so constructed that they should not sway unduly or unequally and where the height of the platform or the gangway or the stairway is more than 3.5 metres above ground level or floor level they should be closely boarded, should have adequate width and should be suitably fastened as described in the para above.
- 1.4 Safe means of access shall be provided to all working platform and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 10 metres in length while the width between side rails in swung ladder shall in no case be less than 300 mm. for ladder upto and including 3.5 metres in length.
- 1.4.1 For longer ladders this width should be increased by at least 20 mm. each additional metre of length. Uniform steps spacing shall not exceed 300 mm. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites of work shall be so stacked or placed so as to cause danger or inconvenience to any persons or the public. The Contractor shall provide all necessary fencing and lights to protect the public from accident and shall be bound to bear the expenses of defenses of every suit, action or other proceedings at law that may be brought by any persons for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may be awarded in any such suit, action or proceedings to any such person shall be paid by the Contractor to compromise any claim by any such person. In case the Contractor fails to settle such problems, the IFCD Administration will make payments arising on account of the conditions given above to the concerned parties and recover the same from Contractor's dues without any delay. Contractor will not have any claim on this account at any stage.
- 1.5 Demolition: Before any demolition work is commenced and also during the process of work:
 - a) All roads and open area adjacent to the work site shall either be closed or suitably protected.
 - b) No electric cable or apparatus which is liable to be a source of danger over a cable or apparatus used by the operator shall remain electrically charged.
 - C) All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosives or flooding. No floor, roof or other part of the building shall be so over loaded with debris or materials as to render it unsafe.
- 1.6 All necessary personal safety equipment as considered adequate by the Engineer in Charge should be kept available for the use of the persons employed in the site and maintained in a condition suitable for immediate use and the contractor should take adequate steps to ensure proper use of equipment by these concerned.
 - a) Workers employed on mixing asphaltic materials cement and mortar shall be provided with protective goggles.
 - b) Those engaged in white washing and mixing or stacking of cement bags or any materials which are injurious to the eye shall be provided with protective goggles.
 - c) Those engaged in welding works shall be provided with welder's protective eye sight lids.
 - d) Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.
- 1.7 When the work is done near any place where there is risk of drowning, all necessary equipment should be provided and kept ready for use and all necessary steps taken for prompt

- rescue of any persons in danger and adequate provision should be made for prompt first aid treatment of all injuries like to be sustained during the course of the work.
- 1.8 Use of hoisting machines and tackles including their attachment anchorage and supports shall confirm to the following standards of condition.
- a) i) These shall be of good mechanical construction, sound materials and adequate strength and free from patent defects and shall be kept in good repair and in good working order.
 - ii) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength and free from patent defects.
 - b) Every crane driver or hoisting appliances operator shall be properly qualified and no person under the age of 21 years should be in-charge of any hoisting machine including any scaffolding.
 - c) In case of every hoisting machine and every cable ring, hook, shackle, swivel and pulley block used in hoisting or as means of suspension safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of hoisting machine having a variable safe working load of the conditions under which it is applicable shall be clearly indicated. No part of any machinery or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.
 - d) In case of departmental machine, the safe working load shall be notified by the Technological Engineer-in-Charge. As regards Contractor's machines, the contractors shall notify the safe working load of machine to the Engineer-in-charge whenever he brings any machinery to site of work, get it verified by the Engineer concerned.
- 1.9 Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safe guards. Hoisting appliances should be provided with such means as will reduce to the minimum the risk of accidental decent of the load; adequate precautions should be taken to reduce the minimum the risk of any part of a suspended load becoming accidentally displaced. When workers are employed on Electrical installations which are already energized, insulating mats wearing apparel, such as gloves, sleeves and both as may be necessary should be provided. The workers should not wear any rings, watches and carry keys or other materials, which are good conductors of electricity.
- 1.10 All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate warning facilities should be provided at or near places of work.
- 1.11 These safety provisions should be brought to the notice of all concerned by display on a notice board, at a prominent place at the work spot. The persons responsible for compliance of the safety code shall be named therein by the Contractor.
- 1.12 To ensure effective endorsement of the rules and regulations relating to safety precautions, the arrangements made by the contractor shall be open to inspection by the Labour Officer, Engineer-in-charge of the Department or their representative.
- 1.13 Notwithstanding the above clause from 7.1 to 7.12, there is nothing in these to exempt the contractor from the operations of any other act or rule in force in the Republic of India.

QUALITY CONTROL

1 GENERAL

All materials incorporated, all methods adopted and all works performed shall be strictly in accordance with the requirement of these technical specifications. The contractor shall maintain an approved quality assurance programme and have necessary procedure manuals and documentation, various provision in this section are only indicative and not exhaustive.

1.1 Field Laboratory**(i) Scope**

The work covers the provision and maintenance of an adequately equipped field laboratory as required for site control on the quality of materials and the works. The lab should be manned, managed & maintained by suitable qualified personnel from the contractor.

(ii) Description**(iii)**

The contractor shall arrange to provide fully furnished and adequately equipped field laboratory. The field laboratory shall preferably be located adjacent to the site office of the Engineer and provided with amenities like water supply, electric supply etc.

Laboratory Equipment

The following items of laboratory equipment shall be provided.

General

i	Oven-Electrically operated, thermostatically controlled, range up to 200 C sensitivity 1 C	1 No.
ii.	Platform balance 300kg capacity	1 No.
iii.	Balance 20kg capacity self-indicating type	1 No.
iv.	Electronic Balance 5kg capacity accuracy 0.5 gm	2 No.
v.	Water-bath electrically operated and thermostatically Controlled with adjustable shovels, sensitivity 1 C.	1 No.
vi.	Thermometers: Mercury-in-glass thermometer range 0 to 250 C	2 No.
vii.	Kerosene or gas stove or electric hot plate	1 No.
viii.	Glass wares, spatulas, wire gauzes, steel scales, measuring tape, casseroles, karahis, enameled trays of assorted sizes, pestle-mortar, porcelain dishes, gunny bags, plastic bags, chemicals, digging tools like pickaxes, shovels etc	As required
ix.	Set of IS sieves with lid and pan : 450mm diameter, 63mm, 53mm, 37.5mm, 26.5mm, 13.2mm, 9.5mm, 6.7mm and 4.75mm size	1 set
	200mm diameter 2.36mm, 2.0mm, 1.18mm, 900micron, 600micron, 425micron, 300micron, 150micron and 75micron	1 set
x.	Water testing kit	1 set
xi.	First aid box	1 set

For cement and cement concrete

i.	Vicat apparatus for testing times	1 No.
ii.	Slump testing apparatus	4 set
iii.	Compression strength testing machine of 100 tonne capacity	1 No.
iv.	Needle Vibrator	1 No.
v.	Concrete cube moulds	12 Nos. (for each site)

The contractor shall set up a laboratory at a location approved by Engineer and equip the same with adequate equipment and personnel in order to carry out all required tests and quality control work as per standard specifications and/ or as otherwise directed by Engineer. Internal layout of the laboratory and list of equipment shall be got approved by Engineer in advance. In case same contractor is doing work in more than one package,

more number of laboratories may be required to be provided as directed by Engineer.

The contractor's laboratory should be manned by a qualified quality control Engineer assisted by experienced technicians and the set up should be got approved by Engineer. The contractor shall carry out quality control test on materials and work at the frequency stipulated in sub clauses of this section. In the absence of clear indications about method and/or frequency of tests for any item in different codes/ standards or as given in these specifications, the direction of Engineer shall be followed.

For satisfying himself about quality of materials and work, quality control tests will also be conducted by Engineer (by himself, his quality control units or any other agencies deemed for client or Engineer), generally at the frequency set forth here in under. Additional tests may also be conducted where, in the opinion of Engineer, need for such test exists.

The contractor shall provide necessary co-operation and assistance in obtaining samples for test and carrying out field tests as required by Engineer from time to time. This may include provision of labour, attendance, assistance in packing and dispatching and any other assistance considered necessary in connection with tests. Alternatively, it may require inspectors to carry necessary instruments to site and carrying out tests at site. The contractor will arrange for such visits and tests at no extra cost to employer.

The contractor shall carry out modifications in the procedure of work, if found necessary, as directed by Engineer during inspection. Works falling short of quality shall be rectified or replaced. If necessary by the contractor at his own cost as directed by Engineer.

The cost of setting up and operating laboratory including building with services, essential supplies like water, electricity, sanitary arrangements and their maintenance and cost of all equipments, tools, materials, labour and incidentals to perform tests and other operations of quality control according to specifications shall be deemed to be incidental to work and no extra payment shall be made therefore. If, however, there is a separate item in the bill of quantities for setting up of a laboratory and installing testing equipment, such work shall be paid for separately.

Source of materials for embankment construction shall be arranged by the contractor and got approved by Engineer. The responsibility for arranging and obtaining land for borrowing or exploitation in any other way shall rest with the contractor, who shall ensure smooth and uninterrupted supply of materials for the quantity required in construction during the construction period.

Similarly, supply of aggregates for construction of bridges and various concrete works and stone of large sizes for protection work, etc. shall be from quarries approved by Engineer. Bricks for building works shall be obtained from approved kilns and samples of supply frequently tested for ensuring uniform good quality. Supply of sand should be from approved river beds or crushed sand from approved quarries.

Steel for structural steel work and reinforced concrete shall be obtained directly from the TATA or SAIL plants or VSPL or other approved suppliers or their local stock yards. Supply of high tensile steel, should be only from approved suppliers for which Engineer's prior approval should be obtained. Responsibility for arranging uninterrupted supply of good quality materials from source shall be that of the contractor.

For testing of samples of soil, soil mix, granular material mix, bituminous mix, aggregates, cores, tiles, stone, bricks, timber, paints, admixtures, water and other building materials, samples in the required quantities and form shall be supplied to Engineer by the

contractor at his own cost.

For cement, bitumen, mild steel, castings, pipes, bearings and other similar materials for which essential tests are to be carried out at the manufacturer's plants or at laboratories other than the site laboratory, the cost of samples, sampling, testing and the furnishing of test certificates shall be borne by the contractor. Contractor shall also furnish test certificates to Engineer.

For testing cement concrete works at site during construction, arrangements for supply of samples, sampling, testing and supply of test results shall be made by the contractor as per frequency and number of tests specified in the Handbook of quality control for construction of Roads and Runways (IRC-Special Publication No.11 & IRS Concrete Bridge & Structure Code) and relevant IS Codes or relevant clauses of these specifications. The cost for this shall be borne by the contractor as included in rates quoted for the work.

The method of sampling and testing of materials shall be as required by the Hand book of quality control for Construction of Road and Runways (IRC special publication No.11), the specifications for road and bridge works of the Ministry of Surface transport (Road Wing) and IRS steel bridges and concrete bridge Codes of ASTM or DIN standard. Where they are contradicting the provisions of IRS, IRC codes or IS Codes shall prevail. Where they are silent or are not specific sound engineering practices shall be adopted as approved by Engineer and his decision will be final and binding on the contractor.

For the work of embankment (including filling and back filling), sub grade and pavement construction of subsequent layer of same or other material over the finished layer shall be done after due tests and obtaining permission from Engineer. Similar permission from Engineer shall be obtained in respect of other items of works prior to proceeding with the next stage of construction as stipulated in different codes/ standards. These specifications are as required by Engineer.

DEFECTIVE MATERIALS

All materials which Engineer or his representative has determined as not conforming to requirement of the contract will be rejected, whether in place or not. They shall be removed immediately from site as directed. Materials, which have been found defective and which have been subsequently corrected shall not be used in the work unless approval is accorded in writing by Engineer. Upon failure of the contractor to comply with any order of Engineer/ his representative given under this clause. Engineer/ his representative shall have authority to cause the removal of rejected material and to recover the removal cost thereof from any money due to the contractor.

IMPORTED MATERIALS

At the time of submission of tenders, the contractor shall furnish a list of materials/ finished products manufactured, produced or fabricated outside India, which he proposes to use in the work. The contractor shall not be entitled to extension of time for delays caused in supply due to acts or events occurring outside India and it shall be the contractor's responsibility to make timely delivery to the job site of all such materials obtained from abroad.

Materials imported from outside India shall conform to relevant specifications and tests indicated in the specifications or standards referred to in the contracts and approved by Engineer. Tenderers should list such materials in their tenders.

In case where materials finished products are not covered by specifications in the

contract, the details of specifications proposed to be followed and the testing procedure as well as laboratories/ establishments where tests are to be carried out shall be specifically brought out in the offer and agreed to by Engineer.

The contractor shall furnish a certificate of compliance of the tests carried out to Engineer. In addition, certified mill test reports clearly identifying the lots of materials shall be furnished at the contractor's cost.

The contractor shall engage a quality graduate Civil Engineer for supervision of the work and quality control at site failing which a penalty of Rs.10,000.00 (Ten thousand only) per month will be recovered from on account bills payable to him).

SPECIAL CONDITIONS OF CONTRACT
QUALITY CONTROL FOR CONCRETE

28 days strength of various grades of concrete referred in various schedules shall be as under.

Test during actual execution of Work (Works Tests) :

Minimum frequency of samples of concrete and criteria for acceptance shall be as per Table given below :

Minimum No. of specimens taken from same shift work		Minimum frequency		Criteria for acceptance
7 days Compressive strength an optional test if desired	28 days compressive strength test	Qty. of concrete in the Work M3		
3	3	1-50 51 & above	1. 1 plus one sample for each additional 50 M3 or part there of Note : At least one sample shall be taken from each shift or as directed by Engineer. For each sample 6 cubes shall be cast, 3 for testing at 7 days & 3 at 28 days.	As per clause 8.7.6 of IRS concrete Bridge Code, 1997, with all up to date correction slips.

1.2 ACCEPTANCE CRITERIA FOR CONCRETE

Acceptance criteria for concrete has been stipulated vide clause 6 & 15 of IS-456/2000(CODE OF PRACTICE FOR PLAIN & REINFORCED CONCRETE).Therefore for all concreting works, the acceptance criteria should be followed as per IS-456/2000

Form of Bid
Financial (Section 6)

Description of the work : TMP, L-Earth Works (SH: Construction of RCC Tunnel from RD 9,380m to 10,220m for Water Transmission System from Thoubal Dam to Chingkheiching) – Package - 2

Bid No.: ACE-II/IFC/7-50/2013-14/137 Dt. 30/08/2014

To : The Addl. Chief Engineer-II,
Irrigation & Flood Control Department, Manipur.

Address : *P.W.D. Complex, Khoyathong, Imphal, Manipur – 795001.*

Sir,

We offer to execute the works described above and remedy any defect therein in conformity with the condition of contract, specifications, drawings, bill of quantities and addenda for the sum(s) of

-
1. We undertake if our bid is accepted to commence the work as soon as is reasonably possible after the receipt of the Engineer's Notice to commence, and to complete the whole of the work(s) comprised in the contract within the time stated in the document.
 2. We agree to abide by this bid for the period of 120 (one hundred twenty) Days from the date fixed for receiving the same and it shall remain binding upon us and may be extended at any time before the expiration of that period.
 3. Unless and until a formal agreement is prepared and executed this bid together with your written acceptance thereof shall constitute a binding contract between us.
 4. We understand that you are not bound to accept the lowest or any tender you may receive.
 5. Your Agency and its authorized representatives are hereby authorized to conduct any inquiries or investigations to verify the statements, documents, and information submitted in connection with this application, and to seek clarification from our bankers and client regarding any, financial and technical aspects. This Letter of Application will also serve as authorization to any individual or authorized representative of any institution referred to in the supporting information, to provide such information deemed necessary and requested by yourselves to verify statements and information provided in this application, or with regard to the resources experience, and competence of the Applicant.
 6. We accept the appointment of Shri. NA as the Dispute Review Expert.

Or

7. We do not accept the appointment of Shri. NA. as the Dispute Review Expert and propose instead that Shri to be appointed as Dispute Review Expert, whose Bio Data is attached.

Dated this.....day of 20

Signature..... in the capacity of

..... Name.

Duly authorized to sign bids for an on behalf of

..... (in block capitals or typed)

(in block capitals or typed)

Address:-----

Witness:-

Signature :- -----

Name :- -----

Address:-----

Occupation:-----

SECTION 8
SECURITIES AND OTHER FORMS
(to be filled by Bidder/Employer)

ANNEXURE – I

**MODEL FORM OF BANK GUARANTEE BOND
FOR EARNEST MONEY DEPOSIT**

Whereas M/S

.....
(hereinafter called the tenderer) are desirous and prepared to tender for works in accordance with the terms and conditions of Tender No. dated

And whereas we, Bank, agree to give the Tenderer a
Guarantee for the Earnest Money Deposit.

1. Therefore, we hereby affirm that we are Guarantors on behalf of the Tenderer, upto a total of rupees.....(in words).....
and we undertake to pay the
upon his first written demand and without demure any sum within the limit of Rupees
2. We further agree that the guarantee herein contained shall remain in force and effect during the period that would be taken for the acceptance of tender. However, unless a demand or claim under this guarantee is made on us in writing on or before the We shall be discharged from all liabilities under the guarantee thereafter.
3. We undertake not to revoke the guarantee during its currency except with the previous consent of in writing.
4. We lastly undertake not to revoke the guarantee for any change in constitution of the Tenderer or the Bank.

Signature & Seal of Guarantor.

Bank
.....
Address
.....

Date

**MODEL FORM OF BANK GUARANTEE BOND
FOR SECURITY DEPOSIT**

1. In consideration of the Owner/ Governor of Manipur (hereinafter called “the owner” “the Government”) having agreed to exempt (hereinafter called “the said contractor(s)”) from the demand, under the terms and conditions of an Agreement no..... dated made between and for the work..... (hereinafter called “the said agreement”), of security deposit for the due fulfillment by the said contractor(s) of the terms and conditions contained in the said agreement, on production of a Bank guarantee for Rs.....(Rupees) only. We(indicate the name of the Bank) at the request of (contractor(s) do hereby undertake to pay to the Government an amount not exceeding Rs. on demand..
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 Government stating that the amount claimed is 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.
3. We undertake to pay to the Government 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 Government 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 Government certifies that the terms and conditions of the 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 Government that the Government shall have the fullest liberty without our consent and without affecting in any manner our obligations 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 Government 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 or omission on the part of the Government or any indulgence by the Government 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)/supplier(s).
7. We, (indicate the name of the Bank) lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Government in writing.
8. This guarantee shall be valid upto.....unless extended on demand by Government. Notwithstanding anything mentioned above availability against the guarantee is restricted to Rs. (Rupees.only) and unless a claim in writing is lodged with us within six months of the date of expiry or extended date of expiry of this guarantee all our liabilities under this guarantee shall stand discharged.

Dated the day of 2010

For (indicate the name of Bank)

Address

.....

MODEL FORM OF BANK GUARANTEE TO SECURE
ADVANCE MOBILISATION AND T & P ADVANCE

To

The Governor of the State of Manipur.

In consideration of the Governor of the State of Manipur (hereinafter called “the Government” which expression shall unless repugnant to the subject or context include his successor and assigns) having agreed under the terms and conditions of Contract No.

Dated made between* and the Government in connection with the work of “Improvement of Nambul River Front under JnNURM” thereafter called “ the said contract”) to make at the request of the contractor an advance of Rs. for utilizing it for the purpose of payment of mobilisation advance/of payment of cost of plant and machinery of the contract on his furnishing a guarantee acceptable to the Government, we the * Bank Ltd. (hereinafter referred to as “ the said Bank “) a company under the Companies Act, 1956 and having our registered office at do hereby guarantee the due recovery by the Government of the said advance with interest thereon as provided according to the terms and conditions of the contract. We do hereby undertake to pay the amount due and payable under this Guarantee without any demure, merely on a demand from the Government stating that the amount claimed is due to the Government under the said agreement. Any such demand made on the shall be conclusive as regards the amount due and payable by the under this guarantee and the to pay the Government the amount due of payable by the.....

..... so demanded shall be absolute and unconditional notwithstanding any dispute or disputes raised by the Contractor and notwithstanding any legal proceeding pending in any Court or Tribunal relating thereto. However, our liability under this Guarantee shall be restricted to an amount not exceeding Rs.

2. We, Bank Ltd. further agree that the Government shall be sole judge of and as to whether the said contractor has not utilized the said advance or any part thereof for the purpose of the contract and the extent of loss or damage caused to or suffered by the Government on account of the said advance together with interest now being recovered in full and the decision of the Government that the said contractor has not utilized the said advance or any part thereof for the purpose of the contract and as to the amount or amounts of loss or damage caused to or suffered by the Government shall be final and binding on us.

3. We, the said Bank further agree that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said contract and till the said advance with interest has been fully recovered and its claims satisfied or discharged and till certify that the said advance with interest has been fully recovered from the said contractor, and accordingly discharges this Guarantee subject, however, that the Government shall have no claims under this Guarantee after years from the date of completion of the said contract, as the case may be, unless a notice of the claim under this Guarantee has been served on the Bank before the expiry of the said period of years in which case the same shall be enforceable against the Bank notwithstanding the fact that the same is enforced after the expiry of the said period of years.

4. The Government shall have the fullest liberty without affecting in any way the liability of the Bank under this Guarantee or indemnity, from time to time to vary any of the terms and conditions of the said contract or the advance or to extend time of performance by the said contractor or to postpone for any time and from time to time any of the powers exercisable by it against the said contractor and either to enforce or forbear from enforcing any of terms and conditions governing the said contract or the advance or securities available to the Government and the said bank shall not be released from its liability under these presents by any exercise by the Government of the liberty with reference to the matter aforesaid or by reason of time being given to the said contractor or any other forbearance, act or omission on the part of the Government or any indulgence by the Government to the said contractor or of any other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect of so releasing the bank from its such liability.

5. It shall not be necessary for the Government to proceed against the contractor before proceeding against the Bank and the Guarantee herein contained shall be enforceable against the Bank notwithstanding any security which the Government may have obtained or obtain from the contractor shall at the time when proceedings are taken against the Bank hereunder be outstanding or unrealised.

6. We, the said Bank lastly undertake not to revoke this Guarantee during its currency except with the previous consent of the Government in writing and agree that any change in the constitution of the said contractor or the said Bank shall not discharge our liability hereunder.

Dated this Day of 20
.....

For and on behalf of the Bank.

(Name and Designation)

The above Guarantee is accepted by the Governor of the State of Manipur.

For and on behalf of the Governor
of the State of Manipur.

(Name and Designation)

HYPOTHECATION DEED

The indenture made this day.....year its registered office at.....hereinafter called the contractor) on the One Part andhereinafter called the Owner) represented by..... the other Part.

WHEREAS the Parties hereto entered into Contractdatedherein after called contract) for the construction of

NOW THIS DEED WITNESS AS FOLLOWS:

1. In consideration of the advance payment made by the Owner to the Contractor as provided in the Contract, the Contractor hereby hypothecate to the Owner the construction plant and equipment described in the Schedule hereto the intent that the said construction plant and equipment including spare parts and accessories, shall remain and be hypothecated to the owner under the terms of the contract for repayment of the said advance of ~.....(Rupees together with the interest thereon at percent per annum.
2. The Contractor hereby agrees, declares and covenants with the owner
 - (A) That the contractor shall repay to the Owner the said advance of ~together with interest thereon as aforesaid and agrees that the said loan be recovered by the owner by making deduction in the manner provided in Clauseof the General conditions of the contract from the claims made by the contractor against the owner for an interim payment.
 - (B) That so long as amount remains payable to the owner the Plant and equipment described in the schedule hereto are the absolute property of the owner and that the same and each and everyone of them have not been sold, pledged, mortgaged or transferred or in any way committed by the Contractor.
 - (C) That so long as any amount remain payable to the owner by the contractor in respect of the said loan of ~ The contractor shall not sell, pledge, hypothecate, transfer part with or use on any other work in any way commit the plant and equipment described in the schedule hereto.
 - (D) That so long as any amount remain payable to the owner by the contractor in respect of the said advance of ~ the contractor may have the possession of the said plant and equipment in trap, in order to enable him to carry out and execute the said contract.
3. The Contractor hereby covenants with the owner that the property hereby hypothecated 113 free from encumbrances and liens and that they shall keep the properties hereby hypothecated free from all encumbrances.
4. During the continuance of this hypothecation, the Contractor will keep pr open books of accounts of the purchases and make full entry therein of all the dealings and transactions of the purchases and will keep such books and all letters, papers and documents belonging or relating to the purchases at the registered office of the contractor and will at any time, if so required produce the same for the inspection of the Owner and allow him or any person authorised by him to have free access thereto and to take copies and extracts of and from the same.
5. That the Contractor shall at all time during the continuance of the hypothecation and at the expenses of contractor insure and keep insured the plant and equipment thereto hypothecated f0or the full value thereof to the joint names of the contractor and the owner with an insurance company to be approved by the owner against the risk of loss or damage from whatever cause arising of this hypothecation, the contractor shall pay all premia necessary for keeping such insurance in effect. The original receipts for insurance premia paid shall be deposited with the owner the contractor shall assign all his rights, title and interest in the insurance policy to the owner. If the contractor shall fail to effect such insurance as aforesaid to the satisfaction of the

owner or to deliver the policies therefor to the owner, the owner shall be entitled to effect such insurance at the expenses of the contractor in the joint names of the contractor and the owner. The contractor expressly binds that the owner shall be entitled to adjust, settle or compromise any dispute between the insurance company and the insured arising under or in connection with any such policy and such adjustment, settlement or compromise shall be valid and binding on the contractor. The contractor further agrees that the owner shall be entitled to receive all moneys payable under any such policies, to give a valid receipt thereof and to credit the amount so received to the loan account of the contractor and the contractor shall not be entitled to raise any question that a larger sum might or ought to have been received or to dispute his liability for the balance remaining due on such account after such credit.

6. If the Contractor shall commit breach of any of the conditions of these presents or shall abandon the said works before full payment of the advance with interest as in the contract, or if the said advance or any part thereof shall for any reason remain unadjusted under or in pursuance of the contract, the owner may seize and either retain the possession or sell without the intervention of any of the assets hereby hypothecated under Clause-1 aforesaid, either by public auction or any private contract with power to make such conditions respecting titles or evidence of title or as to the payment of the purchase money or otherwise as the owner may think fit and buty the same or any part thereof and to rescind or vary any contract for sale and resale of the same when sold as the purchaser or purchasers shall direct and to apply the proceeds towards repayment of the money which may have become payable by the contractors to the owner including all costs charges and expenses and if any surplus remains thereafter then such surplus shall be paid to the contractor.

7. Without prejudice to any remedy provide by this deed the owner may on a certificate of the Engineer-in-charge which shall be final conclusive and binding on the contractor recover all dues hereunder from any of the sums due to the contractor or to any of his partners, individually or severally, which may be payable to him/.them

BID SECURITY (BANK GURANTEE)

WHEREAS _____ [name of Bidder] (hereinafter Called “the Bidder”) has submitted his Bid dated (date) for the Construction of (Name of Contract hereinafter called “the Bid”).

KNOW ALL PEOPLE by these presents that We
(Name of Bank) of (Name of country) having our registered office at
..... (Hereinafter called ‘the Bank”) are bound unto ____ [name of Employer] (hereinafter called “the Employer”) in the sum of *for which payment well and truly to be made to the said Employer the Bank itself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this Day of, 20..... THE

CONDITIONS of this obligation are:

1. If after Bid opening the Bidder withdraws his bid during the period of Bid validity Specified in the Form of Bid;

Or

2. If the Bidder having been notified to the acceptance of his bid by the Employer during the period of Bid validity

- a) Fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidder, if required: or
- b) Fails or refuses to furnish the Performance Security, in accordance with the instruction to Bidders; or
- c) Does not accept the Correction of the Bid Price pursuant to Clause 27.

We undertake to pay to the Employer up to the above amount upon receipt of his first written demand, without the Employer having to substantiate his demand, provided that in his demand the Employer will note that the amount claimed by him is due to him owing to the occurrence of one or any of the three conditions specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including the date, 45 days after the deadline for Validity of the Bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this guarantee should reach the Bank not later than the above date.

DATE SIGNATURE WITNESS

SEAL

.....
[Signature, name and address)

*The Bidder should insert the amount of the guarantee in words and figures denominated in Indian Rupees
This figure should be the same as shown in Clause 16. of the Instructions to Bidders.

PERFORMANCE BANK GUARANTEE

To

_____ [name of Employer]
_____ [address of Employer]

WHEREAS [Name and address of contractor] (Hereinafter called “the Contractor”) has undertaken, in pursuance of Contract No to execute [Name of contract and brief description of works] (Hereinafter called “the Contract”)

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligation in accordance with the Contract.

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee.

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you on behalf of the Contractor, up to a total of[amount of guarantee] _____ (in words), such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first Written demand and without cavil or argument any sum or sums within the limit of[amount guarantee] as aforesaid without your needing to prove or to show grounds or reasons for our demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed thereunder or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change, addition or modification

This guarantee shall be valid until 28 days from the date of expiry of the Defect Liability Period.

Signature and Seal of the guarantor.....
Name of Bank.....
Address.....
Date.....

*An amount shall be inserted by the Guarantor, representing the percentage the Contract Price specified in the Contract including additional security for unbalanced Bids, if any and denominated in Indian Rupees

Letter of Acceptance
(Letterhead paper of the Employer)

_____ (Date)

To

_____ (Name and address of the Contractor)

Dear Sirs,

This is to notify you that your Bid dated _ _ _ _ _ for execution of the _____ (name of the contract and identification number, as given in the Instructions to Bidders) for the Contract Price of Rupees _____ (_____) (amount in words and figures), as corrected and modified in accordance with the Instructions to Bidders' is hereby accepted.

2. You are hereby requested to furnish Performance Security, in the form detailed in Para 34.1 of ITB for an amount equivalent to Rs _____ within 21 days of the receipt of this letter of acceptance valid up to 28 days from the date of expiry of defects Liability Period i.e. up to _____ and sign the contract, failing which action as stated in Para 34.3 of ITB will be taken.

Yours faithfully,

Authorized Signature
Name and title of Signatory
Name of Agency

**Issue of Notice to proceed with the work
(Letter head of the Employer)**

_____ (Date)

To

_____ (Name and address of the Contractor)

Dear Sirs,

Pursuant to your furnishing the requisite security as stipulated in ITB Clause 34.1 and signing of
the Contract for the construction of _____

_____ at
a Bid Price of Rs. _____.

You are hereby instructed to proceed with the execution of the said works in accordance with the contract documents.

Yours faithfully,

(Signature, name and title of signatory authorized to sign on behalf of Employer)

Agreement Form

This agreement, made between Additional Chief Engineer-II, IFC Department, Manipur, Khuyathong PWD Complex, Imphal (name and address of Employer) [hereinafter called "the Employer] and ----- (name and address of contractor) hereinafter called "the Contractor" on the other part.

Whereas the Employer is desirous that the Contractor execute -----
----- (name and identification number of Contract) (hereinafter called "the Works") and the Employer has accepted the Bid by the Contractor for the execution and completion of such Works and the remedying of any defects therein----- only.

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement, words and expression shall have the same meanings as are respectively assigned to them in the conditions of contract hereinafter referred to and they shall be deemed to form and be read and construed as part of this Agreement.
2. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all aspects with the provisions of the contract.
3. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of the defects wherein Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.
4. The following documents shall be deemed to form and be read and construed as part of this Agreement viz.
 - i) Letter of Acceptance
 - ii) Notice to proceed with the works;
 - iii) Contractor's Bid
 - iv) Condition of Contract General and Special v) Contract Data
 - vi) Additional condition vii) Drawings
 - viii) Bill of Quantities and
 - ix) Any other documents listed in the Contract Data as forming part of the Contract.

In witnessed whereof the parties there to have caused this Agreement to be executed the day and year first before written.

The Common Seal of hereunto affixed in the presence of:

Signed, Sealed and Delivered by the said _____

in the presence of: _____

Binding Signature of Employer _____

Binding Signature of Contractor _____

INSTRUCTIONS FOR APPLICANTS

General Information

All individual firms and each partner of a joint venture applying for the Bid are requested to complete all the information in this form. No clauses or columns should be left blank unless instructed so or where separate sheets are required (in which case the appended sheet should be clearly indicated in the relevant column or clause). Where a specific clause does not pertain to the particular work than the word “Does not Arise” should be inserted. Additional sheets where required are to be appended and additional information where required may be also appended as annexure. Nationality information is to be provided for all owners or applicants who are partnerships or individually-owned firms.

Where the Applicant proposes to use named subcontractors for critical components of the works or for work contents in excess of 10 percent of the value of the whole works, the required information should also be supplied for the subcontractor(s).

LETTER OF APPLICATION

Description of the work : **TMP, L-Earth Works (SH: Construction of RCC Tunnel from RD 9,380m to 10,220m for Water Transmission System from Thoubal Dam to Chingkheiching) – Package – 2.**

Bid No. : **ACE-II/IFC/7-50/2013-14/137 Dt. 30/08/2014**

To : **The Additional Chief Engineer-II,
Irrigation & Flood Control Department, Manipur.**

Address : **P.W.D. Complex, Khuyathong, Imphal, Manipur – 795001.**

Sir,

Being duly authorised to represent and act on behalf of

.....
..... (hereinafter “the Applicant”), and having reviewed and fully understood all the qualification information provided, the undersigned hereby apply for the following contract (s) under the **Thoubal Multipurpose Project, Manipur.**

Sl. No.	Contract Number	Contract Name
1		TMP, L-Earth Works (SH: Construction of RCC Tunnel from RD 9,380m to 10,220m for Water Transmission System from Thoubal Dam to Chingkheiching) – Package – 2.

Note: - The Applicant is to delete, in ink, any contract for which he does not wish to qualify, and sign and date the deletion.

2. Attach to this letter are copies of original documents defining a) The Applicant’s legal status;
 - b) The Principal place of business; and
 - c) The place of incorporation (for applicants who are corporations); or the place for registration and the nationality of the owners (for applicants who are partnership or individually-owned firms)
 - d) Authority letter (s) for signatory (ies).
3. Your Agency and its authorized representatives are hereby authorized to conduct any inquiries or investigations to verify the statements, documents, and information submitted in connection with this application, and to seek clarification from our bankers and client regarding any, financial and technical aspects. This Letter of Application will also serve as authorization to any individual or authorized representative of any institution referred to in the supporting information, to provide such information deemed necessary and requested by yourselves to verify statements and information provided in this application, or with regard to the resources experience, and competence of the Applicant.

4. Your Agency and its authorized representatives may contact the following persons for further information: (B)

General and managerial enquiries	
Contact 1	Telephone 1
Contact 2	Telephone 2

Personnel enquiries	
Contact 1	Telephone 1
Contact 2	Telephone 2

Technical enquiries	
Contact 1	Telephone 1
Contact 2	Telephone 2

Financial enquiries	
Contact 1	Telephone 1
Contact 2	Telephone 2

5. This application is made in the full understanding that:

- a) bids by qualified applicants will be subject to verification of all information submitted for qualification at the time of bidding;
- b) your Agency reserves the right to:
amend the scope and value of any contracts/bid under this project; in such event, bids will only be called from qualified bidders who meet the revised requirements; and reject or accept any application, cancel the qualification process, and reject all applications and
- c) your Agency shall not be liable for any such actions and shall be under no obligation to inform the Applicant of the grounds for them.

6. Appended to this application, we give details of the participation of each party, including capital contribution and profit/loss agreements, to the joint venture or association. We also specify the financial commitment in terms of the percentage of the value of the (each) contract, and the responsibilities for execution of the (each) contract.

7. We confirm that in the event that we bid, that bid as well as any resulting contract will be:

- a) signed so as to legally bind all partners, jointly and severally; and
- b) submitted with a joint venture agreement providing the joint and several liability of all partners in the event the contract is awarded to us.

8. The undersigned declare that the statement made and the information provided in the duly completed application are complete, true and correct in every detail.

Signed	Signed
Name	Name
For and on behalf of {name of Applicant of a joint venture}	For and on behalf of {name of partner}

Signed	Signed
Name	Name
For and on behalf of {name of partner}	For and on behalf of {name of partner}

Signed	Signed
Name	Name
For and on behalf of {name of partner}	For and on behalf of {name of partner}

Dated this.....day of 200 .

Signature.....in the capacity of

.....

Duly authorized to sign bids for an on behalf of (in block capitals or typed)

Name:-

Address:

.....

.....

Witness: :-

Signature ----- Name -----

.....

Address:-----

Occupation:-----

APPLICATION FORM (1A)
Structure and Organisation

1. The applicant is
 - (a) an individual
 - (b) a proprietary firm
 - (c) a firm in partnership
 - (d) a Limited Company or Corporation
 - (e) a group of firms /joint venture(If yes give complete information in respect of each partner)
2. Attach the Organisation Chart showing the structure of Organisation, including the names of the Director and positions of officers.
3. Number of years of experience:
 - (a) as a Prime contractor (contractor shouldering major responsibility)
 - (i) in own country
 - (ii) other countries (specify country)
 - (b) in a Joint Venture
 - (i) in own country
 - (ii) other countries (specify country)
 - (c) as sub-contractor in (specify main contractor)
 - (i) in own country
 - (ii) other countries (specify country)
4. For how many years has your Organisation been in business of similar work under its present name? What were your fields when your Organisation was established? Whether any new fields were added in your Organisation? And if so, when?
5. Were you ever required to suspend construction for a period of more than six months continuously after you started? If so, give name of project & give reasons thereof.
6. Have you ever left the work awarded to you incomplete? (If so, give name of project & reasons for not completing work).
7. In which fields of civil engineering construction do you claim specialization and interest
8. Give details of your soil and material testing laboratory, if any.
9. Give details of your experience in mechanized granular pavement construction
10. Give details of your experience in construction of asphaltic overlays.
11. Enclose a chart of proposed organization

APPLICATION FORM (2)

General Experience Record

Name of Applicant or partner of a Joint Venture

All individual firms and all partners of a joint venture are requested to complete the information in this form. The information supplied should be the annual turnover of the Applicant (or each member of a joint venture) in terms of the amounts billed to clients for each year for work in progress or completed.

Use a separate sheet for each partner of a joint venture.

Annual turnover data (construction works only)			
Sl. No.	Year	Turnover (Indian Rupees in Crores)	Remarks
1	2008 – 2009		
2	2009 – 2010		
3	2010 – 2011		
4	2011 – 2012		
5	2012– 2013		

APPLICATION FORM (3)
Details of Contracts of Similar Nature [Underground Tunnel]

Name of Applicant

(Use a separate sheet for each contract.)

1	Number of contract I
	Name of Contract
	Country
2	Name of Employer
3	Employer's Address
4	Nature of works and special features relevant to the contract for which the Applicant wishes to qualify <hr/> <hr/>
5	Contract role (check one) * Sole contractor *Sub contractor partner in a joint venture (Percentage participation)
6	Value of the total contract *(at completion. or at date of award for current contracts).
7	Date of award
8	Date of completion
9	Contract duration (years and months)Years Months
10	Specified requirements (as in.....@) <hr/> <hr/>
11	Name and professional qualifications of applicant's Engineer-in-Charge of the work:
12	Were there any penalties/fines/stop-notice/compensation/liquidated damages imposed? (Yes or No.). If yes, give amount and explanation:

@Insert any specific criteria required for particular operations, such as annual volume of earthmoving, underground excavation, or placing concrete, as applicable.

In case of contracts in foreign currency, the value of the contract in that currency should be stated.
A certificate of completion from the Employer/Engineer must be enclosed.

APPLICATION FORM (3B)

Summary Sheet :Details of Work Executed.

Name of Applicant

Work performed as prime contractor, work performed in the past as a nominated subcontractor will also be considered provided the sub-contract involved execution of all main items of work described in the document, provided further that all other qualification criteria are satisfied (in the same name) of works of similar nature over the last five years.

Project Name	Name of the Employer*	Description of work	Contract No.	Value of Contract (Rs. In crore)	Date of issue of work order	Stipulated period of completion	Actual date of completion	Remarks explaining reasons for delay

** Not below the rank of Executive Engineer/ Divisional Engineer.*

APPLICATION FORM (4)

Summary Sheet: (A) Current Contract Commitments/Works in Progress

Name of Applicant :-

Applicants and each partner to an application should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

(Separate sheets may be used and appended herewith)

Sl. No.	Name of Contract	Name of Employer	Value of Contract	Stipulated Date of Completion	Value of Work Remaining to be completed	Anticipated Completion Date
1						
2						
3						
4						
5						
6						

(B) Works for which bids already submitted

Description of works	Place & State	Name & Address of Employer	Estimated value of works (Rs..)	Stipulated period of completion	Date when decision is expected	Remarks, if any
1	2	3	4	5	6	7

The data may be provided in separate sheet as per the above format and attached herewith.

Attach certificate(s) from the Engineer in Charge

APPLICATION FORM (5)

Personnel Capabilities

Name of Applicant

For specific positions essential to contract implementation, applicants should provide the names of at least two candidates qualified to meet the specified requirements stated for each position: The data on their experience should be supplied in separate sheets using one Form (5A) for each candidate.

Technical Staff:

- i) Graduate Engineer with minimum 10 years experience in tunnelling
- ii) Civil Diploma Engineers with 5 years experience in tunnelling
- iii) Survey engineer with 10 years experience in tunnelling
- iv) Mechanical and electrical engineers
- v) Tunnel foreman and Blasting Forman with blasting license
- vi) Skilled and unskilled tunnel labours

APPLICATION FORM (5A)**Candidate Summary**

Name of Applicant

Position		Candidate * Prime *Alternative
Candidate Information	1. Name of Candidate	2. Date of Birth
	3. Professional Qualifications	
Present Employment	4. Name of employer	
	Address of employer	
	Telephone	Contact (Manager/personnel Officer)\
	Fax	Telex
	Job title of Candidate	Years with present employer

Summarize professional experience over the last 10 years, in reverse chronological order. Indicate particular technical and managerial experience relevant to the Project.

From	To	Company / Project / Position in relevant technical & management experience

APPLICATION FORM (6)

Equipment Capabilities

Name of Applicant

The Applicant shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for each and all items of equipment listed in the Instructions to Applicants. A separate Form (6A) shall be prepared for each item of equipment listed in Para 2.6.5 of the Instructions to Applicants, or for alternative equipment proposed by the Applicant.

Plant and Machinery:

- i) Excavator
- ii) Dumpers/tippers
- iii) Air compressors
- iv) Jack Hammer
- v) 250 KVA DG set
- vi) Boltec SL Bolting rig
- vii) Light vehicle
- viii) Dewatering pump
- ix) Ventilation system
- x) Concrete mixing batching plant
- xi) Concrete placer/pump
- xii) Transit mixture
- xiii) Robot type wet shotcrete machine
- xiv) JCB / Dozer

APPLICATION FORM (6A)**Equipment Summary**

Name of Applicant

Item of equipment		
Equipment	1. Name of manufacturer	
	2. Model and power rating	
	3. Capacity	
	4. Year of manufacture	
Current status	5. Current location	
	6. Details of current commitments	
Source	1. Indicate source of the equipment <input type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	
Omit the following information for equipment owned by the Applicant or partner.		
Owner	8. Name of owner	
	9. Address of owner	
	Telephone	Contact name and title
	Fax	Telex
Agreements	Details of rental / lease / manufacture agreements specific to the Project	

APPLICATION FORM (7)**Financial Capability**Name of Applicant

Applicants, including each partner of a joint venture, should provide financial information to demonstrate that they meet the requirements stated in the Instructions to Applicants. Each applicant or partner of a joint venture must fill in this form. If necessary, use separate sheets to provide complete banker information. A copy of the audited balance sheets should be attached.

Banker	Name of Banker	
	Address of Banker	
	Telephone	Contact name and title
	Fax	Telex

Summarize actual assets and liabilities in Indian Rupees (IRs.) (at the exchange rate current at the end of each year) for the previous five year. Based upon known commitments, summarize projected assets and liabilities in IRs. equivalent for the next two years. (*Amount in Indian Rupees in Crores*)

Financial information in Indian Rupees	Actual: Previous five years					Projected: Next two years	
	2008-09	2009-10	2010-11	2011-12	2012-13	6	7
1. Total assets							
2. Current assets							
3. Total liabilities							
4. Current liabilities							
5. Profit before taxes							
6. Profit after taxes							

Specify proposed sources of financing to meet the cash flow demands of the Project, net of current commitments (Instructions to Applicant; Para 3.5).

Sl. No.	Source of financing	Amount in Indian Rupees

Attach audited financial statements for the last five years (for the individual applicant or each partner of a joint venture).

Firms owned by individuals, and partnerships, may submit their balance sheets certified by a registered accountant, and supported by copies of tax returns, if audits are not required.

APPLICATION FORM (8) Litigation History

Name of Applicant

Applicants, including each of the partners of a joint venture, should provide information on any history of litigation or arbitration resulting firm contracts executed in the last five years or currently under execution (Instructions to Applicants, para 2.6.. A separate sheet should be used for each partner of a joint venture.

Year	Award FOR or AGAINST Applicants	Name of Client, cause of litigation, and matter in dispute	Dispute amount (current value in Indian Rs.)	Actual awarded amount in Indian Rs.

APPLICATION FORM (9)

**INFORMATION REGARDING CURRENT LITIGATION, DEBARRING) EXPELLING OF
TENDERER OR ABANDON-ENT OF WORK BY TENDERER**

Name of Applicant

1	(a)	Has the Applicant or its constituent partners have a consistent history of litigation awarded against himYES/NO
	(b)	If yes, give details	
2	(a)	Has the Applicant or any of its constituent partners been debarred/expelled by any Agency in India during the last 5 years, excepting on account of reason other than non-performance, such as rescinding of joint venture due to most experienced partner of joint venture' palling out, court directions leading to breaking up of a joint venture before start of work.YES/NO
	(b)	If yes, give details	
3	(a)	Has the Applicant or any of its constituent partners abandoned anyYES/NO
	(b)	If yes, give details	
4	(a)	Has the Applicant or any of its constituent partners been declaredYES/NO
	(b)	If yes, give details, including present status	

**SAMPLE FORMAT FOR EVIDENCE OF ACCESS TO OR AVAILABILITY OF CREDIT
FACILITIES**

(CLAUSE 4.2 (i) OF ITB)

BANK CERTIFICATE

This is to certify that M/s. is a reputed company with a good financial standing. If the contract for the work, namely is awarded to the above firm, we shall be able to provide overdraft/credit facilities to the extent of Rs. to meet their working capital requirements for executing the above contract during the contract period.

Signature

(Name) Name of Bank

Senior Bank Manager

Address of the Bank

AFFIDAVIT

1. I, the undersigned, do hereby certify that all the statements made herewith and in the required attachments are true and correct.

2. The undersigned also hereby certifies that neither our firms M/s _____

_____ have abandoned any work on National Highways in India nor any contract awarded to us for such works have been rescinded, during last five years prior to the date of this bid.

3. The undersigned hereby authorise(s) and request(s) any bank, person, firm or corporation to furnish pertinent information deemed necessary and requested by the Department to verify this statement or regarding my (our) competence and general reputation.

4. The undersigned understand and agrees that further qualifying information may be requested, and agrees to furnish any such information at the request of the Department' Project implementing agency.

(Signed by an Authorised Officer of the Firm)

Title of Officer

Name of Firm

DATE

UNDERTAKING

I, the undersigned do hereby undertake that our firm M/s _____
_____ would invest a minimum cash up to 25% of the value of the work
during implementation of the Contract.

(Signed by an Authorised Officer of the Firm)

Title of Officer

Name of Firm

DATE

UNDERTAKING

I, the undersigned do hereby undertake that our firm M/s _____
_____ agree to abide by this bid for a period of _____

days from the date fixed for receiving the same and it shall be binding on us and may be extended at any
time before the expiration of that period.

(Signed by an Authorised Officer of the Firm)

Title of Officer

Name of Firm

DATE

GOVERNMENT OF MANIPUR
PUBLIC WORKS DEPARTMENT

GENERAL CONDITIONS OF CONTRACT

- | | |
|---|--|
| General Rules & Directions | <p>1. All work proposed for execution by contract will be notified in a form of invitation to tender pasted in public places and signed by the officer inviting tender or by publication in News papers as the case may be.</p> <p>This form will state the work to be carried out, as well as the date for submitting and opening tenders and the time allowed for carrying out the work, also the amount of earnest money to be deposited with the application, and the amount of the security deposit and performance guarantee to be deposited by the successful tenderer and the percentage, if any, to be deducted from bills. Copies of the specifications, designs and drawings and any other documents required in connection with the work signed for the purpose of identification by the officer inviting tender shall also be open for inspection by the contractor at the office of officer inviting tender during office hours.</p> <p>2. In the event of the tender being submitted by a firm, it must be signed separately by each partner thereof or in the event of the absence of any partner, it must be signed on his behalf by a person holding a power of attorney authorizing him to do so, such power of attorney to be produced with the tender, and it must disclose that the firm is duly registered under the Indian Partnership Act, 1952.</p> <p>3. Receipts for payment made on account of work, when executed by a firm, must also be signed by all the partners, except where contractors are described in their tender as a firm, in which case the receipts must be signed in the name of the firm by one of the partners, or by some other person having due authority to give effectual receipt for the firm.</p> |
| Applicable for Item Rate Tender only (PWD-8) | <p>4. Any person who submits a tender shall fill up the usual printed form, stating at what rate he is willing to undertake each item of the work. Tenders, which propose any alteration in the work specified in the said form of invitation to tender, or in the time allowed for carrying out the work, or which contain any other conditions of any sort, including conditional rebates, will be summarily rejected. No single tender shall include more than one work, but contractors who wish to tender for two or more works shall separate tender for each. Tender shall have the name and number of the works to which they refer, written on the envelopes.</p> <p>The rate(s) must be quoted in decimal coinage. Amounts must be quoted in full rupees by ignoring fifty paise and considering more than fifty paise as rupee one.</p> |
| Applicable for Percentage Rate Tender only (PWD-7) | <p>4. A. In case of Percentage Rate Tenders, tenderer shall fill up the usual printed form, stating at what percentage below / above (in figures as well as in words) the total estimated cost given in Schedule of Quantities at Schedule –A, he will be willing to execute the work. Tenders, which propose any alternation in the work specified in the said form of invitation to tender, or in the time allowed for carrying out the work, or which contain any other conditions of any sort including conditional rebates, will be summarily rejected. No single tender shall include more than one work, but contractors who wish to tender for two or more works shall submit separate tender for each. Tender shall have the name and number of the works to which they refer, written on the envelopes.</p> |

5. The officer inviting tender or his duly authorised assistant, will open tenders in the presence of any intending contractors who may be present at the time, and will enter the amounts of the several tenders in a comparative statement in a suitable form. In the event of a tender being accepted, a receipt for the earnest money shall thereupon be given to the contractor who shall thereupon for the purpose of identification sign copies of the specifications and other documents mentioned in Rule-I. In the event of a tender being rejected, the earnest money shall thereupon be returned to be contractor remitting the same, without any interest.
6. The officer inviting tenders shall have the right of rejecting all or any of the tenders and will not be bound to accept the lowest or any other tender.
7. The receipt of an accountant or clerk for any money paid by the contractor will not be considered as any acknowledgement or payment to the officer inviting tender and the contractor shall be responsible for seeing that he procures a receipt signed by the officer inviting tender or a duly authorized Cashier.
8. The memorandum of work tendered for and the schedule of materials to be supplied by the department and their issue-rates, shall be filled and completed in the office of the officer inviting tender before the tender form is issued. If a form is issued to an intending tenderer without having been so filled in and incomplete, he shall request the officer to have this done before he completes and delivers his tender.
9. The tenderers shall sign a declaration under the officials Secret Act 1923, for maintaining secrecy of the tender documents drawings or other records connected with the work given to them. The unsuccessful tenderers shall return all the drawings given to them.
- 9.A. Use of correcting fluid, anywhere in tender documents is not permitted. Such tender is liable for rejection.

**Applicable for
Item Rate
Tender only
(PWD-8)**

10. In the case of item Rate Tenders, only rates quoted shall be considered. Any tender containing percentage below / above the rates quoted is liable to be rejected. Rates quoted by the contractor in item rate tender in figures and words shall be accurately filled in so that there is no discrepancy in the rates written in figures and words. However, if a discrepancy is found, the rates which correspond with the amount worked out by the contractor shall unless otherwise proved be taken as correct. If the amount of an item is not worked out by the contractor or it does not correspond with the rates written either in figures or in words, then the rates quoted by the contractor in words shall be taken as correct. Where the rates quoted by the contractor in figures and in word tally, but the amount is not worked out correctly, the rate quoted by the contractor will unless otherwise proved be taken as correct and not the amount. In event no rate has been quoted for any item(s), leaving space both in figure(s), word(s), and amount blank, it will be presumed that the contractor has included the cost of this / these item (s) in other items and rate for such item(s) will be considered as zero and work will be required to be executed accordingly.

**Applicable for
Percentage
Rate Tender
only (PWD-7)**

- 10.A. In case of Percentage Rate Tenders only percentage quoted shall be considered. Any tender containing item rates is liable to be rejected. Percentage quoted by the contractor in percentage rate tender shall be accurately filled in figures and words, so that there is no discrepancy. However if the contractor has worked out the amount of the tender and if any discrepancy is found in the percentage quoted in

words and figures, the percentage which corresponds with the amount worked out by the contractor shall, unless otherwise proved, be taken as correct. If the amount of the tender is not worked out by contractor or it does not correspond with the percentage written either in figures or in words, then the percentage quoted by the contractor in words shall be taken as correct. Where the percentage quoted by the contractor in figures and in words tally but the amount is not worked out correctly, the percentage quoted by the contractor will, unless otherwise proved, be taken as correct and not the amount.

11. In the case of any tender where unit rate of any item / items appear unrealistic, such tender will be considered as unbalanced and in case tenderer is unable to provide satisfactory explanation, such a tender is liable to be disqualified and rejected.

**Applicable for
item Rate
Tender only
(PWD – 8)**

12. All rates shall be quoted on the tender form. The amount for each item should be worked out and requisite totals given. Special care should be taken to write the rates in figures as well as in words and the amount in figures only, in such a way that interpolation is not possible. The total amount should be written both in figures and in words. In case of figures, the word 'Rs.' should be written before the figure of rupees and word 'P' after the decimal figures, e.g. 'Rs.'2.15 P' and in case of words, the word, 'Rupees' should precede and the word 'Paise' should be written at the end. Unless the rate is in whole rupees and followed by the word 'only' it should invariably be upto two decimal places. While quoting the rate in schedule of quantities, the word 'only' should be written closely following the amount and it should not be written in the next line.

**Applicable for
Percentage
Rate Tender
only (PWD-7)**

- 12.A. In percentage Rate Tender, the tenderer shall quote percentage below /above (in figures as well as in words) at which he will be willing to execute the work. He shall also work out the total amount of his offer and the same should be written in figures as well as in words in such a way that no interpolation is possible. In case of figures, the word 'Rs.' should be written before the figure of rupee and word 'P' after the decimal figures, e.g. 'Rs. 2.15 P' and in case of words, the word 'Rupees' should precede and the word "Paise" should be written at the end.

13. (i) The Contractor whose tender is accepted, will be required to furnish performance guarantee of 5% (five percent) of the tendered amount within the period specified in Schedule F. 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 State Bank of India in accordance with the prescribed form.

- (ii) The contractor whose tender is accepted, will also be required to furnish by way of Security Deposit for the fulfillment of his contract, an amount equal to 5% of the tendered value of the work. The security deposit will be collected by deductions from the running bills of the contractor at the rates mentioned above and the earnest money deposited at the time of tenders, will be treated as a part of the Security Deposit. The Security amount will also be accepted is cash or in the shape of Government Securities. Fixed Deposit Receipts of a Scheduled bank or State Bank of India will also be accepted for this purpose provided confirmatory advice is enclosed.

14. On acceptance of the tender, the name of the accredited representative (s) of the contractor who would be responsible for taking instructions from the Engineer-in-Charge shall be communicated in writing to the Engineer-in-Charge.
15. Sales-tax / VAT (except service tax), purchase tax, turnover tax or any other tax applicable in respect of this contract shall be payable by the Contractor and Government will not entertain any claim whatsoever in respect of the same. 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.
16. The contractor shall give a list of both gazetted and non-gazetted P.W.D. employees related to him.
17. The tender for the work shall not be witnessed by a contractor or contractors who himself / themselves has / have tendered or who may and has / have tendered for the same work. Failure to observe this condition would render, tenders of the contractors tendering, as well as witnessing the tender, liable to summary rejection.
18. The tender for composite work includes, in addition to building work, all other works such as sanitary and water supply installations drainage installation, electrical work, horticulture work, roads and paths etc. The tenderer apart from being a registered contractor (B&R) of appropriate class, must associate himself with agencies of appropriate class which are eligible to tender for sanitary and water supply drainage, electrical and horticulture works in the composite tender.
19. The contractor shall submit list of works which are in hand (progress) in the following form:-

Name of work	Name of particulars of Division where work is being executed	Value of work	Position works in progress remarks	Remarks
1	2	3	4	5

20. The Contractor shall comply with the provisions of the Apprentices Act 1961, and the rules and orders issued there under from time to time. If he fails to do so, his failure will be a breach of the contract and the Superintending Engineer / Executive Engineer may in his discretion, without prejudice to any other right or remedy available in law, 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.

CONDITIONS OF CONTRACT

- Definitions**
1. The **Contract** means the documents forming the tender and acceptance thereof and the formal agreement executed between the competent authority of behalf of the Governor of Manipur and the Contractor, together with the documents referred to therein including these conditions, the specifications, designs, drawings and instructions issued from time to time by the Engineer-in-Charge and all these documents taken together, shall be deemed to form one contract and shall be complementary to one another.
 2. In the contract, the following expressions shall, unless the context otherwise requires, have the meanings, hereby respectively assigned to them:-
 - (i) The expressions **works** or **work** shall, unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent, and whether original, altered, substituted or additional.
 - (ii) The **Site** shall mean the land / or other places on, into or through which work is to be executed under the contract of any adjacent land, path or street through which work is to be executed under the contract or any adjacent land, path or street which may be allotted or used for the purpose of carrying out the contract.
 - (iii) The **Contractor** shall mean the individual, firm or company, whether incorporated or not, undertaking the works and shall include the legal personal representative of such individual or the persons composing such firm or company, or the successors of such firm or company and the permitted assignees of such individual, firm or company.
 - (iv) The **Governor** means the Governor of Manipur and his successors.
 - (v) The **Engineer-in-Charge** means the Engineer Officer who shall supervise and be in-charge of the work and who shall sign the contract on behalf of the Governor of Manipur as mentioned in Scheduled 'F' hereunder.
 - (vi) **Government** or **Government of Manipur** shall mean the Governor of Manipur.
 - (vii) The terms **Chief Engineer** includes **Additional Chief Engineer** of the department and Chief Engineer of the Zone.
 - (viii) **Accepting Authority** shall mean the authority mentioned in Scheduled 'F'.
 - (ix) **Excepted Risk** are risks due to riots (other than those on account of contractor's employees), war (whether declared or not) invasion, act of foreign enemies, hostilities, civil war, rebellion revolution, insurrection, military or usurped power, any acts of Government, damages from aircraft, acts of god, such as earthquake, lightening and unprecedented flood, and other causes over which the contractor has no control and accepted as such by the Accepting Authority or causes solely due to use or occupation by Government of the part of the works in respect of which a certificate of

	completion has been issued or a cause solely due to Government's faulty design of works.
(x)	Market Rate shall be the rate as decided by the Engineer-in-Charge on the basis of the cost of materials and labour at the site where the work is to be executed plus the percentage mentioned in Scheduled 'F' to cover, all overheads and profits.
(xi)	Schedule(s) referred to in these conditions shall means the relevant schedules(s) annexed to the tender papers or the standard schedule of Rates of the government mentioned in Scheduled 'F' hereunder, with the amendments thereto issued upto the date of receipt of the tender.
(xii)	Department means IFC Deptt, Manipur or any department of Government of Manipur which invite tenders on behalf of Governor of Manipur as specified in scheduled 'F'.
(xiii)	District Specifications means the specifications followed by the State Government in the area where the work is to be executed.
(xiv)	Tendered value means the value of the entire work as stipulated in the letter of award .
(xv)	Date of commencement of work: The date of commencement of work shall be the date of start as specified in Schedule "F" or the first date of handing over of the site, whichever is later, in accordance with the phasing if any, as indicated in the tender documents.
Scope and Performance	<p>3. Where the context so requires, words imparting the singular only also include the plural and vice versa. Any reference to masculine gender shall whenever required include feminine or ender and vice versa.</p> <p>4. Headings and Marginal notes to these General Conditions of Contract shall not be deemed to form part thereof or be taken into consideration in the interpretation of construction thereof or of the contract.</p> <p>5. The contractor shall be furnished, free of cost one certified copy of the contract documents except standard specifications, Scheduled of Rates and such other printed and published documents, together with all drawings as may be forming part of the tender papers. None of these documents shall be used for any purpose other than that of this contract.</p>
Works to be carried out	6. The work to be carried out under the Contract shall, except as otherwise provided in these conditions, include all labour, materials, Tools, plants, equipments and transport which may be required in preparation of and for and in the full and entire execution and completion of the works. The descriptions given in the Schedule of Quantities (Schedule-A) shall, unless otherwise stated, be held to include wastage on materials, carriage and cartage, carrying and return of empties, hoisting, setting, fitting and fixing in position and all other labours necessary in and for the full and entire execution and completion of the work as aforesaid in accordance with good practice and recognised principles.
Sufficiency of Tender	7. The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and of the rates and prices quoted in the Schedule of Quantities, which rates and prices shall, except as

Discrepancies and Adjustment of Errors	<p>otherwise provided, cover all his obligations under the contract and all matters and things necessary for the proper completion and maintenance of the works.</p> <p>8. The several documents forming the Contract are to be taken as mutually explanatory of one another, detailed drawings being followed in preference to small scale drawing and figured dimensions in preference to scale and special conditions in preference to General Conditions.</p> <p>8.1 In the case of discrepancy between the scheduled of Quantities, the specifications and / or drawing, the following order of preference shall be observed:-</p> <ul style="list-style-type: none"> (i) Description of Scheduled of Quantities. (ii) Particulars Specifications and Special Condition, if any. (iii) Drawings. (iv) P.W.D. Specifications. (v) Indian Standard Specifications of B.I.S. <p>8.2 If there are varying or conflicting provisions made in any one document forming part of the contract, the Accepting Authority shall be the deciding authority with regard to the intention of the document and his decision shall be final and binding on the contractor.</p> <p>8.3 Any error in description, quantity or rate in Schedule of Quantities or any omission therefrom shall not vitiate the Contract or release the Contractor from the execution of the whole or any part of the works comprised therein according to drawings and specifications or from any of his obligations under the contract.</p>
Signing of Contract	<p>9. The successful tenderer / contractor, on acceptance of his tender by the Accepting Authority, shall, within 15 days from the stipulated date of start of the work, sign the contract consisting of:-</p> <ul style="list-style-type: none"> (i) the notice inviting tender, all the documents including drawings, if any, forming the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto. (ii) Standard PWD form as mentioned in Schedule 'F' consisting of: <ul style="list-style-type: none"> (a) Various standard clauses with correction upto the date stipulated in Scheduled 'F' alongwith annexures thereto. (b) P.W.D. Safety Code. (c) Model Rules for the protection of health, sanitary arrangements for workers employed by IFC Deptt or its contractors. (d) PWD/IFCD Contractor's Labour Regulations. (e) List of Acts and omissions for which fines can be imposed. (iii) No payment for the work done will be made unless contract is signed by the contractor.

CLAUSES OF CONTRACT

CLAUSE 1

**Performance
guarantee**

- (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 contractor 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 upto 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 receipts of any scheduled bank / Banker's Cheque of any scheduled bank / Demand Draft 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 of 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 upto 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.
- (iii) The Engineer-in-Charge shall not make a claim under the performance guarantee except for a amounts to which the Governor of Manipur 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 Governor of Manipur 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 Governor of Manipur.

CLAUSE 1A

**Recovery
of
Security**

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 5% of the gross amount of each running bill till the

Deposit sum alongwith the sum already deposited as earnest money, will amount to security deposit of 5% of the tendered value of the work. Earnest money shall be adjusted first in the security deposit and further recovery of security deposit shall commence only when the upto date amount of security deposit starts exceeding the earnest money. 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, from any sums which may become 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 of the contractor at the rates mentioned above and the Earnest money deposited at the time of tenders will be treated as part of Security Deposit.

Note-1: Government papers tendered as security will be taken at 5% (five percent) below its market price or at its face value, whichever is less. The market price of Government paper would be ascertained by the Divisional officer 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 scheduled '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 Clauses 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 for delay of work	@1.5% per month of delay to be computed on per day basis
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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 2 A

Incentive for early completion In case, the contractor completes the work ahead of scheduled completion time, a bonus @ 1% (one percent) 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 percent) 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 'Scheduled 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 in proper or unworkman 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 if work with individual date of completion, if any stipulated, on or before such date (s) or 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 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.

- (v) 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.
- (vi) 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 shall obtain a contract with Government as a result of wrong tendering or other non-bonafide methods of competitive tendering.
- (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, transfer, sublets (engagement of labour on a piece-work basis or of labour 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 Governor of Manipur 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 Earnest money Deposit, 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 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 performances of such work and the value payable is 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, either party may close the contract. In such eventuality, the Earnest Money Deposit and the Performance Guarantee of the contractor shall be refunded, but no payment on account of interest, loss of profit or damages etc. shall be payable at all.

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 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 expenses or sell them by auction or private sale of account of the contractor and his risk in all respects and the certificate of the Engineer-in-Charge as to the expenses of any removal and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the contractor.
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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
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liberty to forfeit the earnest money & 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 works 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 Schedule 'F'.

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

- i) force majeure, or
- ii) abnormally bad weather, or
- iii) serious loss or damaged by the 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 tradesman 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 by or
- vii) non-availability or break down of tools and plant to be supplied or supplied by Government or
- viii) 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 endeavors 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 shall be communicated to the Contractor by the authority as indicated in Schedule "F" in writing, within 3 months of the date of receipt of such request. Non application by the contractor for extension of time shall not be a bar for giving a fair and reasonable extension by the authority as indicated in Schedule 'F' and this shall be binding on the contractor.

CLAUSE 6

Measurement 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 representatives 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 the 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 authorised 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, measurement shall be taken in accordance with the relevant 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 incharge 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 authorised representative incharge 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 expenses, 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 authorised representative may causes 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 materials to which it

relates nor shall it relieve the contractor from liabilities from any over measurement or defeats 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 authorised 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 authorised representative as per the interval or program fixed in consultation with Engineer-in-charge or his authorised representative. After the necessary correction 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 authorised 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 authorised 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 computerized M.Bs. 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 alongwith 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 assistant 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 authorised representative in charge of the work before covering up or otherwise placing beyond the reach of checking and or / test checking the measurements for any work in order that 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 authorised representative in charge of the work 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 checking and / or test checking measurements without such notice having been given of the Engineer-in-Charge's consent being obtained in writing the same shall be uncovered at the Contractor's expenses, 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 authorised 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 materials 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 10 th working day after the day of presentation of the bill by the Contractor to the Engineer-in-Charge or his Assistant Engineer together with the account of the materials issued by the department, or dismantled materials, if any. In case of works outside the headquarters of the Engineer-in-Charge, the period of ten working days will be extended to fifteen working days.
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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 Assistant Engineer to the effect that the work has been completed upto the level in question make interim advance payments without detailed measurements for work done (other than foundation, items to be covered under finishing items) upto 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.

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 When the annual repairs and maintenance of works are carried out, the splashes and

keep site clean droppings from while 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/- (Rupees fifteen thousand only) as may be fixed by the Superintending Engineer concerned and in this respect the decision of the Superintending Engineer shall be final and binding on 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 rate 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 authorised Assistant Engineer, complete with account of materials issued by the Department and dismantled materials.

- (i) If the Tendered value of work is upto Rs. 15 lakhs : 3 months
- (ii) If the Tendered value of work exceeds Rs. 15 lakhs : 6 months

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-à-vis the Governor of Manipur.

CLAUSE 10

**Materials
supplied by
Government**

Materials which Government will supply are shown in schedule 'B' which also stipulates quantum, place of issue and rate(s) to be charged in respect thereof. The contractor shall be bound to procure them from the Engineer-in-Charge.

As soon as the work is awarded, the contractor shall finalise the programme for the completion of the work as per clause 5 of this contract and shall give his estimates of materials required on the basis of drawings / or schedule of quantities of the work. The contractor shall give in writing his requirements to the Engineer-in-Charge which shall be issued to him keeping in view the progress of work as assessed by the Engineer-in-Charge, in accordance with the agreed phased programme of work indicating monthly requirements of various materials. The contractor shall place his indent in writing for issue of such materials at least 7 days in advance of his requirement.

Such materials shall be supplied for the purpose of the contract only and the value of the materials so supplied at the rates specified in the aforesaid schedule shall be set off or deducted, as and when materials are consumed in items of work (including normal wastage) for which payment is being made to the contractor, from any sum then due or which may therefore become due to the contractor under the contract or otherwise or form the security deposit. At the time of submission of bills, the contractor shall certify that balance of materials supplied is available at site in original good condition.

The contractor shall submit alongwith every running bill (on account or interim bill) material-wise reconciliation statements supported by complete calculations reconciling total issue, total consumption and certified balance (diameter / section-wise in the case of steel) and resulting variations and reasons therefore, Engineer-in-Charge shall (whose decision shall be final and binding on the contractor) be within his rights to follow the procedure of recovery in clause 42 at any stage of the work if reconciliation is not found to be satisfactory.

The contractor shall bear the cost of getting the materials issued, loading, transporting to site, unloading, storing under cover as required, cutting assembling and joining the several parts together as necessary. Notwithstanding anything to the contrary contained in any other clause of the contract and (or the CPWA Code) all stores / materials so supplied to the contractor or procured with the assistance of the Government shall remain the absolute property of Government and the contractor shall be the trustee of the stores / materials, and the said stores / materials shall not be removed / disposed off from the site of the work on any account and shall be at all times open to inspection by the Engineer-in-Charge or his authorised agent. Any such stores / materials remaining unused shall be returned to the Engineer-in-Charge in as good a condition in which they were originally supplied at a place directed by him, at a place of issue or any other place specified by him as he shall require, but in case it is decided not to take back the stores / materials the contractor shall have no claim for compensation on any account of such stores/materials so supplied to him as aforesaid and not used by him or for any wastage in or damage to in such stores / materials.

On being required to return the stores / materials, the contractor shall hand over the stores / materials on being paid or credited such price as the Engineer-in-Charge shall determine, having due regard to the condition of the stores / materials. The price allowed for credit to the contractor, however, shall be at the prevailing market rate not exceeding the amount charged to him, excluding the storage charge, if any. 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 account for contravention of the terms of the licenses or permit and or / for criminal breach of trust, be liable to Government for all advantages or profits resulting or which in the usual course would have resulted to him by reason of such breach. Provided that the contractor shall in no case be entitled to any compensation or damages on account of any delay in supply or non-supply thereof all or any such materials and stores provided further that the contractor shall be bound to execute the entire work if the materials are supplied by the Government within the original scheduled time for completion of the work plus 50% thereof or schedule time 6 months whichever is more if the time of compensation of work exceeds 12 months, but if a part of the materials only has been supplied within the aforesaid period, then the contractor shall be bound to do so much of the work as may be possible with the materials and stores supplied in the aforesaid period. For the completion of the rest of the work, the contractor shall be entitled to such extension of time as may be determined by the Engineer-in-Charge whose decision in this regard shall be final and binding on the contractor.

The contractor shall see that only the required quantities of materials are not issued. Any such material remaining unused and in perfectly good / original condition at the time of completion or determination of the contract shall be returned to the Engineer-in-Charge at the stores from which it was issued or at a place directed by him by a notice in writing. The contractor shall not be entitled for loading, transporting, unloading and stacking of such unused materials except for the extra lead, if any involved, beyond the original place of issue.

CLAUSE 10 A

**Materials to
be provided
by the
contractor**

The contractor shall, at his own expenses, 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 expenses 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 analysed 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 authorised representatives 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 expenses of the contractor, other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise too 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 expenses, provide a material testing lab at the site for conducting routine field tests. The lab shall be equipped atleast with the testing equipment as specified in schedule 'F'.

CLAUSE 10 B

- 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 upto 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 and 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 of advance & valid for the contract period. This shall be kept renewed from time to time to cover the balance amount and likely period of complete recovery, together with interest.

Provided always that provision of Clausev10 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 expeditions execution of work and improve the quality of the 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 plant 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 recognised 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 percent of such amount of advance shall be paid after the plant and equipment is brought to site the 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 home by the contractor.

Interest &

- (iv) The mobilization advance and plant and machinery advance in (i) & (ii) above bear

- Recovery** simple interest at the rate of 10 percent 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 percent 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 percent of the gross value of the contract is executed and paid, together with interest due on the entire outstanding amount upto 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 executed in the discretion of the Engineer-in-Charge.

CLAUSE 10 C

- Payment on account of increase in prices / wages due to statutory order(s)** If after submission of the tender, the price of any materials 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 in sales tax / VAT, Central/State Excise/Custom Duty) beyond the price/wages prevailing at the time of the last stipulated date for receipt of the 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 stipulated date of completion or as prevailing for the period under consideration, whichever is less.

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 materials 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 of 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 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 the 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 C A

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' increase / decreases beyond the price(s) prevailing at the time of the last stipulated date for receipt of tenders (including extensions, If any) 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 contractor 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, it will be limited to indices prevailing at the time of stipulated date of completion or as prevailing for the period under consideration, whichever is less.

The increase/decrease in prices of cement, steel reinforcement and structural steel shall be determined by the price indices issued by the Chief Engineer, IFC Deptt, Manipur. 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 and base price for cement, steel reinforcement and structural steel as issued under the authority of Chief Engineer, IFC Deptt, Manipur applicable for Manipur and for other places as issued under the authority of Chief Engineer, IFC Deptt, Manipur and base price of other materials issued by concerned Chief Engineer, IFC Deptt, Manipur as indicated in Schedule 'F' as valid on the last stipulated date of receipt of tender, including extension if any and for the period under consideration. In case, price index of a particular material is not issued by Ministry of Commerce and Industry, then the price index of nearest similar materials as indicated in Schedule 'F' shall be followed.

The amount of the contractor 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 materials:

$$V = P \times Q \times \frac{CI - CI_0}{CI_0}$$

Where,

V = Variation in cement cost i.e. increase or decrease in the amount in rupees to be paid or recovered.

P = Base price of cement as issued under authority of Chief Engineer, IFC Deptt, Manipur as indicated in Schedule 'F' valid at the time of the last stipulated date of receipt of tender including extensions, if any.

Q = Quantity of materials brought at site for bonafide use in the works since previous bill.

CI₀ = Price Index for cement, steel reinforcement bars and structural steel as issued by the Chief Engineer, IFC Deptt, Manipur as valid on the last stipulated date of receipt of tenders including extension, if any. For other items, if any, provided in Schedule 'F', All India Wholesale Price Index for the materials as published by the Economic Advisor to Government of India, Ministry of Industry and Commerce as valid on the last stipulated date of receipt of tenders including extensions, if any.

CI = Price Index for cement, steel reinforcement bars and structural steel as issued by the Chief Engineer, IFC Deptt, Manipur for period under consideration. For other items, if any, provided in Schedule 'F'. All India Wholesale Price Index for the materials for period under consideration as published by the 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 stipulated date of completion or the prevailing index of the period under consideration, whichever is less, shall be considered.

Provided always that provisions of the proceeding 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.

CLAUSE 10 CC

Payment due to increase / decrease in prices / wages (excluding materials covered under clause 10 CA) after receipt of tender for works In 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 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 stipulated date of completion or as prevailing for the period under consideration, whichever is less. 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 upto this quarter: (A)
 - (b). Gross value of work done upto 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 clauses 10 CA) fresh paid in this quarter: (D)
- (e). Full assessed value of secured advance (excluding materials under clauses 10 CA) recovered in this quarter: (E)
- (f). Full assessed value of secured advance for which escalation is 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)
- 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 which escalation is applicable:
 $W = N - (K + L)$
- iii) Components of materials (except cement, reinforcement bars, structural steel or other materials covered under clause 10 CA), Labour, P.O.L., etc., shall be pre-determined for every work and incorporated in the conditions of contract attached to the tender papers included in scheduled 'E'. 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 (except cement, reinforcement bars, structural steel or other materials covered under clause 10 CA), and P.O.L. shall be worked as per the formula given below:-
- (a) Adjustment for civil component (except cement, structural steel, reinforcement bars and other materials covered under clause 10 CA)/electrical component of construction 'Materials'.
- $$V_m = W \times \frac{X_m}{100} \times \frac{MI - MI_o}{MI_o}$$
- V_m = Variation in material cost of 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 10 CC.
- X_m = Component of 'material' (except cement, reinforcement bars, structural steel and other materials covered under clause 10 CA) expressed as percent of total value of work.
- MI = All India Wholesale Price index for civil components / 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 the Economic Advisor to Government 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 stipulated date of completion or the prevailing index of the period under consideration, whichever is less, shall be considered).
- MI_o = All India Wholesale Price index for civil components / 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 tenders including extensions, if any, as published by the Economic

Advisor to Government of India, Ministry of Industry & Commerce and applying weightages to the individual commodities / group items.

(b) Adjustment for component of "POL"

$$V_F = W \times \frac{Z}{100} \times \frac{FI - FI_0}{FI_0}$$

V_F = Variation in cost of Fuel, Oil & Lubricant 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 10 CC.

Z = Component of Fuel, Oil & Lubricant expressed as percent of total value of work.

FI = All India Wholesale Price index for Fuel, Oil & Lubricant for the period under consideration as published by the Economic Advisor to Government of India, Ministry of Industry & Commerce, New Delhi. (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 stipulated date of completion or the prevailing index of the period under consideration, whichever is less, shall be considered.)

FI_0 = All India Wholesale Price index for Fuel, Oil & Lubricant valid on the last stipulated date of receipt of tenders including extensions, if any.

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 first such payments shall be made at the end of three months after the month (excluding the month in which the 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 failing within that period.

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

$$V_L = W \times \frac{Y}{100} \times \frac{LI - LI_0}{LI_0}$$

V_L = Variation in labour cost i.e. amount of increase or decrease in the amount 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 percentage of 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 the quarter previous to the quarter pertaining to stipulated date of completion of the minimum wage prevailing on the last date of the quarter previous to the one under consideration, whichever is less, shall be considered).

LI_0 = 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 sub-para (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 and / or P.O.L. 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 10 CC shall 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.

CLAUSE 10 D

Dismantled material Government 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 specification, 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 specification, 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 works and methods of construction.

CLAUSE 12

Deviation / Variations Extent and Pricing

The Engineer-in-Charge shall have power (i) to make alternation 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 alternations, 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 work, 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.

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.

Deviation, extra items and pricing

12.2 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 one month 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.

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 aforesaid para.

Deviation, Substituted items, pricing

- (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 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).

**Deviation,
Deviated
Quantities
Pricing**

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 one month 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.

12.3 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.

12.4 The contractor shall send to the Engineer-in-Charge once every three months, an upto 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 Superintending 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 contractor:

- (i) For buildings: All works upto 1.2m above ground level or upto floor 1 level whichever is lower.
- (ii) For abutments, piers, and well staining: All works upto 1.2m above the bed level
- (iii) For retaining walls, wing walls, compound walls, chimneys, overhead reservoirs/tanks and other elevated structures : All works upto 1.2m above ground level.
- (iv) For Reservoirs/tanks (other than overhead reservoirs/tanks): All works upto 1.2m above the ground level
- (v) For basement: All works upto 1.2m above ground level or upto 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 contemplation of tenderer while filling 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 or
work**

It at any time after acceptance of the tender. Government 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 utilised on the work to the full extent 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 damages 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 work, 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.

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 to 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 in that behalf by the Engineer-in-charge; or,
- iii) 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 a notice given in writing in that behalf by the Engineer-in-charge; or,
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 what amount, if any, is recoverable from the contractor for completion of the part of the works/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 the 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 differences shall not be payable to the contractor.

Any excess expenditure incurred or to be incurred by Government in completing the part of the works/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 per as agreement be recovered from any moneys due to the contractor on any account, and if such moneys is insufficient, the contractor shall be called upon in writing and shall be liable to pay the same within 30 days.

If the contractor shall fail 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 buildings 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 or 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 sub-para (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.

Provided, further, that the contractor shall not be entitled to claim any compensation from Government for the loss suffered by him on account of delay by Government in the supply of materials in schedule 'B' where such delay is covered by difficulties relating to the supply of wagons, force majeure including non-allotment of such materials by controlling authorities acts of God, acts of enemies of the state / country or any reasonable cause beyond the control of the Government.

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-in-Charge, his authorised subordinate 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 time, 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 authorised subordinates incharge of the work or to the Chief Engineer in charge of Quality Assurance or his subordinates 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 works 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 12 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 of the contractor.

CLAUSE 17

Contractor If the contractor or his working people or servants shall break, deface, injure or destroy any

liable for damages, defects during maintenance period	part of building in which they may be working, or any building, road, road kerb, fence, enclosure, water pipe, cables, drain, 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 damages 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 expenses or in default the Engineer-in-Charge cause the same to be made good by other workmen and deduct the expenses 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.
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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 all materials (except such special materials, of 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 thereof 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 expenses 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.
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CLAUSE 18 A

Recovery of compensation paid to workman	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,
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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 consequences 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 provision of the Contract Labour (Regulation and Abolition) Act, 1970, and of the Contract Labour (Regulations and Abolition) Act, 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 IFC Deptt, 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 IFC Deptt 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 (Regulations 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 license 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 fulfill these requirements shall attract the penal provisions of this contract arising out of the resultant non-execution of the work.

CLAUSE 19 A

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 sub-contractors, wages not less than fair wages as defined in the IFC Deptt Contractors Labour Regulations or as per the provisions of the Contract Labour (Regulation and Abolition) Act, 1970 and 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 Manipur public Works Department contractor's Labour Regulations made by the 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, 171, 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 fulfillment 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 Benefit 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 IFC Deptt 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 the no amount by way of commission or otherwise is deducted or recovered by the Jamadar from the wage of workmen.

CLAUSE 19 C

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 expenses arrange for the safety provisions as per IFC Deptt safety Code framed from time to time and shall at his own expenses 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 hours,
- (3) the wages paid to them,
- (4) the accidents that occurred during the said fortnight showing the circumstance 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 maternity incorrect statement. The decision of the Divisional Officer 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 arrangement for workers employed by the Manipur 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 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 Rupees 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 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 arrangement for the workers as amended from time to time or furnishing any information or submitting or filling any statement under the provisions of the above Regulations and Rules which is maternity 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, filling such maternity 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 this 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 IFC Deptt Contractor's Labour observing and complying with the provisions of the Contractor 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 construction (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, 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 expenses 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 remodeled and / or reconstructed according to approved standard, and of the contractor(s) shall fail to remodel or reconstruct such huts and sanitary arrangement 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 2.10 m (7ft) and the floor area to be provided will be at the rate of 2.7 sq.m. (30 sq. m.) 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 (8yards) 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 of bathing and washing purposes. Where piped water supply is available, supply shall be at stand posts and where it 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 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 if 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 of renovation works etc. where the labour have an easy access to the individual houses, the contractor shall issue identity card 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 the colony/blocks on the notice board in the colony and also at the service centre, to apprise the residents about the same.

CLAUSE 19 J

It shall be the responsibility of the contractor to see that the building under construction is not occupied by anybody unauthorisedly during construction, and is handed over to the Engineer-in-Charge with vacant possession of complete building. If such building though completed in 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 Superintending Engineer whose decision shall be final both with regard to the justification and quantum and be binding on the contractor.

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

CLAUSE 19 K

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 IFC Deptt Training Institute / Industrial Training Institute / National institute of construction Management and Research (NICMAR) / National Academy of Construction, CIDC or any similar reputed and recognised 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 alongwith 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 tradesmen per day. Decision of Engineer in charge as to whether particular tradesmen 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 crore.

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, 1970m 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 Governor of Manipur 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 ensure.

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 damages 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 partnerships 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 partnerships agreement where under the partnership firm would have the right to carry out the works hereby undertaken by the contractor. If pervious 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 ensure 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 material 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, instruction, 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 Superintending Engineer in writing for written instruction or decision. Thereupon, the Superintending Engineer shall give his written instructions or decision within a period of one month from the receipt of the contractor's letter.

If the Superintending Engineer fails to give his instructions or decisions in writing within the aforesaid period or if the contractor is dissatisfied with the instructions or decision of the Superintending Engineer, the contractor may, within 15 days of the receipt of Superintending Engineer's decision, appeal to the Chief Engineer 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 Chief Engineer shall give his decision within 30 days of receipt of contractor's appeal. If the contractor is dissatisfied with this decision, the contractor shall within a period of 30 days from receipt of the decision, give notice to the Chief Engineer 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.

- (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 Chief Engineer, IFC Deptt, in charge of the work or if there be no Chief Engineer, the administrative head of the said IFC Deptt. 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 Chief Engineer IFC Deptt or the Additional Chief Engineer of the IFC Deptt, as aforesaid, should act as an 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 of re-enactment thereof and the rules 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 the both the parties.

It is also 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 Government against Patent Rights	The contractor shall fully indemnify and keep indemnified the Governor of Manipur 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 expenses, to settle a dispute or to conduct any litigation that may arise therefrom, provided that the contractor shall not be liable to indemnify the Governor of Manipur 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.
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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.
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CLAUSE 28

Action where no	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
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specifications are specified Standards Specifications. In case there are no such specifications in Bureau of India 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

With-holding and lien in respect of sums due from contractor (i) Whenever any claim or claim 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 finalization 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 Engineer-in-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 or 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 examinations any sum is found to have been overpaid in respect of nay work done by the contractor under the contract 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 nay 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 Superintending 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 Superintending Engineer or the Executive Engineer.

CLAUSE 29 A

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 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 failing 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 imported labour only i.e., deposit imported or labour imported by contractor from area 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 of 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:
District of Dhanbad, Hazaribagh, Jamtara – a Sub-Division under Santhal Pargana Commissionery, District of Bankura, 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 lying 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 th 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

- Alternative 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 building, 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 of purchase made under orders or permits or licenses 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 license 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 expenses 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 & 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 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 Superintending 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 ($1/8^{\text{th}}$ of the daily charges) subject to a minimum of half days' 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 authorised 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 department 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 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**

- (i) The contractor undertaken to make arrangement for the supervision of the work by the firm supplying the tar or bitumen used.
- (ii) The contractor shall collect the total quantity of tar or bitumen required for the work as per standard formula, before the process of painting is started and shall hypothecate it to the Engineer-in-Charge. If any bitumen or tar remains unused on completion of the work on account of lesser use of materials in actual execution for reasons other than authorised changes of specifications and abandonment of portion of work, a corresponding deduction equivalent to the cost of unused materials as determined by the Engineer-in-Charge shall be made and the materials return to the contractors. Although the materials are hypothecated to Government, the contractor undertakes the responsibility for their proper watch, safe custody and protection against all risks. The materials shall not be removed from site of work without the consent of the Engineer-in-Charge in writing.
- (iii) The contractor shall be responsible for rectifying defects noticed within a year from the date of completion of the work and the portion of the security deposit relating to asphaltic work shall be refunded after the expiry of this period.

CLAUSE 36

**Employment of
Technical Staff
and employees**

Contractors Superintendence, Supervision, Technical Staff and 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 obligation 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 long 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 (non-refundable) 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) along with every on account bill/final bill and shall produce evidence if 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 foreman and

supervisory staff as are competent to give proper supervision to the work.

The contractor shall provide and employ skilled, semi-skilled 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 Worker 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, the 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.
- (iii) If pursuant to or under any law, notification or order any royalty, cess or the like becomes payable by the Government of Manipur 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 Manipur and it will have the right and be entitled to recover the amount paid in the circumstance 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 of 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 Superintending 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 authorised 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 death of contractor Without prejudice to any of the right or remedies under this contract, if the contractor dies, the Divisional Officer on behalf of the Governor of Manipur shall have the option of terminating the contract without compensation to the contractor.

CLAUSE 40

If relative working in PWD then he contractor not allowed to tender The contractor shall not be permitted to tender for works in the IFC Deptt circle (Division in case of contractors of Horticulture/Nursery categories) responsible for award an execution of contracts in which his near relative is posted as Divisional Accountant or as an officer in any capacity between the grades of the Superintending Engineer and Assistant Engineer (both inclusive). He shall also intimate the names of person who are working with him in any capacity or are subsequently employed by him and who are near relative to any Gazetted Officer in the IFC Deptt or in the Ministry of Urban Development. 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 IFC Deptt for any breach of this condition.

NOTE:- By the term "near relatives" is meant wife, husband, parents and grandparents children and grand children, 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 Manipur 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 Manipur 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 Manipur 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 non-reconciliation 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 works as shown in the Schedule of Rates mentioned in schedule 'F'. In case any item is executed for which standards 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 authorised by Engineer-in-Charge including authorised lappages, chairs, etc., plus 3% wastage due to cutting into pieces, such theoretical quantity being determined and compared with the actual issues each diameterwise, section-wise and categoriwise 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 diameterwise & categoriwise.

- (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 authorised 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 Superintending Engineer regarding theoretical quantities of materials which should have been actually used, shall be final and binding of 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 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 materials 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 Divisional Officer upto Rs. 5,000/- and by the Superintending Engineer concerned for a higher amount. The contractor shall be paid for the damages / destruction suffered and for restoring the materials 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 materials 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 the time for its completion as is considered reasonably by the Divisional Officer.

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 Superintending 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**

Security Deposit of the work shall not be refunded till the contractor produces a clearance certificate from the Labour Officer. As soon as the work is virtually completed 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 realised if otherwise due.

NOTE: *In case of difference or ambiguity English version, the English version will prevail.*

P.W.D. SAFETY CODE

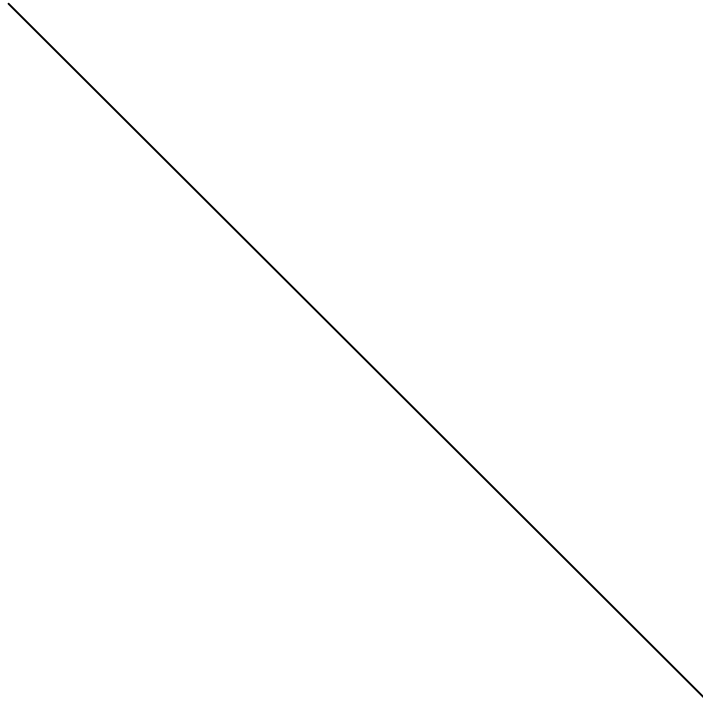
1. Suitable scaffolds should be provided for workmen for all works that cannot safely be done from the ground, or from solid construction except such short period work as can be done safely from ladders, when, a ladders is used, an extra mazdoor shall be engaged for holding the ladders and if the ladder is used for carrying material as well suitable footholds and hand-hold shall be provided on the ladder and the ladder shall be given an inclination not steeper than $\frac{1}{4}$ to 1($\frac{1}{4}$ horizontal and 1 vertical).
2. Scaffolding of staging more than 3.6 m (12 ft) above the ground or floor, swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly attached or bolted braced and otherwise secured at least 90cm. (3ft). high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends there of with only such opening as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.
3. Working platform, gangways and stairways should be constructed that they should not sag unduly or unequally, and if the height of the platform or the gangway or the stairway is more than 3.6m (12ft) above ground level or floor level, they should closely be boarded, should have adequate width and should be suitably fastened as describe in (2) above.
4. Every opening in the floor of a building or in a working platform shall be provided with suitable means to prevent the fall of person or materials by providing suitable fencing or railing whose minimum height shall be 90cm (3ft).
5. Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9m (30ft) in length while the width between side rails in rung ladder shall in no case be less than 29cm (11½) for ladder upto and including 3m. (10ft) in length. For longer ladders, this width should be increased at least $\frac{1}{4}$ " for each additional 30cm. (1 foot) of length. Uniform step spacing of not more than 30cm shall be kept. Adequate precaution shall be taken to prevent danger from electrical equipment. No materials on any of the sites or work shall be so stacked or placed as to cause danger or inconvenience to any persons or the public. The contractor shall provide all necessary fencing and lights to protect the public from accident and shall be bound to bear the expenses of defense of every suite, action or other proceeding at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may awarded in any such suit; action or proceedings to any such persons or which may, with the consent of the contractor, be paid to compensate any claim by any such person.
6. Excavation and Trenching – All trenches 1.2m (4ft) or more in depth, shall at all time be supplied with at least 1 ladder for each 30m (100ft) in length or fraction thereof, Ladder shall extend from bottom of the trenches to at least 90cm. (3ft) above the surface of the ground. The side of the trenches which are 1.5m (5ft) or more in depth shall be stepped back to give suitable slope or securely held by timber bracing, so as to avoid the danger of sides collapsing. The excavated materials shall not be placed within 1.5m (5ft) of the edges of the trenches or half of the depth of the trench whichever is more. Cutting shall be done from top to bottom. Under no circumstances, undermining or undercutting shall be done.
7. Demolition – Before any demolition work is commenced and also during the progress of the work,
 - i) All roads and open areas adjacent to the work site shall either be closed or suitably protected.
 - ii) No electric cable or apparatus which is liable to be a source of danger or a cable or apparatus used by the operator shall remain electrically charged.

- iii) All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.
8. All necessary personal safety equipment as considered adequate by the Engineer-in-charge should be kept available for the use of the person employed on the site and maintained in a condition suitable for immediate use, and the contractor should take adequate steps to ensure proper use of equipment by those concerned:- the following safety equipment shall invariably be provided.
- i) Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.
 - ii) Those engaged in white washing and mixing or stacking of cement bags or any materials which is injurious to the eyes, shall be provided with protected goggles.
 - iii) Those engaged in welding work shall be provide with welder's protective eyes-shields.
 - iv) Stone breaker shall be provide with protective goggles and protective clothing and seated at sufficiently safe intervals.
 - v) When workers are employed in sewers and manholes, which are in active use, the contractor shall ensure that the manholes covers are opened and ventilated atleast for an hour before the workers are allowed to get into the manholes, and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident to the public. In addition, the contractor shall ensure that the following safety measure are adhered to :-
 - a) Entry for workers into the line shall not be allowed except under supervision of the JE or any other higher officer.
 - b) At least 5 to 6 manholes upstream and downstream should be kept open for atleast 2 to 3 hours before any man is allowed to enter into the manhole for working inside.
 - c) Before entry, presence of Toxic gases should be tested by inserting wet lead acetate paper which changes colour in the presence of such gases and gives indication of their presence.
 - d) Presence of oxygen should be verified by lowering a detector lamp into the manhole. In case, no oxygen is found inside the sewer line, workers should be sent only with oxygen kit.
 - e) Safety belt with rope should be provided to the workers. While working inside the manholes, such rope should be handled by two men standing outside to enable him to be pulled out during emergency.
 - f) The area should be barricaded or cordoned of by suitable means to avoid mishaps of any kinds. Proper warning signs should be displayed for the safety of the public whenever cleaning works are undertaken during night or day.
 - g) No smoking or open flames shall be allowed near the blocked manholes being cleaned.
 - h) The malba obtained on account of cleaning of blocked manholes and sewer lines should be immediately removed to avoid accidents on account of slippery nature of the malba.
 - i) Worker should not be allowed to work inside the manhole continuously. He should be given rest intermittently. The Engineer-in-Charge may decide the time up to which a worker may be allowed to work continuously inside the manhole.
 - j) Gas mask with oxygen cylinder should be kept at site for use in emergency.
 - k) Air-blowers should be used for flow of fresh air through the manholes. Whenever called for, portable air blowers are recommended for ventilating the manholes. The motors for these shall be vapour proof and of totally enclosed type. Non sparking gas engines also could be used but they should placed atleast 2 meters away from

- the opening and on the leeward side protected from wind so that they will not be a source of fire on any inflammable gas that might be present.
- l) The workers engaged for cleaning the manholes/sewers should be properly trained before allowing to work in the manhole.
 - m) The workers shall be provided with Gumboots or non sparking shoes bump helmets and gloves non sparking tools safety light and gas mask and portable air blower (when necessary). They must be supplied with barrier cream for anointing the limbs before working inside the sewer lines.
 - n) Workmen descending a manhole shall try each ladder stop or rung carefully before putting his full weight on it to guard against insecure fastening due to corrosion of the rung fixed to manhole well.
 - o) If a man has received a physical injury, he should be brought out of the sewer immediately and adequate medical aid should be provided to him.
 - p) The extent to which this precaution are to be taken depend on individual situation but the decision of the Engineer-in-Charge regarding the steps to be taken in this regard in an individual case will be final.
- vi) The Contractor shall not be employed men and women below the age of 18 years on the work of painting with products containing lead in any form. Wherever men above the age of 18 are employed on the work of lead painting the following precaution should be taken :-
- a) No paint containing lead or lead products shall be used except in the form of paste or readymade paint.
 - b) Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint is dry rubbed and scrapped.
 - c) Overalls shall be supplied by the contractors to the workmen and adequate facilities shall be provided to enable the working painters to wash during and on the cessation of work.
9. An additional clause (viii) (i) of Public Works Department safety code (iv) the contractor shall not employ women and men below the age of 18 on the work of painting with product containing lead in any form, wherever men above the age of 18 are employed on the work of lead painting, the following principles must be observed for such use :-
- i) White lead, sulphate of lead or product containing these pigment, shall not be used in painting operation except in the form of pastes or paint ready for use.
 - ii) Measures shall be taken wherever required in order to prevent danger arising from the application of a paint in the form of spray.
 - iii) Measures shall be taken, wherever practicable, to prevent danger arising out of from dust caused by dry rubbing down and scraping.
 - iv) Adequate facilities shall be provided to enable working painters to wash during and on cessation of work.
 - v) Overall shall be worn by working painters during the whole of working period.
 - vi) Suitable arrangement shall be made to prevent clothing put off during working hours being spoiled by painting materials.
 - vii) Cases of lead poisoning and suspected lead poisoning shall be notified and shall be subsequently verified by medical man appointed by competent authority of IFC Deptt
 - viii) IFC Deptt may require, when necessary medical examination of workers.
 - ix) Instructions with regard to special hygienic precautions to be taken in the painting trade shall be distributed to working painters.

10. When the work is done near any place where there is risk of drowning, all necessary equipments should be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision, should be made for prompt first aid treatment of all injuries likely to be obtained during the course of the work.
11. Use of hoisting machines and tackle including their attachment, anchorage and supports shall conform to the following standard or conditions:-
 - i) a) These shall be of good mechanical construction, sound materials and adequate strength and free from patent defects and shall be kept repaired and in good working order.
 - b) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from patent defects.
 - ii) Every crane driver or hoisting appliance operator, shall be properly qualified and no person under the age of 21 years should be in charge of any hoisting machine including any scaffolding winch or give signals to operator.
 - iii) In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or as means of suspension, the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of a hoisting machine having a variable safe working load each safe working load and the condition under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.
 - iv) In case of departmental machine, the safe working load shall be notified by the Electrical Engineer-in-Charge. As regards contractor's machine the contractors shall notify the safe working load of the machine to the Engineer-in-Charge whenever he brings any machinery to site of work and get it verified by the Electrical Engineer concerned.
12. Motors, gearing, transmission, electric wiring and other dangerous part of hoisting appliance should be provided with efficient safeguards. Hoisting appliance should be provided with such means as will reduce to the minimum the risk of accidental descent of the load. Adequate precautions should be taken to reduce to the minimum the risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installation which are already energized, insulating mats, wearing apparel, such as gloves, sleeves and boots as may be necessary should be provided. The worker should not wear any rings, watches or carry keys or other materials which are good conductors of electricity.
13. All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near places of work.
14. These safety provisions should be brought to the notice of all concerned by displayed on a notice board at a prominent place at work spot. The person responsible for compliance of the safety code shall be named therein by the contractor.
15. To ensure effective enforcement of the rules and regulation relating to safety precautions the arrangements made by the contractor shall be open to inspection by the labour Officer or Engineer-in-Charge of the department or their representatives.

16. Notwithstanding the above clause from (1) to (15), there is nothing in these to exempt the contractor from the operation of any other Act or rule in force in the Republic of India.



Model Rules for the Protection of Health and Sanitary Arrangement for Workers Employed by P.W.D. or its Contractors

1. APPLICATION

These rules shall apply to all buildings and construction works in charge of Public Works Department/ IFC Deptt in which twenty or more workers are ordinarily employed or are proposed to be employed in any day during the period during which the contract work is in progress.

2. DEFINITION

Work place means a place means a place where twenty or more workers are ordinarily employed in connection with construction work on any day during the period during which the contract work is in progress.

3. FIRST-AID FACILITIES

- i) At every work place, there shall be provided and maintained, so as to be easily accessible during working hours, first aid boxes at the rate of not less than one box for 150 contract labour or part thereof ordinarily employed.
- ii) The first-aid box shall be distinctly marked with a red cross on white back ground and shall contain the following equipment:-

- a) For work places in which the number of contract labour employed does not exceed 50-

Each first-aid box shall contain the following equipments:-

- 1. 6 small sterilised dressings.
 - 2. 3 medium size sterilised dressings.
 - 3. 3 large size sterilised dressings.
 - 4. 3 large sterilised burn dressings.
 - 5. 1 (30ml) bottle containing a two percent alcoholic solution of iodine.
 - 6. 1 (30 ml) bottle containing salvolatile having the dose and mode of administrator indicated on the label.
 - 7. 1 snakebite lancet.
 - 8. 1 (30gms) bottle of potassium permanganate crystals.
 - 9. 1 pair scissors.
 - 10. 1 copy of the first-aid leaflet issued by the Chief Engineer, IFC Deptt, Manipur, Factory Advice Service and Labour Institutes, Government of India.
 - 11. 1 bottle containing 100 tablets (each of 5 gms) of aspirin.
 - 12. Ointment for burns.
 - 13. A bottle suitable surgical antiseptic solution.

- (b) For work places in which the number of contract labour exceed 50.

Each first-aid box shall contain the following equipments.

- 1. 12 small sterilized dressings.
 - 2. 6 medium size sterilized dressings.

3. 6 large size sterilized dressings
4. 6 large size sterilized burn dressings.
5. 6 (15 gms.) packets sterilized cotton wool.
6. 1 (60 ml.) bottle containing a two percent alcoholic solution iodine.
7. 1 (60 ml.) bottle containing salvolatite having the dose and mode of administration indicated on the label.
8. 1 roll of adhesive plaster.
9. 1 snake bite lancet.
10. 1 (30 gms.) bottle of potassium permanganate crystals.
11. 1 pair scissors.
12. 1 copy of the first-aid leaflet issued by the Director General Factory Advice Service and Labour Institute/Government of India.
13. A bottle containing 100 tablets (each of 5 gms.) of aspirin.
14. Ointment for burns.
15. A bottle of suitable surgical antiseptic solution.

- (iii) Adequate arrangements shall be made for immediate recoupment of the equipment when necessary.
- (iv) Nothing except the prescribed contents shall be kept in the First-aid-box.
- (v) The first aid box shall be kept in charge of a responsible person who shall always be readily available during the working hours of the work place.
- (vi) A person in charge of the First-aid box shall be a person trained in First-aid treatment in the work places where the number of contract labour employed is 150 or more.
- (vii) In work places where the number of contract labour employed is 500 or more and hospital facilities are not available within easy distance from the works. First-aid posts shall be established and run by a trained compounder. The compounder shall be on duty and shall be available at all hours when the workers are at work.
- (viii) Where work places are situated in places which are not towns or cities, a suitable motor transport shall be kept readily available to carry injured person or person suddenly taken ill to the nearest hospital.

4. DRINKING WATER

- (i) In every work place, there shall be provided and maintained at suitable places, easily accessible to labour, a sufficient supply of cold water fit for drinking.
- (ii) Where drinking water is obtained from an intermittent public water supply, each work place shall be provided with storage where such drinking water shall be stored.
- (iii) Every water supply or storage shall at a distance of not less than 50 feet from any latrine drain or other source of pollution. Where water has to be drawn from an existing well which is within such proximity of latrine, drain or any other source of pollution, the well shall be properly chlorinated before water is drawn from it for drinking. All such wells shall be entirely closed in and be provided with a trap door which shall be dust and waterproof.
- (iv) A reliable pump shall be fitted to each covered well, the trap door shall be kept locked and opened only for cleaning or inspection which shall be done at least once a month.

5. WASHING FACILITIES

- (i) In every work place adequate and suitable facilities for washing shall be provided and maintained for the use of contract labour employed therein.
- (ii) Separate and adequate cleaning facilities shall be provided for the used of male and female workers.
- (iii) Such facilities shall be conveniently accessible and shall be kept in clean and hygienic condition.

6. LATRINES AND URINALS

- (i) Latrines shall be provided in every work place on the following scale namely:-

- (a) Where female are employed, there shall be at least one latrine for every 25 females.
- (b) Where males are employed, there shall be at least one latrine for every 25 males.

Provided that, where the number of males or females exceeds 100, it shall be sufficient if there is one latrine for 25 males or females as the case may be upto the first 100, and one for every 50 thereafter.

- (ii) Every latrine shall be under cover and so partitioned off as to secure privacy, and shall have a proper door and fastenings.
- (iii) Construction of latrines: The inside walls shall be constructed of masonry or some suitable heat-resisting nonabsorbent materials and shall be cement washed inside and outside at least once a year. Latrines shall not be of a standard lower than borehole system.
- (iv)
 - (a) Where workers of both sexes are employed, there shall be displayed outside each block of latrine and urinal, a notice in the language understood by the majority of the workers "For Men Only" or "For Women Only" as the case may be.
 - (b) The notice shall also bear the figure of a man or of a woman, as the case may be.
- (v) There shall be at least one urinal for male workers upto 50 and one for female workers upto fifty employed at a time, provided that where the number of male or female workmen, as the case may be exceeds 500, it shall be sufficient if there is one urinal for every 50 males or females upto the first 500 and one for every 100 or part thereafter.
- (vi)
 - (a) The Latrines and urinals shall be adequately lighted and shall be maintained in a clean and sanitary condition at all times.
 - b) Latrine and urinal others than those connected with a flush sewage system shall comply with the requirements of Public Health Authorities.
- (vii) Water shall be provided by means of tap or otherwise so as to be conveniently accessible in or near the latrines and urinals.
- (viii) Disposal of excreta: Unless otherwise arranged for by the local sanitary authority, arrangements for proper disposal of excreta by incineration at the work place shall be made by means of a suitable incinerator. Alternately excreta may be disposed of by putting a layer of night soil at the bottom of

pucca tank prepared for the purpose and covering it with a 15 cm. layer of waste refuse and then covering it with a layer of earth for a fortnight (when it will turn to manure).

- (ix) The contractor shall at his own expense, carry out all instructions issued to him by the Engineer-in-Charge to effect proper disposal of night soil and other conservancy work in respect of the contractor's workmen or employees on the site. The contractor shall be responsible for payment of any charges which may be levied by Municipal or Cantonment Authority for execution of such on his behalf.

7. PROVISION OF SHELTER DURING REST

At every place there shall be provided, free of cost, four suitable sheds, two for meals and the other two for rest separately for the use of men and women labour. The height of each shelter shall not be less than 3 metres (10 ft.) from the floor level to the lowest part of the roof. These shall be kept clean and the space provided shall be on the basis of 0.6 m. (6 ft) per head.

Provided that the Engineer-in-Charge may permit subject to his satisfaction, a portion of the building under construction or other alternative accommodation to be used for the purpose.

8. CRÈCHES

- (i) At every work place, at which 20 more women worker are ordinarily employed, there shall be provided two rooms of reasonable dimensions for the use of their children under the age of six years. One room shall be used as a play room for the children and the other as their bedroom. The rooms shall be constructed with specifications as per clause 19H (ii) a,b, & c.
- (ii) The rooms shall be provided with suitable and sufficient openings for light and ventilation. There shall be adequate provision of sweepers to keep the places clean
- (iii) The Contractor shall supply adequate number of toys and games in the play room and sufficient number of cots and beddings in the bed room.
- (iv) The contractor shall provide one ayaa to look after the children in the crèche when the number of women workers does not exceed 50 and two when the numbers of women workers exceed 50.
- (v) The use of the rooms earmarked as crèches shall be restricted to children, their attendants and mothers of the children.

9. CANTEENS

- (i) In every work place where the work regarding the employment of contract labour is likely to continue for six months and where in contract labour numbering one hundred or more are ordinarily employed, an adequate canteen shall be provided by the contractor for the use of such contract labour.
- (ii) The canteen shall be maintained by the contractor in an efficient manner.
- (iii) The canteen shall consist of at least a dining hall kitchen, storeroom, pantry and washing places separately for workers and utensils.
- (iv) The canteen shall be sufficiently lighted at all time when any person has access to it.

- (v) The floor shall be made of smooth impervious materials and inside walls shall be lime-washed or colour washed at least once in each year.
Provided that the inside walls of the kitchen shall be lime washed every four months.
- (vi) The premises of the canteen shall be maintained in a clean and sanitary condition.
- (vii) Waste water shall be carried away in suitable covered drains and shall not be allowed to accumulate so as to cause a nuisance.
- (viii) Suitable arrangement shall be made for the collection and disposal of garbage.
- (ix) The dining hall shall accommodate at a time 30 per cent of the contract labour working at a time.
- (x) The floor area of the dining hall, excluding the area occupied by the service counter and any furniture except tables and chairs shall not be less than one square metre (10 sq ft) per dinner to be accommodated as prescribed in sub-Rule 9.
- (xi)
 - a) A portion of the dining hall and service counter shall be partitioned off and reserved for woman workers in proportion to their number.
 - b) Washing places for woman shall be separate and screened to secure privacy.
- (xii) Sufficient tables stools, chair or benches shall be available for the number of diners to be accommodated as prescribed in sub – Rule 9.
- (xiii)
 - a)
 - 1. There shall be provided and maintained sufficient utensil crockery, furniture and any other equipments necessary for the efficient running of the canteen.
 - 2. The furniture utensils and other equipments shall be maintained in a clean and hygienic condition.
 - b)
 - 1. Suitable clean clothes for the employees serving in the canteen shall be provided and maintained.
 - 2. A service counter, if provided, shall have top of smooth impervious materials.
 - 3. Suitable facilities including an adequate supply of hot water shall be provided for the cleaning of utensils and equipments.
- (xiv) The food stuffs and other items to be served in the canteen shall be in conformity with the normal habits of the contract labour.
- (xv) The charges for food stuffs, beverage and any other items served in the canteen shall be based on 'No profit, No loss' and shall be conspicuously displayed in the canteen.
- (xvi) In arriving at the price of foodstuffs, and other article served in the canteen, the following items shall not be taken into consideration as expenditure namely:-
 - a) The rent of land and building.

- b) The depreciation and maintenance charges for the building and equipments provided for the canteen.
- c) The cost of purchases, repairs and replacement of equipments including furniture, crockery, cutlery and utensil.
- d) The water charges and other charges incurred for lighting and ventilation.
- e) The interest and amounts spent on the provision and maintenance of equipments provided for the canteen.

(xvii) The accounts pertaining to the canteen shall be audited once every 12 months by registered accountants and auditors.

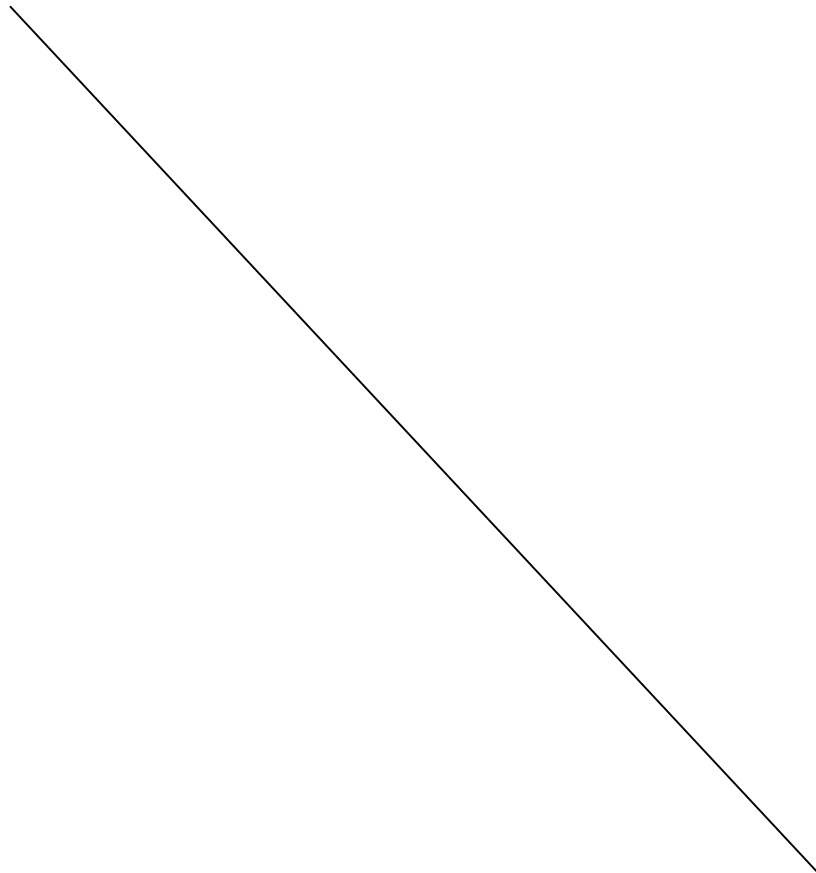
10. ANTI – MALARIAL PRECAUTIONS

The contractor shall at his own expenses, conform to all anti-malarial instructions given to him by the Engineer-in-Charge including fillings up of any borrow pits which may have been dug by him.

11. The above rules shall be incorporated in the contracts and in noticed inviting tenders and shall form an integral part of the contracts.

12. AMENDMENTS

Government may, from time to time, add to or amend this rule and issues directions - it may be considered necessary for the purpose of removing any difficulty which may arise in the administration thereof.



P.W.D. CONTRACTOR'S LABOUR REGULATIONS

1. SHORT TITLE

These regulations may be called the C.P.W.D/ IFC Deptt contractors labour regulations.

2. DEFINITIONS

- (i) workman means any person employed by P.W.D/ IFC Deptt or its contractor directly or indirectly through a subcontractor with or without the knowledge of the Publics Works Department/ IFC Deptt to do any skilled, semiskilled or un skilled manual, supervisory, technical or clerical work for hire or rewards, whether the terms of employment are expressed or implied but does not include any person:-
 - a) Who is employed mainly in a managerial or administrative capacity: or
 - b) Who, being employed in a supervisory capacity draws wages exceeding five hundred rupees per mensem or exercises either by the nature of the duties attached to the office or by reason of powers vested in him, functions mainly of managerial nature: or .
 - c) who is an out worker, that is to say, person to whom any article or materials are given out by or on behalf of the principal employers to be made up cleaned, washed, altered, ornamental finished, repaired adopted or otherwise processed for sale for the purpose of the trade or business of the principal employer and the process is to be carried out either in the home of the out worker or in some other premises, not being premises under the control and management of the principal employer.

No person below the age of 14 years shall be employed to act as a workman.

- (ii) Fair Wages means wages whether for time or piece work fixed and notified under the provisions of the Minimum Wages Act from time to time.
 - (iii) Contractors shall include every person who undertakes to produce a given result other than a mere supply of goods or articles of manufacture through contract labour or who supplies contract labour for any work and includes a subcontractor.
 - (iv) Wages shall have the same meaning as defined in the Payment of Wages Act.
3. (i) Normally working hours of an adult employee should not exceed nine hours a day. The working day shall be so arranged that inclusive of interval for rest, if any, it shall not spread over more than 12 hours on any day.
- (ii) When an adult worker is made to work for more than 9 hours on any day or for more than 48 hours in any week, he shall be paid overtime for the extra hours put in by him at double the ordinary rate of wages.
 - (iii)
 - a) Every worker shall be given a weekly holiday normally on a Sunday, in accordance with the provisions of the Minimum Wages (Central) Rules 1960 as amended from time to time irrespective of whether such work is govern by the Minimum Wages Act or not.
 - b) where the minimum wages prescribed by the government under the Minimum Wages Act are not inclusive of the wages for the weekly day of rest, the worker shall be entitled to rest day wages at the rate applicable to the next preceding day, provided he has worked under the same contractor for a continuous period of not less than 6 days.

- c) Where a contractor is permitted by the Engineer-in-Charge to allow a worker to work on a normal weekly holiday he shall grant a substituted holiday to him for the whole day on one of the five days immediately before or after the normal weekly holiday and pay wages to such worker for the work performed on the normal weekly holiday at overtime rate.

4. DISPLAY OF NOTICE REGARDING WAGES ETC.

The contractor shall before he commences his work on contract, display and correctly maintain and continue to display and correctly maintain in a clear and legible condition in conspicuous places on the work, notices in English and in the local Indian Languages spoken by the majority of the workers giving the minimum rates of wages fixed under Minimum Wages Act, the actual wages being paid, the hours of work for which such wages are earned, wages periods, dates of payment of wages and other relevant information as per Appendix 'III'.

5. PAYMENT OF WAGES

- i) The contractor shall fix wages period in respect of which wages shall be payable.
- ii) No wages period shall exceed one month.
- iii) The wages of every person employed as contract labour in an establishment or by a contractor where less than one thousand such person are employed shall be paid before the expiry of seventh day and in other cases before the expiry of tenth day after the last of the wages period in respect of which the wages are payable.
- iv) Where the employment of any worker is terminated by or on behalf of the contractor the wages earned by him shall be paid before the expiry of the second working day from the date on which his employment is terminated.
- v) All payments of wages shall be made on a working day at the work premises and during the working time and on a date notified in advance and in case the work is completed before the expiry of the wage period, final payment shall be made within 48 hours of the last working day.
- vi) Wages due to every worker shall be paid to him direct or to other person authorized by him in this behalf.
- vii) All wages shall be paid in current coin or currency or in both.
- viii) Wages shall be paid without any deductions any kind except those specified by Government by general or special order in this behalf or permissible under the payment of Wages Act 1956.
- ix) A notice showing the wages period and the place and time of disbursement of wages shall be displayed at the place of work and a copy sent by the contractor to the Engineer-in-Charge under acknowledgement.
- x) It shall be the duty of the contractor to ensure the disbursement of wages in the presence of the Junior Engineer or any other authorized representative of the Engineer-in-Charge who will be required to be present at place and time of disbursement of wages by the contractor to workmen.
- xi) The contractor shall obtain from the Junior Engineer or any other authorized representative of the Engineer-in-Charge as the case may be, a certificate under his signature at the end of the entries in the "Register of Wages" of the "Wage-cum-Muster Roll" as the case may be in the following form:-

"Certified that the amount shown in column No..... has been paid to the workman concerned in my presence onat"

6. FINES AND DEDUCTION WHICH MAY BE MADE FROM WAGES

- i) The wages of a worker shall be paid to him without any deduction of any kind except the following:-
 - a) Fines
 - b) Deductions for absence from duty i.e. from the palace or the places where by terms of his employment he is required to work. The amount of deduction shall be in proportion to the period for which he was absent.
 - c) Deduction for the damage to or loss of goods expressly entrusted to the employed person for custody, or loss of money or any other deduction which he is required to account where such damage or loss is directly attributable to his neglect or default.
 - d) Deduction for recovery of advances or for adjustment of overpayment of wages, advances granted shall be entered in a register.
 - e) Any other deduction which the Government may from time to time allow.
- ii) No fines should be imposed on any worker save in respect of such acts and omissions on his part as have been improved of by the Chief Labour Commissioner.

Note :- An approved list of acts and omissions for which fines can be imposed is enclosed at Appendix-X.

- iii) No fine shall be imposed on a worker and no deduction for damage or loss shall be made from his wages until the worker has been given an opportunity of showing cause against such fines or deductions.
- iv) The total amount of fine which may be imposed in any one wages period on a worker shall not exceed an amount equal to three paise in a rupee of the total wages, payable to him in respect of that wage period.
- v) No fine imposed on any worker shall be recovered from him by installment, or after the expiry of sixty days from the date on which it was imposed.
- vi) Every fine shall be deemed to have been imposed on the day of the act or omission in respect of which it was imposed.

7. LABOUR RECORDS

- i) The contractor shall maintain a Register of persons employed on work on contract in form XIII of the CL (R & A) Central Rules 1971 (Appendix IV).
- ii) The contractor shall maintain a Muster Roll Register in respect of all workman employed by him on the under contract in Form XVI of the CL (R&A) Rules 1971 (Appendix – V).
- iii) The contractor shall maintain a Wage Register in respect of all workman employed by him on the work under Contract in Form XVII of the CL (R&A) Rules 1971 (Appendix VI).
- iv) Register of accident – the contractor shall maintain a register of accident in such form as may

be convenient at the work place but the same shall include the following particulars:

- a) Full particulars of the labourers who met with accident.
- b) Rate of Wages.
- c) Sex
- d) Age
- e) Nature of accident and cause of accident.
- f) Time and date of accident
- g) Date and time when admitted in Hospital
- h) Date of discharge from the Hospital.
- i) Period of treatment and result of treatment.
- j) Percentage of loss of earning capacity and disability as assessed by Medical Officer.
- k) Claim required to be paid under Workman's Compensation Act.
- l) Date of payment of compensation.
- m) Amount paid with details of the person to whom the same was paid.
- n) Authority by whom the compensation was assessed.
- o) Remarks.
- v) The contractor shall maintain a Register of Fines in the form XII of the CL (R&A) Rules 1971 (Appendix – XI)

The contractor shall display in a good condition and in a conspicuous place of work the approved list of acts and omission for which fines can be imposed (Appendix – X).

- vi) The contractor shall maintain a Register of deduction for damage or loss in Form XX of the CL (R&A) Rule 1971 (Appendix – XII).
- vii) The contractor shall maintain a Register of Advances in Form XXIII of the CL (R&A) Rules 1971 (Appendix - XIII)
- viii) The contractor shall maintain a Register of Over time in Form XXIII of the CL (R&A) Rules 1971 (Appendix - XIV).

8. ATTENDANCE CARD – CUM –WAGE SLIP

- i) The contractor shall issue an Attendance card-cum-wage slip to each workman employed by him in specimen form at (Appendix – VII)
- ii) The card shall be valid for each wage period.
- iii) The contractor shall mark the attendance of each workman on the card twice each day, once at the commencement of the day and again after the rest interval, before he actually starts work.
- iv) The card shall remain in possession of the worker during the wage period under reference.
- v) The contractor shall complete the wage slip portion on the reverse of the card at least a day prior to the disbursement of wages in respect of the wage period under reference.
- vi) The contractor shall obtain the signature or thumb impression of the worker on the wage slip at the time of disbursement of wages and retain the card with himself.

9. EMPLOYMENT CARD

The contractor shall issue an employment card in Form XIV of the CL (R&A) Central Rules 1971 to each workers within three days of the employment of the worker (Appendix VIII).

10. SERVICE CERTIFICATE

On termination of employment for any reason whatsoever the contractor shall issue the workman whose services have been terminated, a Service certificate in Form XV of the CL (R&A) Central Rule 1971 (Appendix – IX)

11. PRESERVATION OF LABOUR RECORDS

All records required to be maintained under Regulation Nos. 6 & 7 shall be preserved in original for a period of three years from the date of last entries made in them and shall be made available for inspection by the Engineer-in-Charge or Labour Officer or any other officers authorized by the Ministry of Urban Development in this behalf.

12. POWER OF LABOUR OFFICER TO MAKE INVESTIGATIONS OR ENQUIRY

The Labour Officer or any person authorized by Government on their behalf shall have power to make enquiries with a view to ascertaining and enforcing due and proper observance of Fair wages Clauses and the Provisions of these regulations. He shall investigate into any complaint regarding the default made by the contractor or sub contractor in regard to such Provision.

13. REPORT OF LABOUR OFFICER

The Labour Officer or other persons authorized as aforesaid shall submit a report of result of his investigation or enquiry to the Executive Engineer concerned indicating the extent, if any, to which the default has been committed with a note that necessary deductions from the contractor's bill be made and the wages and other dues be paid to the labourers concerned. In case an appeal made by the contractor under Clause 13 of these regulations, actual payment to labourers will be made by the Executive Engineer after the Superintending Engineer has given his decision on such appeal.

- i) The Executive Engineer shall arrange payments to the labour concerned within 45 days from the receipt of the report from the Labour Officer or the Superintending Engineer as the case may be.

14. APPEALS AGAINST THE DECISION OF LABOUR OFFICER

Any person aggrieved by the decision and recommendation of the Labour Officer or other person so authorized may appeal against such decision to the Superintending Engineer concerned within 30 days from the date of decision forwarding simultaneously a copy of his appeal to the Executive Engineer concerned but subject to such appeal, the decision of the officer shall be final and binding upon the contractor.

15. PROHIBITION REGARDING REPRESENTATION THROUGH LAWYER

- i) A workman shall be entitled to be represented in any investigation or enquiry under these regulations by:-
 - a) An officer of a registered trade union of which he is a member.
 - b) An officer of a federation of trade unions to which the trade union referred to in clause (a) is affiliated.

- c) Where the employer is not a member of any registered trade union, by an officer of a registered trade union, connected with the industry in which the worker is employed or by any other workman employed in the industry in which the worker is employed.
- ii) An employer shall be entitled to be represented in any investigation or enquiry under this regulations by:-
 - a) An officer of an association of employers of which he is a member.
 - b) An officer of a federation of associations of employers to which association referred to in clause (a) is affiliated.
 - c) Where the employers is not a member of any association of employers, by an officer of association of employer connected with the industry in which the employer is engaged or by any other employer, engaged in the industry in which the employer is engaged.
- iii) No party shall be entitled to be represented by a legal practitioner in any investigation or enquiry other these regulations

16 INSPECTION OF BOOKS AND SLIPS

The contractor shall allow inspection of all the prescribed labour records to any of his workers or to his agent at a convenient time and place after due notice is received or to the Labour Officer or any other person, authorized by the Government on his behalf

17 SUBMISSIONS OF RETURNS

The contractor shall submit periodical returns as may be specified from time to time.

18 AMENDMENTS

The Government may from time to time add to or amend the regulations and on any question as to the application/interpretation or effect of those regulations the decision of the Superintending Engineer concerned shall be final.

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SPECIMEN FORM OF THE REGISTER, REGARDING
MATERNITY BENEFIT ADMISSIBLE TO THE CONACTOR'S LABOUR
IN PUBLIC WORKS DEPARTMENT WORKS.

Name and address of the contractor.....

Name and location of the work.....

1. Name of the women and her husband's name.
2. Designation.
3. Date of appointment.
4. Date with months and years in which she is employed.
5. Date of discharge / dismissal, if any.
6. Date of production of certificate in respect of pregnancy.
7. Date on which the women informs about the expected delivery.
8. Date of delivery / miscarriage / death.
9. Date of production of certificate in respect of delivery / miscarriage.
10. Date with the amount of maternity/death benefit paid in advance of expected delivery.
11. Date with amount of subsequent payment of maternity benefit.
12. Name of the person nominated by the woman to receive the payment of the maternity benefit after her death.
13. If the woman dies, the date of her death, the name of the person to whom maternity benefit amount was paid, the month thereof and the date of payment.
14. Signature of the contractor authenticating entries in register.
15. Remarks column for use of Inspecting Officer.

LABOUR BOARD

Name of work.....

Name of Contractor

Address of Contractor.....

Name and address of C.P.W.D. Division

Name of C.P.W.D labour officer.....

Address of C.P.W.D labour officer.....

Name of Labour Enforcement officer

Address of Labour Enforcement Officer.....

SL. No.	Category	Minimum wage fixed	Actual wage paid	Number present	Remarks

Weekly holiday

Wage period

Date of payment of wages

Working hours

Rest interval

13 Form - XIII (See rule 75)

Register of Workmen Employed by Contractor

Name and address of contractor

Name and address of establishment under which contract is carried on

Name of work and location of work

Name and address of Principal Employer

Sl No	Name and surname of workmen	age and sex	Father's/Husband Name	Nature of employment/designation	Permanent home address of the workmen (village and Tehsil, Taluk and District)	Local Address	Date of commencement of employment	Signature or thumb impression of the workman	termination of employment	Reasons for terminations	Remarks
1	2	3	4	5	6	7	8	9	10	11	12

Form - XVI (see rule 78 (2) (a))

Master Roll

Name and address of contractor

Name and address of establishment under which contract is carried on

Name of work and location of work

Name and address of Principal EmployerFor the month of fortnight

SI No	Name of workmen	sex	Father's/Husband Name	Dates					Remarks
1	2	3	4	5	6	7	8	9	10

Form - XVII [(see Rule 78 (2) (a)]

Register of wages

Name and address of contractor

Name and address of establishment under which contract is carried on

Name of work and location of work

Name and address of Principal EmployerWages Period: Monthly/Fortnightly.

SI No	Name of workman	Serial no in the register of workman	Designation / nature of work done	No. of days worked	Units of work done	Daily rate of wages / piece rate	Amount of wages earned					Deductions if any (indicate nature)	Net amount paid	Signature or thumb impression of the workman	Initial of contractor or his representatives
							wages	Dearness allowances	Overtime	other case payment (indicate nature)	Total				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Wage card No.....

Wage Card

Name and address of contractorDate of issue.....

Name and location of workDesignation

Name of workmanMonth/Fortnight

Rate of Wages

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Morning																														Rate

Evening Amount

Initial

Received fromthe sum of Rs.on account of my wages

The Wage Card is valid for one month from the date of issue Signature

1 / Form – XIX
[See rule 78 (2) (d)]

Wages slip

Name and address of contractor

Name and Father's / Husband's name of workman

Nature and location of work

For the Week / Fortnight / Month ending

1. No. of days worked

2. No. of units worked in case of piece rate workers

3. Rate of daily wages / piece rate

4. Amount of overtime wages.....

5. Gross wages payable

6. Deduction, if any.....

7. Net amount of wages paid

Initials of the contractor or his representative

14 / Form – XIV
[See rule 76

Employment Card

Name and address of contractor

Name and address of establishment under which contract is carried on

Name of work and location of work

Name and address of Principal Employer

1. No. of days worked

2. SL.No. in the register of workman employed

3. Name of employment / designation

4. Wage rate (with particulars of unit in case of piece work).....

5. Wage period.....

6. Tenure of employment

7. Remarks.....

Signature contractor

15 Form - XV
Service Certificate

Name and address of contractor

Nature and location of work

Name and address of workman

Age or date of birth

Identification marks

Father's / Husband's name

Name and address of establishment in under which contract is carried on

Name and address of Principal Employer

SL. No.	Total period for which employed		Nature of work done	Rate of wages (with particulars of unit in case of piece work)	Remarks
	From	To			
1	2	3	4	5	6

Signature

LIST OF ACTS AND OMISSIONS FOR WHICH FINES CAN BE IMPOSED

In accordance with rule 7(v) of the IFC Deptt Contractor's Labour Regulations to be displayed prominently at the site of work both in English and local Language.

1. Willful insubordination or disobedience, whether alone or in combination with other.
2. Theft fraud or dishonestly in connection with the contractor beside a business or property of IFC Deptt.
3. Taking or giving bribes or any illegal gratifications.
4. Habitual late attendance.
5. Drunkenness lighting, riotous or disorderly or indifferent behaviour.
6. Habitual negligence.
7. Smoking near or around the area where combustible or other materials are locked.
8. Habitual indiscipline.
9. Causing damage to work in the progress or to property of the IFC Deptt or of the contractor.
10. Sleeping on duty.
11. Malingering or slowing down work.
12. Giving of false information regarding name, age father's name, etc.
13. Habitual losses of wage cards supplied by the employers.
14. Unauthorized use of employer's property to manufacturing or making of unauthorized particles at the work place.
15. Bad workmanship in construction and maintenance by skilled workers which is not approved by the Department and for which the contractors are compelled to undertake rectifications.
16. Making false complaints and / or misleading statements.
17. Engaging on trade within the premises of the establishments.
18. Any unauthorized divulgence of business affairs of the employees.
19. Collection or canvassing for the collection of any money within the premises of an establishment unless authorized by the employer.
20. Holding meeting inside the premises without previous sanction of the employers.
21. Threatening or intimidating any workman or employer during the working hours within the premises.

12 Form - XII
[(See Rule 78 (2) (d))]
Register of Fines

Name and address of contractor

Name and address of establishment in under which contract is carried on

Nature and location of work

Name and address of Principal Employer

SL. No.	Name of workman	Father's / husband's name	Designation / nature of employment	Act /Omission for which fine imposed	Date of offence	Whether workman showed cause against fine	Name of person in whose presence employee's explanation was heard.	Wage period and wages payable	Amount of affine imposed	Date of which dine realised	Remarks
1	2	3	4	5	6	7	8	9	10	11	12

Form - XX
(See Rule 78 (2) (d))
Register of deduction for damages or loss

Name and address of contractor

Name and address of establishment in under which contract is carried on

Nature and location of work

Name and address of Principal Employer

SL. No.	Name of workman	Father's / husband's name	Designation / nature of employment	Particulars of damages or loss	Date of damage or loss	Whether workman showed cause against deduction	Name of person in whose presence employee's explanation was heard	Amount of deduction imposed	No. of installments	Date of recovery		Remarks
										First installment	Last installments	
1	2	3	4	5	6	7	8	9	10	11	12	13

Form - XXII
(See Rule 78 (2) (d)
Register of Advances

Name and address of contractor

Name and address of establishment in under which contract is carried on

Nature and location of work

Name and address of Principal Employer

SL. No.	Name of workman	Father's / husband's name	Designation / nature of employment	Wage period and wages payable	Date and amount of advance given	Purchase(s) which advance made	Number of installments by which advance to be repaid	Date and amount of each installment repaid	Date and which last installment was repaid	Remarks
1	2	3	4	5	6	7	8	9	10	11

Form - XXIII
[(See Rule 78 (2) (e))]
Register of Overtime

Name and address of contractor

Name and address of establishment in under which contract is carried on

Nature and location of work

Name and address of Principal Employer

SL. No.	Name of workman	Father's / husband's name	Sex	Designation / nature of employment	Date of which overtime worked	Total overtime worked or production in case of piece repaid	Normal rate of wages	Overtime rate of wages	Overtime earning	Rate on which overtime paid	Remarks
1	2	3	4	5	6	7	8	9	10	11	12

APPENDIX – XV
Notice for appointment of Arbitrator
[Refer Clause 25]

To

The Chief Engineer,
.....

Dear Sir,

It terms of clause 25 of the agreement, particulars of which are given below, I/We hereby give notice to you to appoint an arbitrator for settlement of disputes mentioned below:

1. Name of applicant.
2. Whether applicant is individual/Prop. Firm/Partnership Firm/Ltd. Co.
3. Full address of the applicant.
4. Name of the work and contract number in which arbitration sought.
5. Name of the Division which entered into contract.
6. Contract amount in the work.
7. Date of contract.
8. Date of initiation of work.
9. Stipulated date of completion of work.
10. Actual dated of completion of work (if completed).
11. Total number of claims made.
12. Total amount claimed.
13. Date of intimation of final bill (if completed).
14. Date of payment of final bill (if completed).
15. Amount of final bill (if completed).
16. Date of request made to SE for decision.
17. Date of receipt of SE's decision.
18. Date of appeal to you.
19. Date of receipt of your decision.

Specimen signatures of the applicant
(only the person/authority who signed
the contract should sign).

I / We certify that the information given above is true to the best of my / our knowledge. I / We enclose following documents.

1. Statement of claims with amount of claims.
- 2.
- 3.

Yours faithfully,

(Signatures)

Copy in duplicate to :

1. The Executive Engineer,
..... Division.

Form of Performance Security (Guarantee) Bank Guarantee Bond

In consideration of the Governor of Manipur (hereinafter called "The Government") 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.

We, (hereinafter referred to as "the Bank") hereby undertake
(indicate the name of the Bank)
to pay to the Government an amount not exceeding Rs. (Rupees only) on demand by the Government.

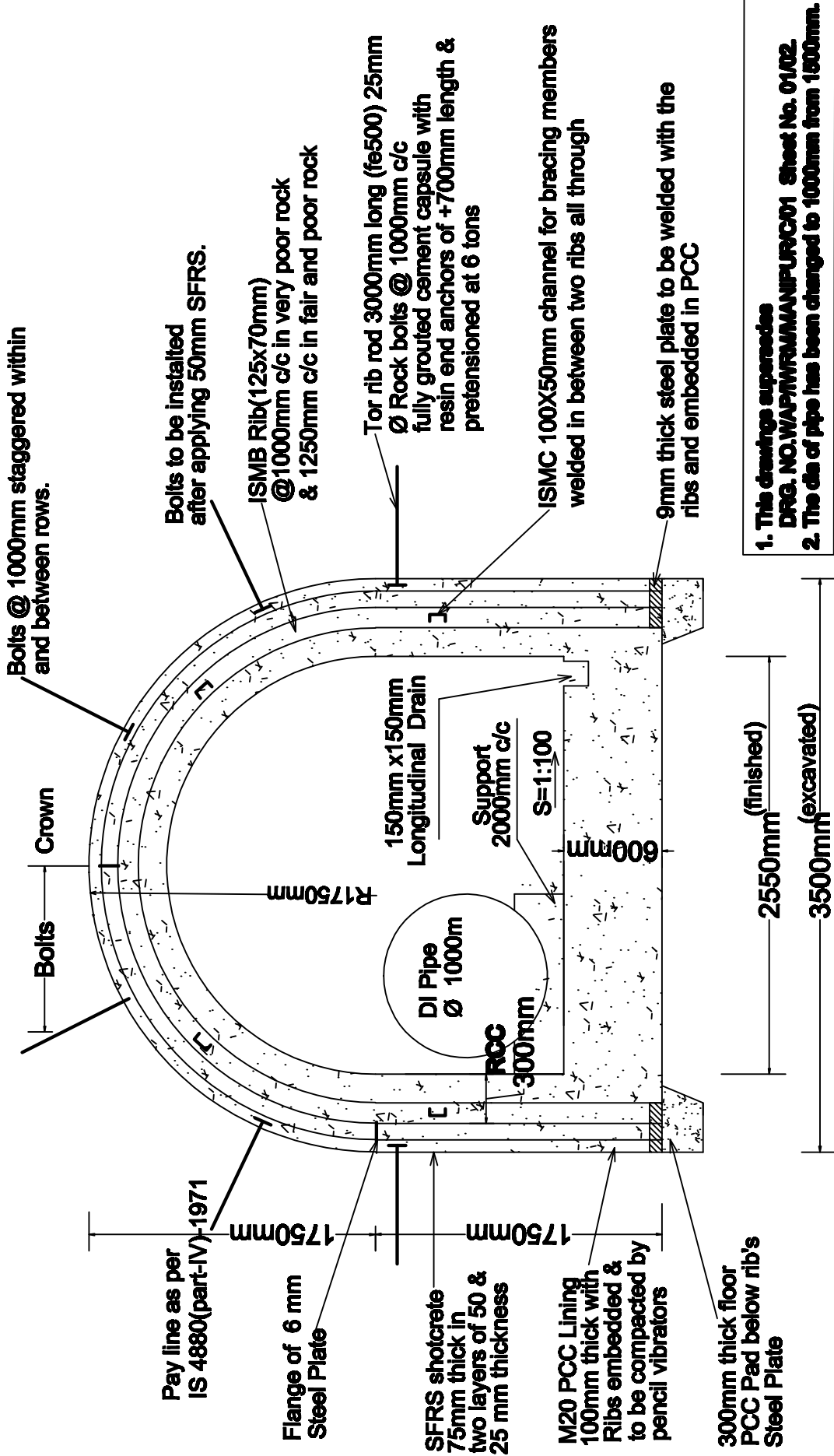
2. We, do hereby undertake to pay the amounts due and payable under this
(indicate the name of the Bank)
guarantee without any demure, merely on a demand from the Government stating that the amount claimed as required to meet the recoveries due or likely to be due from the said contractor(s). Any such 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 government any money so demanded notwithstanding any dispute or dispute raised by the contractor(s) in any suit of 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 valid discharge of our liability for payment thereunder and the Contractor(s) shall have no claim against us for making such payment.

4. We, 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 at the dues of the government under or by virtue of the said agreement have been fully and its claims satisfied or discharged or till Engineer-in-Charge on behalf of the Government 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, further agree with the Government that the Government shall have been the fullest liability 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 Government 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 Government or any indulgence by the Government 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, lastly undertake not to revoke this guarantee except with the previous consent of the Government in writing.
8. This guarantee shall be valid upto unless extended on demand by the Government. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs... (Rupeesonly) and unless a claim in writing is lodged with us within ix 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)




C/S OF TUNNEL & SUPPORT

REVISIONS			
REV.	DATE	REVISIONS	APPROVED
1			
CLIENT: Govt. of Manipur (Irrigation & Flood Control Department)			
DRAWING NAME: RAW WATER PIPELINE FROM THOUBAL			
DESIGN CONSULTANT: WAPCOS LIMITED (A Unit of India Infrastructure)			
AUGUST 2013		DRG. NO.WAPWRMANIPURC01	
		SHEET No. 01/02	



1. All dimensions are millimetres and elevations are in metres unless otherwise specified.
2. Reinforcement shall be cold twisted deformed steel bars conforming to IS: 1786.
3. Clear cover to reinforcement shall be 50mm(side wall) and 175mm for bottom.
4. Embedded and overlap length of reinforcement shall be as per IS: 456

0						ISSUED FOR CONSTRUCTION PURPOSE	
REV.	DATE	REVISIONS		DESIGN MR. JAYRAM KADAMBA	CHECKED MR. SUDHAR KADAMBA	APPROVED MR. SUDHAR KADAMBA	
<p align="center">Govt. of Manipur (Irrigation & Flood Control Department)</p> <p align="center">RAW WATER PIPELINE FROM THOUBAL</p>							
DRAWING NAME:				Reinforcement Details			
DESIGN CONSULTANT:				<p align="center">WAPCOS LIMITED (A Govt. of India Undertaking)</p>			
AUGUST 2013				<p align="center">  </p>			
SHEET No.				03 / 01			
DRG. NO. WAP/WRMMANIPUR/C/03							

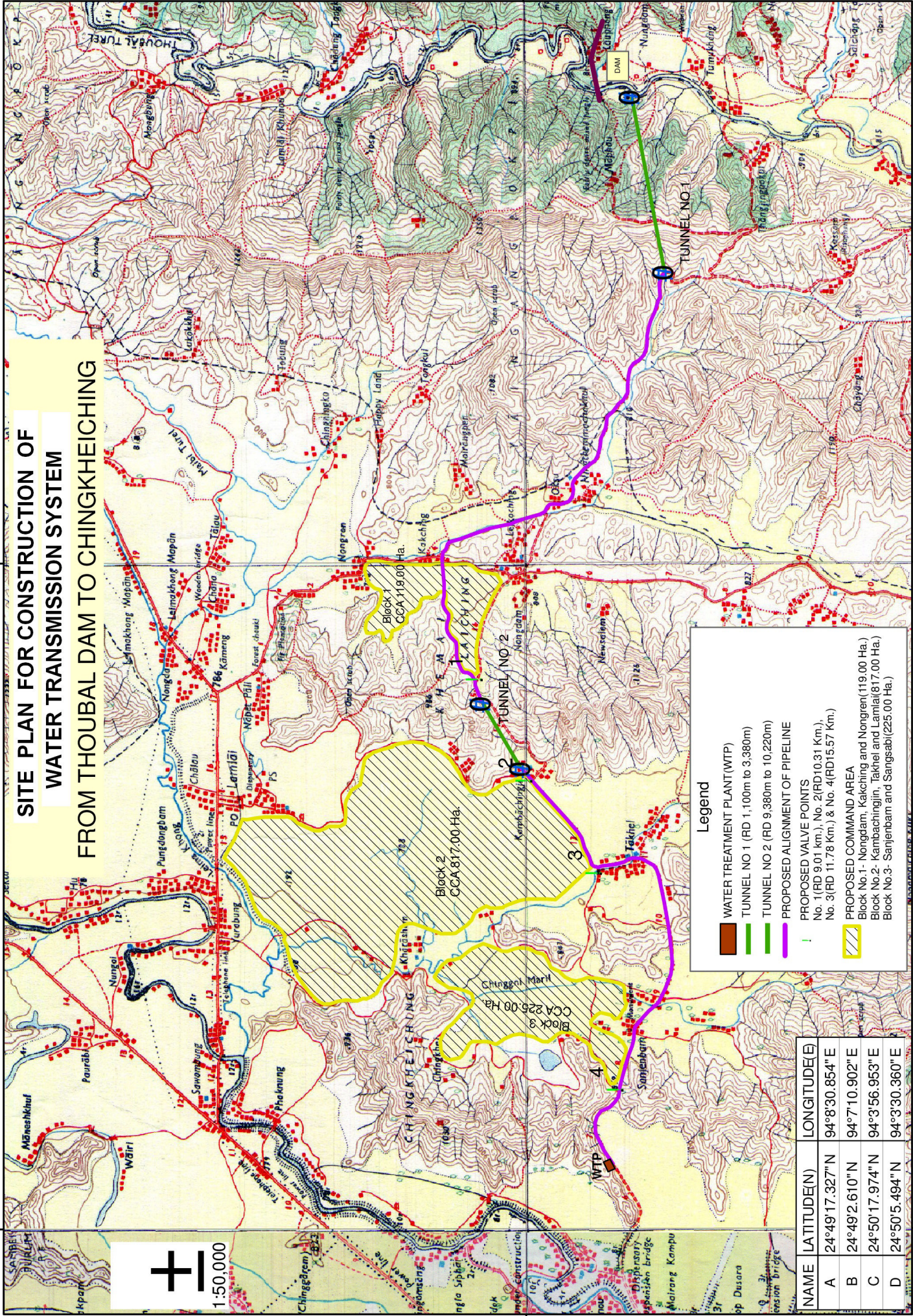
94°50"E

94°50"E

SITE PLAN FOR CONSTRUCTION OF
WATER TRANSMISSION SYSTEM
FROM THOUBAL DAM TO CHINGKHEICHING



1:50,000



Legend

- WATER TREATMENT PLANT (WTP)
- TUNNEL NO 1 (RD 1,100m to 3,380m)
- TUNNEL NO 2 (RD 9,380m to 10,220m)
- PROPOSED ALIGNMENT OF PIPELINE
- PROPOSED VALVE POINTS
- PROPOSED COMMAND AREA

- Block No. 1- Nongdam, Kakching and Nongren (119.00 Ha.)
- Block No. 2- Kambachingjin, Takhel and Lamlat (817.00 Ha.)
- Block No. 3- Sanjenbam and Sangsabi (225.00 Ha.)
- Block No. 4- Chingkheiching

NAME	LATITUDE(N)	LONGITUDE(E)
A	24°49'17.327"N	94°8'30.854"E
B	24°49'2.610"N	94°7'10.902"E
C	24°50'17.974"N	94°9'56.953"E
D	24°50'5.494"N	94°3'30.360"E

24°50'0"N

24°50'0"N

94°50"E

94°50"E