



(A government of India Enterprise under Ministry of Railways)

E-tender Document

For

Name of work: Construction of Running Rooms at JNPT & New Kharbao stations of DFCCIL in the state of Maharashtra

Tender No. MUM-S-Running Room-568-I

(PARTICIPATION THROUGH E-TENDER ONLY)

**E-tendering site- <https://www.ireps.gov.in> / its link at www.dfccil.com
(Help desk of IREPS: 011-23761525)**

May, 2020

Employer:

**CHIEF GENERAL MANAGER/SOUTH/MUMBAI
DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)**

Under

MINISTRY OF RAILWAYS

Address: 7th Floor, Central Railway's New Admin Building, D. N. Road, CSMT, Mumbai-400001, Tel. 022-22634185, Tel/Fax 022-22634184

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PART - I
INSTRUCTIONS TO BIDDERS (ITB)

Chapter -I GENERAL

1. The salient features of the contract are as follows:

i.	Tender No.	MUM-S-Running Room-568-I
ii.	Name of Work	Construction of Running Rooms at JNPT & New Kharbao stations of DFCCIL in the state of Maharashtra
iii.	Duration of Contract	18 months from the Date as specified in the letter of Acceptance
iv	Cost put to Tender	₹ 10,37,23,800/-
V	Earnest Money	₹ 6,68,600/- (Rs. Six lakhs sixty eight thousand six hundred only) to be deposited online through payment gateway provided at www.ireps.gov.in
Vi	Performance Security	5% of the Contract Value in the form of bank Guarantee to be submitted within 15 days from the Date of Issue of Letter of Acceptance (LOA)
Vii	Security Deposit	Overall Security Deposit is 5% of Contract Value. EMD of ₹ 6,68,600/- (Rs. Six lakhs sixty eight thousand six hundred only) to be adjusted against Security Deposit. Balance to be deducted @10% from each Running bill till realization of the full amount.

2. **General:** All bidders must note that this being E-tender, bids received only through online mode on E-tendering portal <https://www.ireps.gov.in> shall only be considered as an offer. **Any bid submitted in paper form will neither be received nor opened and shall be summarily rejected.**

Further, following instructions should be noted by bidders

3. Bid Document obtaining process:

The Bidder who wishes to view free Notification and tender documents can visit website www.ireps.gov.in or www.dfccil.com

Interested bidders who wish to participate should visit website <https://www.ireps.gov.in>, which is the ONLY website for bidding their offer. Further the procedure is as follows:

- The system requirements (hardware and software) for tendering through this portal are given in the user manual titled **Getting Your System Ready for IREPS Application** available in **Learning Center** link on IREPS Home Page.
- Bidders are required to Obtain Class-III Digital Signature Certificate along with the Firm's Name. The same can be procured from any of the Certifying Authorities authorized by Controller of Certifying Authorities (CCA) in the name of the person who will submit the

Online Tender and is authorized to do so. Bidders may visit the site of CCA (www.cca.gov.in) for further details.

- This tender being E-tender, the digital signature obtained from approved Controller of Certificate Authorities (CCA) shall only be considered as authentic. The process of obtaining digital signature has been specified as above in para 2.1

Note:- The Bidders may go through the **User Manual for Contractors** available under **Learning Centre** icon on left Navigation panel of the website www.ireps.gov.in for details regarding the registration, viewing of tenders, filling of Tenderer profile and uploading of his Tenders.

- Using the login ID, password and digital signature enter the Bidder home page by clicking on the Login button on the Home page of the site www.ireps.gov.in and choosing the option E-Tender Works.
- New Contractors can get themselves registered by filling up the registration form which can be accessed through the link **New Vendors/Contractors (E-Tender)** available in the Quick Links section in the left navigation bar of the home page of the website <https://www.ireps.gov.in>. Please choose the option **Works Tenders** in the field named **Type of tenders in which you are interested**.

Note:- In case any other option is selected, bidder may not be able to participate in Works tender. E-Mail ID entered will be used as user name, and once the registration is done it is not possible to change the user name. Digital Signature Certificate (DSC) is must for registration.

- The users are required to complete their profiles, bank information (for payment etc), authorized signatories (by adding their DSC details).
- The tender can be searched by typing either the Tender No., Name of Work, DFCCIL etc from the drop down menu in the "Search Tender" icon available under 'Quick Links' Section available on the Left Navigation Block of the Home Page. The **View tender Document(T)** icon is displayed in all the Folders in Middle body of the Bidder Home Page and in the Search Tender page for all published tenders, for all tender types. Clicking on this icon opens the complete tender document in PDF format.
- The tender document cost (TDC) has to be paid through e-payment gateway available under **Make/View Payment-TDC&EMD** icon displayed in all the Folders in Middle body of the Bidder Home Page and in the Search Tender page. Such online payments are to be made to the Dedicated Freight Corridor Corporation of India Limited A/c No. 317301010036304, IFSC code: UBIN0531731.
- The EMD is also be paid through e-payment gateway to Dedicated Freight Corridor Corporation of India Limited A/c No. 317301010036304, IFSC code: UBIN0531731. The payment page for EMD opens only after the payment of TDC has been done.
- With the payment of TDC and EMD, the bidding page can be accessed through the icon **Bid preparation and Submission**. The page consists of Tabs bar containing various tab

names viz. **General, Eligibility, Compliance, Attach doc, Fin Offer and Submit Offer**. Users can switch between the tabs by clicking on the tab name in the Tabs bar.

4.0 Submission of Offer

- 4.1 The Tender shall be submitted through online mode only at www.ireps.gov.in . Tender submitted in any other mode will not be accepted.
- 4.2 All the required documents (legible) as mentioned in Check list from S. No. 4.8 (a) to (f) have to be uploaded along with the offer on www.ireps.gov.in failing which the bid shall be summarily rejected and shall not be considered for further evaluation.
- 4.3 The bidder must ensure that the tender document submission before the closing time as the tender submission shall stop accepting the offer at prescribed date and time.
- 4.4 Bidder can anytime change quoted rates before date & time of closing of tender.
- 4.5 The Tenderers are required to give unconditional offers. A conditional offer is liable to be rejected. DFCCIL reserves the right to modify, expand, restrict, scrap, reject and re-float tender without assigning any reasons whatsoever.
- 4.6 The Tenderers shall closely pursue all the clauses, instructions, terms and conditions, scope of work, specification etc. as indicated in the Tender document before quoting. Should the Contractor have any doubt about the meaning of any portion of the Tender Document or find discrepancies/ommissions in the Tender Document issued or require clarification, he shall at once contact the authority inviting the tender for clarification at least ten days before the date of submission of tender.
- 4.7 The MSEs registered with body specified by ministry of MSME for the item tendered should attach their registration certificate in ireps, where prompted for payment of EMD and TDC.
- 4.8 The following statutory documents are to be scanned and uploaded with the offer as attachment at website www.ireps.gov.in under **ATTCH DOC** Tab , **otherwise, the offer of the tender shall be considered as invalid offer.:**
 - (a) Covering letter as per Format given under Form No.1 of Chapter II of Part II.
 - (b) Power of Attorney of the person signing the tender documents in Original if specific to this work or Attested Copy of the general Power of Attorney of the Company in favour of the person signing the Tender
 - (c) Certified copy of GST No., PAN card & Aadhar Card
 - (d) Certified copy of Registration of Company/Firm/Agency, Partnership Deed/Memorandum and Articles of Association of the Company/Firm/Agency.
 - (e) Constitution of the Company/Firm/Agency in the Form prescribed.
 - (f) Complete Tender Document including Corrigendum/Addendum(s) signed by the Bidder.
Note: The Bidder/Tenderer is required to submit an undertaking in the Form No. 20 placed under Part II Chapter II (Tender Forms) as a token of authenticity and trueness of the submitted documents.
- 4.9 **Financial bid** to be filled, saved and uploaded with digital signature under the “**FIN OFFER**” Tab of Bid preparation and Submission page only. Do not upload scanned copy such as pdf or jpg file etc. of ‘Financial Bid’ in Attach Doc Tab.

- 4.10 The bidder must obtain for itself on its own responsibility and its own cost all the information including risks, contingencies & other circumstances in execution of the work. It shall also carefully read and understand all its obligations & liabilities given in tender documents.
- 4.11 **Cost of biddings:** The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
- 4.12 Tenderer may carefully note that they are liable to be disqualified at any time during tendering process in case any of the information furnished by them is not found to be true. In addition, the EMD of such tenderer shall be forfeited. The decision of Employer in this respect shall be final and binding.
- 4.13 The bidder shall submit only one bid in the capacity of an individual or sole proprietor, partnership firm, company and Joint venture. Violation of this condition is liable to disqualify the tenders in which bidder has participated and EMD of all such tenderers shall stand forfeited.
- 4.14 The bidder is expected to examine all instructions, terms, conditions, forms.
- 4.15 Specifications and other information in the bidding document. Failure to furnish all information required by the bidding documents or submission of a bid not substantially responsive to the bidding document in every respect will be at the bidders risk and may result in rejection of his bid.
- 4.16 At any time prior to the deadline for submission of bids, Employer may for any reason whether at its own initiative or in response to any request by any prospective bidder amend the bidding documents by issuing Corrigendum, which shall be part of the Tender documents.
- 4.17 Employer may at its discretion extend the deadline for submission of the bids at any time before the time of submission of the bids.
- 4.18 The tender documents i.e. Technical Bid and Financial Bid with statutory documents should be submitted through online mode in website www.ireps.gov.in under **Bid preparation and Submission** only up to **15.00Hrs on 17/06/2020**. The **“Packet - A (TECHNICAL BID)”** will be opened at **15.30Hrs on 19/06/2020**. Any modified date and time for submission of tenders shall be uploaded on website www.ireps.gov.in and also published in leading Newspaper up to 08.06.2020. The detail procedure of tender opening will be as per Para **1.3.5 of Chapter III**.
- 4.19 Bidders are advised to upload the Supporting documents regarding the **Technical eligibility and Financial Eligibility** under the **Action Column** against the

corresponding Eligibility condition **as per Form 2A and 2B as per Chapter II of Part IV.(Statutory Document) under “ELIGIBILITY” Tab**

4.20 Bidders are advised to upload scanned copies of the following supporting document in “**Attach Doc**” Tab. The list is indicative and not extensive.

1. **Supporting Documents for Eligibility Criteria (Technical & Financial) as per Form 2A and 2B as per Chapter II of Part IV.(Statutory Document) – if option not provided under “ELIGIBILITY” Tab**
2. **Sole proprietorship Firm, Partnership Firm, JV Firm deed/Memorandum and Articles of Association of the firm or company, if applicable as per Para 1.36 of General Information (Statutory document).**
3. **Power of attorney of the person signing the tender document or photocopy duly attested by Notary Public as per Para 1.36 of General information (Statutory document)**
4. **Offer letter as per Chapter II of Part II (Statutory document)**
5. **GST Registration Certificate (Statutory document).**
6. Any other supporting document as required.

4.21 **After uploading above documents, bidder should quote their rates in the ‘FIN OFFER’ tab file and save the file.**

Note: The abridge portion of the schedule is visible in this Tab. However, for detailed schedule, the Tenderer/bidder may refer to the Detailed schedule attached, as pdf, in the Tender.

4.22 The Bid submission is completed by Selecting the **Encrypt & Submit** button under **SUBMIT OFFER** Tab. The **DSC** is required to be attached to the computer and selected before submission of **BID**.

4.23 Tenderer should submit the originals of statutory documents and other documents in Chief General Manager/South/Mumbai’s Office up to **17.30hrs on 18/06/2020 (if stipulated)**. Documents other than statutory document should be submitted in Chief General Manager/South/Mumbai’s Office within 7 days from opening. The bid is liable to be rejected in case of failure to submit the documents on time. In case of lockdown, certificate as per Form 20 of Part II Chapter II is to be submitted.

4.24 For the same item featuring at more than one place in different sections, the order of priority shall be as follows:-

- 4.24.1** Financial Bid
- 4.24.2** Notice Inviting Tender
- 4.24.3** Instructions to Bidders
- 4.24.4** Scope of work
- 4.24.5** Special Conditions of Contract
- 4.24.6** General Conditions of Contract

For example, if any item is found common in Special Conditions of Contract and general Conditions of Contract then the provision given in Special Conditions of Contract will prevail over General Conditions of Contract for the same item.

- 4.25 After award of Contract to the successful Contractor, if it is observed that there is any discrepancy or ambiguity about any terms and Conditions mentioned in the Tender Document, the interpretation of the same given by DFCCIL shall be considered as final and binding.
- 4.26 Contractor must fill up all the schedules and furnish all the required information on emode as per the instructions given in the various sections of the Tender Document.
- 4.27 Submission of a tender by a Tenderer implies that he has read all the tender documents including amendments/corrigendum, if any, visited the site and made himself aware of the scope of the work to be done, local conditions and other factors having any bearing on the execution of the work.
- 4.28 DFCCIL reserves all rights to reject any tender including of those tenders who fail to comply with the instructions without assigning any reason what soever and does not bind itself to accept the lowest or any specific tender. The decision of the DFCCIL in this regard shall be final and binding. Any failure on the part of the tenderer to observe the prescribed procedure and any attempt to canvass for the work will prejudice the tenderer's bid
- 4.29 Tenderers may note that they are liable to be disqualified at any time during the tendering process in case any information furnished by them is not found to be true. Earnest Money Deposit (EMD) of such Tenderer shall be forfeited. The decision of the DFCCIL in this regard shall be final and binding.
- 4.30 The evaluation of the tenders will be made on the basis of fulfillment of Eligibility Criteria mentioned in the Bid document. However, DFCCIL reserves the right to seek any clarification from the Contractor.

5.0 Modifications/Substitution/withdrawal of Bids

- i) Once the bid is submitted, the tenderer will not be allowed to withdraw the offer
- ii) The Tenderer can, however, modify their bid till closing time of tender. In case of revising the bid, the revised bid will supersede earlier bids and the latest bid will be considered for evaluation.

6.0 Opening and Evaluation of the tender

- i) The “Packet-A (TECHNICAL BID)” will be opened online at **15.30Hrs on 19/06/2020** at the address mentioned in “ Notice Inviting tender “and read out in the presence of such tenderer(s) as is/ are present. The detail procedure of tender opening will be as per Para 1.3.5 of Chapter III. Tenderers or their authorized representatives who are present shall sign register in evidence of their attendance.
- ii) For participation in the tender, the Authorized signatory holding Power of Attorney shall be the Digital Signatory. In case, the Authorized signatory holding Power of Attorney and Digital Signatory are not the same, the Bid shall be considered Non-responsive.

Help desk for E- Tendering

1. For any help in connection with E-tendering, please contact ‘Help Desk’ available on left Navigation Block of home page of the site <https://www.ireps.gov.in>.
2. User manual for Contractors is available under **Learning Centre** tab on the left Navigation block of the home page of the site <https://www.ireps.gov.in>. The procedure of using Help Desk is also described in this user Manual. The bidders may contact at **011-23761525** in case of any doubt.

**PART-I
Chapter-II**

NOTICE INVITING TENDER

Chapter II

NOTICE INVITING TENDER

No. MUM/S/OPTG/ Running Room/568-I

Date: 14.05.2020

Sub: - Construction of Running rooms at JNPT and New Kharbao stations of DFCCIL in the state of Maharashtra

1.0 Dedicated Freight Corridor Corporation of India Limited (DFCCIL) is a Special Purpose Vehicle set up under the administrative control of Ministry of Railways to undertake planning & development, mobilization of financial resources and construction, maintenance and operation of the Dedicated Freight Corridor. DFCCIL was incorporated in October 2006 under Indian Companies Act 1956. At present the company is undertaking construction of Eastern & Western Corridors and has its Corporate Office at New Delhi and Field Units at Mumbai & various other cities.

The Mumbai/South Unit of DFCCIL, i.e., Office of the Chief General Manager/ South/ Mumbai, 7th floor, Central Railway New Administrative Building, D.N. Road, CSMT, Mumbai-400001, invites Open E-Tender under Two Packet System for works Contract on prescribed forms from firms/ Companies/ Joint Ventures having requisite experience and financial capacity for execution of the following work:

SN	Description	Particulars
1.	Tender No.	MUM-S-Running Room-568-I
2.	Name of Work	Construction of Running rooms at JNPT and New Kharbao stations of DFCCIL in the state of Maharashtra.
3.	Type of Tender	'Two Packet' Open E-Tender
4.	Type of contract	Works Contract
5.	Bidding style	Single rate for each schedule
6.	Cost put to tender	₹ 10,37,23,800/- including GST.
7.	Tender Document Cost (TDC) (Non-Refundable)	₹ 10,000/- Plus GST @18% = Rs. 11,800/- (Eleven Thousand Eight Hundred Only) To be paid online through e-payment gateway provided at www.ireps.gov.in to DFCCIL Account No. 317301010036304, IFSC code: UBIN0531731
8.	Earnest Money (EMD) (Tender Security)	₹ 6,68,600/- (Rs. Six lakhs sixty eight thousand six hundred only) to be deposited online through payment gateway provided at www.ireps.gov.in
9.	Uploading of NIT & Tender Document	22/05/2020 at 13:00 hrs on www.ireps.gov.in

MUM-S-Running Room-568-I Dated 14.05.2020

10	Last Date & Time of Submission of tender (Online)	17/06/2020 up to 15:00 hrs on www.ireps.gov.in
11	Date and Time of Opening of Tender (Online)	19/06/2020 at 15:30 hrs on www.ireps.gov.in
12	Duration of Contract	18 (Eighteen) months
13	Validity of the offer	120 days from the date of opening of the tender.
14	Retention Money / Security Deposit	5% of Contract Value (to be deducted from On-account payment @10% till the value reaches 5% of CV)
15	Address for Communication	Dy. Chief Project Manager /Engg.-I/Mumbai (South) O/o Chief General Manager, Mumbai(S), DFCCIL 7 th floor, CR's NAB, D.N. Road, CSMT, Mumbai-400001 Tel.No:022-22615827; Fax. No: 022-2263 4184 e-mail: arastogi@dfcc.co.in
16	Help Desk for E-tendering	www.ireps.gov.in For any help in connection with E-tendering & matter relating to Digital signature, please contact 'Help Desk' available on left Navigation Block of home page of the site https://www.ireps.gov.in and phone No. 011-23761525
17	Availability of Tender Documents	The Tender documents can be downloaded from www.ireps.gov.in . Tenderer who wishes to view free Notification and Tender documents can visit www.ireps.gov.in DFCCIL may issue Addendum(s)/Corrigendum(s) to the Tender document, if any, which shall be issued at least 7 days in advance of date of opening of tender and placed on the website www.ireps.gov.in only
<u>DATE & TIME SCHEDULE</u>		
1.	Date of uploading NIT (Online Publishing Date)	22.05.2020 at 13:00 Hrs
2.	Bid Submission (Online) Start Date	22.05.2020 at 13:00 Hrs
3.	Bid Submission (Online) End Date	17.06.2020 at 15:00 Hrs
4.	Bid clarification date upto	08.06.2020 at 11:00 Hrs
5.	Last Date of Submission of Originals of Mandatory Documents i.e., EMD & Tender Document Fees etc.	18.06.2020 at 15:30 Hrs
6.	Technical Bid Opening (Online) Date & time	19.06.2020 at 15:30 Hrs

2.0 Eligibility criteria

Eligibility shall be assessed on applicants, fulfilling the technical capability and competence as well as for financial and organizational resources as specified in clause no. 1.3.13 (i) A & B of Preamble and General Instruction to tenders (Part - I, Chapter III).

3.0 Tender Document: -

3.1 The tender document may be downloaded from the Indian Railways E-procurement website <https://www.ireps.gov.in>.

3.2 No request for extension of the Tender due date shall be considered.

3.3 The Offer shall be valid for 120 days from the date of opening of the tender, and extended, if required, from time to time. The Contractor cannot withdraw their offer within the period of validity/extended validity lest liable for forfeiture of Earnest Money Deposit (Tender Security)

3.4 DFCCIL may issue addendum(s)/corrigendum(s) to the tender document. In such case/s, the addendum(s)/corrigendum(s) shall be uploaded on Indian Railways e-procurement portal www.ireps.gov.in at least SEVEN (7) days in advance of date fixed /re-fixed for closing of bids. The tenderers must keep themselves updated about the latest developments about the tender and ensure incorporation of the addendum(s)/corrigendum(s), if any. The offers received without taking cognizance of such corrigendum/ addendum published shall be liable to be rejected. Tenderers are advised to complete all submission related work well before Time and Date for Submission of Tender Online. Any request for modification in the time/date of submission of tender due to tenderer's failure to submit his offer, will not be accepted.

3 Submission of Bid

4.1 The Bids shall be submitted as per 'Instructions to Bidder (ITB)' as given under **Part I Chapter I** of the Tender Document.

4.2 The Bid should be submitted **ONLINE** through the portal www.ireps.gov.in only. The offers submitted in modes other than ONLINE will not be accepted. For detailed instructions, refer to para 20 – 'Bid Submission Process' of Part-I - 'General Instructions to Bidder (ITB)'.

To participate in the E-Bid submission, it is mandatory for the bidders to have User ID and Password to login on the portal www.ireps.gov.in. New Bidders/Contractors can get themselves registered by filling up the registration form which can be accessed through the link *New Vendors/Contractors (E-Tender)* available in the Quick Links section in the left navigation bar of the home page of this portal. Obtain Class-III Digital Signature Certificate with Organization Name from any digital signature issuing authority. For further details, please refer to Part-I Chapter-I - 'General'.

6.1 Any tender received without Earnest Money in any of the forms specified in the Tender Document shall not be considered and shall be summarily rejected except for the **MSEs** registered with body specified by ministry of MSME for the item tendered.

- 6.2 Two packet system is being adopted for the opening of the tender. It will **contain the TECHNICAL BID and the FINANCIAL BID**. Detailed credential as per the requirement of eligibility criteria (provided in 'ELIGIBILITY' Tab of "Bid Preparation and Submission" Icon) are to be attached under ELIGIBILITY Tab while all tender papers (except Financial Offer) are to be attached in the "ATTACH DOC" Tab as a part of Technical Bid. Financial Offer with % age above or below or at par on the amount of various schedules "A", "B", "C", duly filled in along with Schedule of Prices are to be submitted in "FIN OFFER" Tab as part of "Financial Bid". Caution: Do not upload scanned copy such as pdf or jpg file etc of 'Financial Bid' in document library.

5.0 Opening of Online Bids:

The E-Bids shall be opened on-line at the address given below at the time and date mentioned in the NIT/Corrigendum/s in presence of the Tenderers or their authorized representatives intending to attend the Opening. The address of the office for submission of Mandatory Original Documents and Online Opening of Tender is: - **Office of the Chief General Manager/ South/ Mumbai,**

7th floor, Central Railway New Administrative Building,
D.N. Road, CSMT, Mumbai-400001, Maharashtra.

- 6.0 DFCCIL reserves the right to cancel the tender before submission/opening of the tender or postpone the tender submission/opening date and to accept/ reject any or all tenders without assigning any reason thereof. DFCCIL's assessment of suitability as per Eligibility Criteria shall be final and binding.
- 7.0 DFCCIL reserves the right to pre-qualify the bidders provisionally based on the documents submitted by them subject to final verification. Tenderers may note that their offers are liable to be disqualified at any time during the tendering process in case it is found that any of the information furnished by them is not true. EMD of such tenderer shall be forfeited. The decision of DFCCIL in this regard shall be final and binding.
- 8.0 Information as required as per various Forms to tender document should be submitted by the tenderers without fail strictly as per formats.
We look forward for your active participation.

**PART I
CHAPTER III**

PREAMBLE & GENERAL INSTRUCTION TO TENDERERS

PART- I
Chapter- III

PREAMBLE & GENERAL INSTRUCTIONS TO TENDERERS

1.3.1 Introduction

(i) General

Dedicated Freight Corridor Corporation of India Ltd. (DFCCIL), a public sector undertaking (under Ministry of Railways) has been set up under the Indian Companies Act, 1956 for implementation of Dedicated Freight Corridor Project. Government of India is the sole shareholder of the DFCCIL.

Ministry of Railways (MOR), Government of India has planned to construct Dedicated Freight Corridor (DFC) covering about 3338 Kilometres on Eastern and Western Corridors. The coverage of Eastern Corridor is from Ludhiana to Dankuni and Western Corridor is planned from Jawaharlal Nehru Port, Mumbai to Rewari / Tughlakabad / Dadri near Delhi. There will be a linkage between two corridors at Dadri.

(ii) Running room buildings

DFCCIL has planned to construct running rooms at JNPT and new Kharbao stations for its crew. The layout for both the running room buildings is identical and is a G+3 storey building with a provision for future extension of one more floor.

The running room buildings are located in a plot of approximately 50 m x 10 m in the campus earmarked with Railway station along with the surrounding infrastructure (under construction by other Contractor), to which the utilities are to be connected.

The civil part of the building shall be constructed based on CPWD DSR 2018, Maharashtra SSR 2019-2020 and a few Market Rate items. The detailed designs consist of a suitable RCC framed structures including staircases, lift and allied components.

Depth and the type of the foundations has been decided/ designed based on detailed geotechnical investigations on each of the sites at JNPT and new Kharbao.

(iii) Scope of Work

On behalf of President of India, Chief General Manager (South) herein after referred to as 'DFCCIL' is inviting sealed tenders from Firms / Companies / Joint Ventures having requisite experience and financial capacity for execution of the following work:

Construction of Running Rooms at JNPT & New Kharbao stations of DFCCIL in the state of Maharashtra.

- (iv) The scope of work of this tender involves supply of all materials, construction, inspection, testing as per attached drawings, scope of work, specifications and standards for Running rooms RCC Buildings at JNPT and New Kharbao. The scope drawings enclosed with bid document shall form part of scope of work. Any other work not listed below but shown in scope drawings shall form bidder's overall scope of work. The scope of work mainly is as described below, but not limited to the following:
- a) Clearing of proposed site from all debris, stripping of the area, removing vegetation, grass, shrubs, roots etc.
 - b) The bidder/ contractor is expected to visit site to get himself acquainted with prevailing site conditions i.e., availability of water, power, approach road etc., before quoting for this tender. The bidder/ contractor shall be entirely responsible for provision of all such utilities. No delay shall be entertained on this account.
 - c) The bidder/ contractor may have to arrange temporary power connection from the local Electric Supply Authority by his effort and cost. Alternatively bidder/ contractor shall have to carry out the work with his own DG sets at no extra cost.
 - d) Drawings accompanying the tender document are issued for tendering purpose only. Detailed drawings will be supplied to the successful bidder/ Contractor.
 - e) Any additional material, which are not specifically mentioned in the technical specifications but are required to make the system complete in all respects for safe operation and guaranteed performance, shall be included in the scope of work of the bidder/ contractor. Payment for the same, if not originally included in the schedule, shall be paid as per the item available in CPWD DSR 2018/Maharashtra SSR 2019-20 or as mutually agreed. The rates for such items shall be paid as follows-
 - i) For CPWD DSR item – As per the rate quoted for Schedule A - above/below/At par by the Tenderer under this contract.
 - ii) For Maharashtra SSR – As per the rate quoted under Schedule B – above/Below/At par – under this contract.
 - iii) Market Rate item – Based on the detailed Analysis provided by the Tenderer and duly approved by the Engineer.
 - f) All materials supplied shall be new, of best quality and tested in accordance with the latest version of the relevant Indian standards or relevant International standard & codes, as specified under the Detailed Specifications enclosed with this Tender/CPWD Specifications/ Maharashtra state specifications and acceptable to DFCCIL. The bidder/ contractor shall indicate make and grade of all bought out items and get the approval from Engineer/Engineer's Representative/Consultant before bringing them to the site for the use in the work..
 - g) No deviations/ exceptions from this specification shall be permitted without the written approval of DFCCIL. A complete list of exclusions/ deviations from the Bidder's/ contractor scope of work shall be clearly indicated in the offer. Similarly, if any departure, omission or substitution from the stipulated specifications is made, this fact should be clearly indicated in the offer with reasons, for consideration/ written approvals by DFCCIL.
 - h) All moving Equipments or parts of erection equipment, which can conceivably cause injury to the operator or other authorized personnel within the vicinity of the working

area, shall be suitably guarded. Selection of equipment shall be made with the following in view:

- a. Safety of personnel,
 - b. Long life of equipment,
 - c. Uninterrupted operation,
 - d. Easy maintenance
- i) The bidder/ contractor shall take care to clean the working site from time to time for easy access to work site and for safety. Working site should be always kept clean to the entire satisfaction of the Engineer-in-charge.
 - j) Work shall be carried out in such a manner that the work of other agencies operating at the site is not hampered due to any action of the bidder/ contractor. Proper co-ordination with other agencies shall be the responsibility of the bidder/ contractor. In case of any dispute, the decision of Engineer-in-charge shall be final and binding on the bidder/ contractor.
 - k) Bidder/ contractor shall have to take all safety precautions for carrying out work in the premises. Necessary safety equipment such as safety belts, helmets, etc. and other safety instruments are to be positioned by the bidder/ contractor and the same shall be used by the work force as per work requirement. The bidder/ contractor has to enforce the same.
 - l) The suitability and capacity of all equipment used for erection shall be to the satisfaction of the Engineer-in-charge.
 - m) The Bidder/ contractor's scope shall include carrying out any and all works and providing any and all facilities & services those are required in accomplishing an operating system complying fully with all tender and statutory requirements as are envisaged, complete in all respects and satisfying all performance and guarantee requirements as stated or implied from the Contents of the tender document.
 - n) Schedule of Quantities-The quantities indicated are estimated and may vary during detailing. The bidder/ contractor shall indicate additional items and quantities, if any for the satisfactory completion of the work. Payment to bidder/ contractor will be based on actually erected and accepted quantities and the rates as detailed under item e) above.
 - o) All the items under the scope of supply shall be supplied four weeks prior to start of erection of those items.
 - p) Ground improvement, as required, shall have been done by the Employer's other Contractor. However, in case the same has not been done by the time the Tender is awarded, the Contractor will be required to carry out the same as per the rate determined under item e) above.
 - q) Providing Anti termite treatment.
 - r) Excavation in Earthwork for foundations/plinth beams (including dewatering) and refilling, as per enclosed drawing.
 - s) Segregation of unserviceable material and good earth (good earth for use for filling and disposal of unserviceable material, debris etc.) as instructed by DFCCIL Site In-charge. Necessary testing to prove the suitability shall be done by the Contractor at his own cost.
 - t) Preparation of shop drawings and getting approval from Consultant/Engineers representative.

- u) Completing all Civil & RCC works as per drawings and specifications.
- v) Completing of Structural steel work.
- w) Completing all Plumbing works and sanitary works with all fittings and fixtures, and commissioning the services.
- x) Completing of all Drainage and Sewer works and commissioning the services.
- y) Painting as per specifications and Drawings.
- z) Setting up of WORKSITE establishment and BIDDER'S facilities.
- aa) Any other works to complete the job in all respect.

(v) Cost of the work: The estimated cost of the tendered work is as given under NIT.

(vi) The Tenderer shall be governed by General Conditions of Contract (GCC), Preamble and General Instructions to Tenderers (ITT/ITB) and Special Conditions of Contract (SCC). Wherever, there is a conflict in any condition between CPWD DSR 2018 conditions, GCC and Special Conditions of Contract mentioned in the tender documents, the conditions mentioned in Special Conditions of Contract will prevail. However, Engineer's decision in this connection shall be final and binding.

Part I, Chapter-IV and V of the tender document contains General Conditions of Contract and Special Conditions of Contract specific to this work and shall be applicable in the contract.

(vii) Location

Works are to be executed in the jurisdiction of Railway/DFCCIL land, either owned or on long lease. DFCCIL reserves right to change the site of work anywhere in adjacent/adjoining area of the work defined in Para 1.3.1(iii) above in the jurisdiction of CGM//SOUTH/MUMBAI/DFCCIL and the contractor shall be bound to execute the work without any extra cost.

1.3.2 (A) Tender Bid

The Tender Bid shall be submitted online **through uploading on e-tender web site Address:- <https://www.ireps.gov.in>** as under:-

Packet - A

Eligibility/Qualifying element of the Tender Bid along with other documents mentioned in Para 1.3.2 (b) (i), here in after called "TECHNICAL BID "

Packet -B

Price elements of the Tender Bid as per Para 1.3.2 (b) (ii), here in after called "FINANCIAL BID".

The TECHNICAL BID (Packet - A) **received through e-tender with physical deposition of EMD, Tender Fee and other statutory documents** shall be opened on the date of tender opening and the detailed scrutiny of TECHNICAL BID shall be

carried out.

The “FINANCIAL BID” (Packet - B)/FIN. OFFER **received through e-tender** shall be opened only of those tenderers who qualify in "Technical Bid".

The Financial Bid (Packet- B) of un-qualified tenderers shall not be processed further and not opened. The detailed procedure for tender opening and processing is given in Para 1.3.5.

1.3.2(B) Form of Tender

The Tender documents shall be considered under **two separate packets** viz:-"Packet-A "containing technical Bid and "Packet– B" containing financial Bid.

Detailed credentials as per the requirement of eligibility criteria and all tender papers except Summary of Prices and Schedule of Prices are to be submitted through online e-tender in "TECHNICAL BID" i.e. Packet-A either through ELIGIBILITY Tab or ATTACH DOC Tab of the **Bid preparation and Submission** icon. Summary of Prices and Schedule of Prices with percentage above/below/at par duly filled in are to be submitted in “FINANCIAL BID” (FIN OFFER Tab) to be filled and saved with digital signature through online e-tender.

Completed tender documents in two packets viz. Packet-A and Packet-B shall be submitted through online e-tender on web site:-<https://www.ireps.gov.in>.

Any tender received through online e-tender later than the time and date of submission of tenders (as specified under NIT) shall be rejected and not opened.

- (i) **Documents to be uploaded in support of TECHNICAL BID (Packet - A)**
:-

S. No	Description	Documents
(1)	Offer letter complete.	Form No.1
(2)	Tenderer's credentials in accordance With Para 1.3.13 (i) & (ii) of Preamble and General Instructions to Tenderers.	Form No. 2A,2B&2C
(3)	Earnest money in accordance with Para1.3.8and Cost of Tender Document, in accordance with Para 1.3.4.3 of Preamble and General Instructions to Tenderers, in an envelope.	

(4)	Written confirmation authorizing the signatory of the tender to commit the tenderer and other documents as per format as applicable, in accordance with Para 1.3.6 of Preamble and General Instructions to Tenderers.
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(ii) Documents to be enclosed with the FINANCIAL BID (Packet B):-

S. No	Description	Documents
(1)	Summary of Prices, Schedule of Prices & Total Prices	Under FIN OFFER Tab of web site

1.3.3 Tender Document

This tender document consists of following five parts:

PART/CHAPTERS	DESCRIPTION	PAGE NO.
PART – I	Important Instructions To Bidders (Tenderers) ITB before submitting their Tenders (Bids) through online.	3
Chapter I	General	4
Chapter II	Notice Inviting Tender	11
Chapter III	Preamble and General Instructions to Tenderers	16
Chapter IV	General Conditions of Contract	35
	Pre Contract Integrity Pact	88
Chapter V	Special Conditions of Contract	95
Chapter VI	Additional Special Conditions of Contract	106
PART – II	Technical Specifications	124
Chapter I	Milestones and Time Schedule	242
Chapter II	Tender Forms (including Schedule of Prices)	245
PART – V	Drawings	279

1.3.4 Sale and Submission of Tender Document

1.3.4.1 The Tender document can be downloaded from Indian Railways e-procurement portal <https://www.ireps.gov.in>. The tender document shall be submitted in online mode through this site only. **The Tender Document cost of Rs. 10,000 + GST through e-payment gateway (DFCCIL Ac/ No. 317301010036304, IFSC code: UBIN0531731) is payable. The cost of the tender form is not refundable and also not transferable.**

1.3.4.2 Bid Document obtaining process:

As per para 3.0 of Instructions to Bidders (ITB) of General chapter -I of Part I.

1.3.4.3 Clause applicable for tender submitted through e-tender

Tenderer/s are free to download tender documents at their own cost, for the purpose of perusal. Master copy of the tender document will be available in the office of Chief General Manager/South, DFCCIL, 7th floor, Central Railway New Administrative Building, D.N. Road, Mumbai-40001. After award of the work, an agreement will be drawn up. The agreement shall be prepared based on the master copy available in the office of Chief General Manager/South, DFCCIL, Dedicated Freight Corridor Corporation of India Limited and not based on the tender documents submitted by the Tenderer. In case of any discrepancy between the tender documents submitted through e-tender and the master copy, later shall prevail and will be binding on the Tenderers. No claim on this account shall be entertained.

1.3.4.4 Cost of Tender documents downloaded from internet

6.3 Tender documents are available on Indian railways e-procurement portal. The cost of the tender document as indicated in para 1.3.4.1 above will have to be deposited by the tenderer through e-payment gateway of ireps portal (DFCCIL Ac No. 317301010036304, IFSC code: UBIN0531731) along with the Tender document. In case, tender is not accompanied with the cost of the tender document as detailed above, tender will be summarily rejected. However, **MSEs** registered with body specified by ministry of MSME for the item tendered are **exempted** from payment of TDC. Necessary registration certificate for the same shall be attached with the tender at appropriate place, under **Bid preparation and Submission Tab**.

1.3.4.5 Bid submission process:

.As per para 4.0 of Instructions to Bidders (ITB) of General chapter-I of Part I.

1.3.4.6 The rates should be quoted in FIN OFFER Tab (packet –B) filled, saved and uploaded with digital signature. Only the offer submitted under this Tab shall be considered for evaluating the offer of the Tenderer. Don't upload pdf or jpg etc. or scanned copy of "financial bid" in document library. The financial bids submitted other than this Tab, shall not be considered.

1.3.4.7 Signing of All Bid Papers and completing Financial Bid:

This tender being E-tender, the digital signature obtained from approved Controller of Certificate Authorities (CCA) shall only be considered as authentic. The process of obtaining digital signature has been specified under Chapter I- General of ITB. The submission of Bid and associated documents through **ireps** portal using digital signature shall be considered as signed by the Contractor.

1.3.4.8 Care in Submission of Tenders—Before submitting a tender, the tenderer will be deemed to have satisfied himself by actual inspection of the site and locality of the works ,that all conditions liable to be encountered during the execution of the works are taken into account and that the quoted rates by tenderer in tender forms are adequate and all-inclusive in item of Taxes, Duties & Levies etc. in terms of General/Special Conditions of Contract for the completion of works to the entire satisfaction of the Employer.

1.3.4.9 Addressal of queries:

Bidders should give their queries in writing at least 10 days prior to Bid closing date.

DFCCIL response to queries as well as Corrigendum in bidding document will be posted on the website www.ireps.gov.in at least 7 days prior to date of opening or given under NIT.

All communication between the Employer and the tenderer shall be in writing. For the purposes of seeking clarification, the Employer's address is:

Dedicated Freight Corridor Corporation of India Limited

Attention: Dy.CPM/ Engg -I/Mumbai (South), 7th Floor, Central Railway's NAB, D. N. Road, CSMT , Mumbai-1

Telephone:9004443322, Fax number:-022-22634184

Electronic mail address: arastogi@dfcc.co.in

1.3.4.10 Conditional tenders are liable to be rejected. DFCCIL, however, reserves the right to reject such tenders summarily without assigning any reasons whatsoever. The DFCCIL also reserves the right to reject any special conditions stipulated by the Tenderer as considered unacceptable to the DFCCIL and can call upon the Tenderer

to withdraw such conditions. If any deviations from the General conditions/ special conditions/ specifications are proposed by the tenderer, they should be mentioned in the statement of deviation in Annexure 'A' and not elsewhere in the tender documents.

1.3.4.11 If it is found at any stage of the finalization of the tender or during actual execution of the work that the information furnished in this tender ,including clarifications, is incorrect, the tenders are likely to be rejected.

1.3.4.12 Works Contract Tax or any other taxes except GST:

Taxes prescribed by the Central government/State Government/Local bodies at the rate prescribed by them will be recovered from the bills from time to time.

1.3.4.13 The list of documents (Check list) to be attached along with the tender documents is as follows:-

- (a) Covering letter as per Format given under Form No.1 of Chapter II of Part II.
- (b) Power of Attorney of the person signing the tender documents in Original if specific to this work or Attested Copy of the general Power of Attorney of the Company in favour of the person signing the Tender
- (c) Certified copy of GST No., PAN card & Aadhar Card
- (d) Certified copy of Registration of Company/Firm/Agency, Partnership Deed/Memorandum and Articles of Association of the Company/Firm/Agency.
- (e) Constitution of the Company/Firm/Agency in the Form prescribed.
- (f) Complete Tender Document including Corrigendum/Addendum(s) signed by the Bidder.

1.3.5 Opening of Tender:

- (a) Tender will be opened online at **15.30hrs.on 19/06/2020**, in the office of Chief General Manager(South), Dedicated Freight Corridor Corporation of India Limited, 7th floor, Central Railway New Administrative Building, D.N. Road, Mumbai, India, in the presence of the tenderer so the representatives as may be present at the prescribed date and time.
- (b) The packet of '**TECHNICAL BID (Packet- A)**'only of the tenderers whose EMD, Tender Fee, stipulated Forms have been received shall be opened and the contents there of i.e. qualification details shall be read out. **FINANCIAL BID (Packet-B)** shall be opened subsequently after informing the parties participated through the site www.ireps.gov.in.
- (c) After the opening of "TECHNICAL BID"(Packet-A) of all the tenderers, these Bids shall be scrutinized and analysed. If found necessary by the Employer, the tenderers shall be asked to furnish clarifications and the Employer may also hold discussions with the tenderers after giving due notice. The names of the tenderers whose Bid are considered complete and meet eligibility criteria shall be shortlisted.

(d) The **FINANCIAL BID (Packet-B)** shall be opened on a subsequent date and time duly notified well in advance. The Financial Bids of only those tenderers shall be opened who are shortlisted after scrutiny of their Technical Bid. The Financial Bid of the tenders who do not qualify during scrutiny of Technical Bid shall not be opened. The time of opening, date and venue of online financial Bids of Shortlisted tenderer shall be advised to qualified tenderers well in advance to enable them to depute the representative through the portal www.ireps.gov.in. The earnest money of non-qualifying tenderers will be returned back within a reasonable period of completion of results of Technical Bid.

1.3.5.1 The Employer (DFCCIL) will notify Bidders in writing who have been rejected on the grounds of their Technical bids being substantially non-responsive to the requirements of the bidding document and their price bids i.e. FINANCIAL BID (Packet-B) submitted online will not be opened.

1.3.6 Constitution of the Firm:-

1.3.6.1 Tenderer shall clearly specify whether the tender is submitted on his own or on behalf of a partnership firm / Joint Venture (JV) / Company. The tenderer(s) who is / are constituents of the firm / Company, shall enclose self-attested copies of the constitution of their concern, Partnership Deed and Power of attorney along with their tender. Tender documents in such cases shall be signed by such persons as may be legally competent to sign them on behalf of the firm / company as the case may be.

1.3.6.2 The tenderer shall give full details of the constitution of the Firm / JV / Company and shall also submit following documents (as applicable), in addition to documents mentioned above:

(a) Sole Proprietorship Firm: The tenderer shall submit the notarized copy of the affidavit.

(b) Partnership Firm : The tenderer shall submit self-attested copies of (i) registered / notarized Partnership Deed and (ii) Power of Attorney duly authorizing one or more of the partners of the firm or any other person(s), authorized by all the partners to act on behalf of the firm and to submit & sign the tender, sign the agreement, witness measurements, sign measurement books, receive payments, make correspondences, compromise / settle / relinquish any claim (s) preferred by the firm, Sign "No claim Certificate", refer all or any dispute to arbitration and to take similar action in respect of all tenders / contracts or said tender / contract.

(c) Joint Venture: The tenderer shall submit documents as mentioned in clause 65 of GCC.

(d) Companies registered under Companies Act-1956: The tenderer shall submit (i)

the copies of Memorandum of Association (MOA) and Articles of Association (AOA) of the company; and (ii) Power of attorney duly registered / notarized by the company (backed by the resolution of Board of Directors) in favour of the individual, signing the tender on behalf of company.

1.3.6.3 If it is mentioned in the tender submission that it is being submitted on behalf of / by a sole Proprietorship Firm / Partnership Firm / Joint venture / registered Company etc. but above-mentioned documents (as applicable) are not enclosed along with tender, the tender shall be summarily rejected.

If it is NOT mentioned in the tender submission that it is being submitted on behalf of / by a Sole Proprietorship Firm / Partnership Firm / Joint Venture / Registered Company etc., then the tender shall be treated as having been submitted by the individual who has signed the tender.

After opening of the tender, any document pertaining to the constitution of the Firm / Joint Venture etc. shall neither be asked nor be entertained / considered by DFCCIL.

1.3.6.4 A tender from Joint Venture / Partnership Firm etc. shall be considered only where permissible as per the tender conditions.

1.3.6.5 The DFCCIL will not be bound by any power of attorney granted by the tenderer or by changes in the composition of the Firm made subsequent to the submission of tender. It may, however, recognize such power of attorney and changes after obtaining proper legal advice.

1.3.7 Validity of Tender:-

Tenderer shall keep his offer open for a minimum period of 90 days from the date of opening of the tender or as mentioned in the Tender Notice.

1.3.8 Earnest Money:-

(a) The tender must be accompanied by Earnest Money in favour of '**Dedicated Freight Corridor Corporation of India Limited, Mumbai**' deposited in any of the forms as mentioned in 1.3.8(c), failing which the tender will not be considered. However MSEs are exempted from deposition of the EMD.

(b) The earnest money shall remain deposited with the DFCCIL for the period of validity of the offer prescribed in this tender i.e. 120 days from the date of opening of tender. If the validity of the offer is extended, the validity of earnest money should also be extended failing which the offer after the expiry of the aforesaid period may not be considered by the DFCCIL.

(c) The Earnest money should be in the following form:

On-line payment through e-payment gateway available in the Contractor's home page under www.ireps.gov.in .

- (d) It shall be understood that the tender documents have been sold/issued to the tenderer and the tenderer is permitted to tender in consideration of stipulation on his part, that after submitting his tender he will not resale from his offer or modify the terms and conditions, thereof in a manner not acceptable to the Employer. Should the tenderer fail to observe or comply with the said stipulation, therefore said amount shall be liable to be forfeited to the DFCCIL.
- (e) The earnest money of the unsuccessful tenderer(s) will, save as here- in-before provided, be returned to the unsuccessful tenderer(s) within a reasonable time but the DFCCIL shall not be responsible for any loss or depreciation that may happen for the due performance of the stipulation to keep the offer open for the period specified in the tender documents or to the earnest money while in their possession nor be liable to pay interest thereon. The Earnest Money of the successful Tenderer shall be converted to Retention money/Security Deposit when the successful Tenderer has furnished the Performance Security and signed the Contract Agreement.
- (f) Dedicated Freight Corridor Corporation of India Limited (DFCCIL) reserves the right of forfeiture of the Earnest Money Deposit (EMD) in case of Successful Tenderer if:
- i. Does not execute the Contract Agreement within 30 (thirty) days from the date of Issue of Letter of Acceptance; or
 - ii. Does not submit the Performance Security in the form of Bank Guarantee of the requisite value (equal to 5% of contract value) as per Form No.6 of the Chapter II of Part II of the tender document, within 15 days of issue of Letter of Acceptance; or
 - iii. Does not commence the work within 7 days of receipt of Letter of Acceptance or date as specified in the Letter of Acceptance.
 - iv. Withdraws the offer during the period of validity/extended validity.
 - v. When any of the information furnished by the Tenderer not found true.

NOTE: No interest shall be paid by DFCCIL on earnest money amount. The forfeiture of the EMD shall also be applicable if work is terminated at any stage as per terms and conditions of the Contract.

1.3.9 Execution of Contract Agreement:-

The Tenderer whose tender is accepted shall be required to appear in person at the office of **Chief General Manager/South, DFCCIL, 7th floor, Central Railway New Administrative Building, D.N. Road, Mumbai-40001** or if a firm or corporation, a duly authorized representative shall so appear and execute the contract agreement within 30 days after notice that the contract has been awarded to him. Failure to do so shall

constitute a breach of the agreement affected by the acceptance of the tender in which case the full value of the earnest money accompanying the tender shall stand forfeited without prejudice to any other rights or remedies.

In the event of any tenderer whose tender is accepted refuses to execute the contract agreement as here in before provided, DFCCIL may determine that such tenderer has abandoned the contract and there upon his tender and acceptance thereof shall be treated as cancelled and DFCCIL shall be entitled to forfeit the full amount of the Earnest Money.

1.3.10 Security Deposit on Acceptance of Tender:

The security deposit/ rate of recovery/mode of recovery on acceptance of tender shall be as per the Para 16.(1) to 16.(3) of General Conditions of Contract (GCC). Overall Security Deposit shall 5% of the Contract value. EMD submitted along with the Tender will adjusted against the Security Deposit. Balance to be deducted @ 10% from each of the Running bills till realization of the full amount.

1.3.11 Tenderer's Address

The tenderer should state in the tender his postal address legibly and clearly. Any communication sent in time to the tenderer by post at his said address shall be deemed to have reached the tenderer duly and in time. Important documents should be sent by registered post.

1.3.12 Right of DFCCIL to Deal with Tenders

- (a) The DFCCIL reserves the right of not to invite tenders for any of DFCCIL work or works or to invite open or limited tenders and when tenders are called - to accept, attend in whole or in part or to reject any tender or all tenders without assigning reasons for any such action.
- (b) The authority for the acceptance of the tender will rest with the DFCCIL. It shall not be obligatory on the said authority to accept the lowest tender or any other tender and no tenderer(s) shall demand any explanation for the cause of rejection of his/their tender. DFCCIL undertake discretion to assign reasons for declining to consider or reject any particular tender or tenders.

1.3.13 (i) Eligibility Criteria

(A): Technical Eligibility Criteria

Criteria	Compliance Requirement		Documents
Requirement	Single Entity	Joint venture	Submission Requirements
(i) The tenderer / JV firm or Lead Member of JV firm must have satisfactorily completed at least one single similar work (Any Building work) in last three previous financial years and the current financial year up to the date of submission of tender, having minimum value of 35% of the Advertised value of tender i.e. Rs. 3,63,03,330/-	Must meet requirement	Existing JV - Must meet requirement. Or Lead Member of proposed JV- Must meet requirement	The tenderer shall submit the completion certificates / certified completion certificates from the client(s) and or Photostat of original certificates of client. All documents either original or photocopy should be either self attested (submitted along with Form 20) or by Notary.

Note:

Following work will be treated as similar work:-

1. "**Any Building work**" involving general construction activities viz concreting, masonry etc."
2. Similar work can be carried out as a part of larger work, the same should be specifically stated in the credentials and its costs be advised separately.

(B):Financial Eligibility Criteria

Criteria	Compliance Requirement		Documents
Requirement	Single Entity	Joint Venture	Submission Requirements
The contractual payments received by the tenderer / JV firm or the arithmetic sum of contractual payments received by all the members of the JV firm in the previous three financial year and the current financial year up to the date of submission of tender shall be at least 150% of advertised value of tender i.e. for an amount of Rs. 15,55,85,700/- .	Must meet Requirement	Must meet requirement	TDS certificates/ Audited balance sheets and or Photostat of TDS certificates/Audited Balance sheets clearly indicating the contractual amount received. All documents either original or photocopy should be either self-attested (submitted along with Form 20) or by Notary.

Note: 1. Contractual payments received by a Member in an earlier JV firm shall be reckoned only to extent of the concerned member's share in that JV Firm for the purpose of satisfying compliance of the above-mentioned financial eligibility criteria in tender for considerations.

2. In case the tenderer/s is a partnership firm, the turnover etc. shall be in the name of partnership firm only.

1.3.13 (ii) Credentials of Tenderer

The tenderer shall provide satisfactory evidence in support of their technical and financial eligibility, which are acceptable to DFCCIL, as follows:

- (a) For Technical eligibility criteria, the details will be submitted in Form No.2A along with supporting documents.
- (b) For Financial eligibility criteria, the details will be submitted in Form No.2B along with supporting documents.
- (c) The tenderer shall submit the completion certificates/certified completion certificates

from the client(s) or Photostat of original certificates of client. All documents either original or photocopy should be attested by Notary. These certificates should indicate the details of works carried out and successful commissioning of similar type of work executed by the tenderer. Completion certificate from Govt. organisation /PSUs/Public Limited Company will be accepted. The certificate from Private individual/Private Company for whom such works are executed shall not be accepted. In case, the work is executed for Public Limited Company, copy of work order, bill of Quantity, TDS certificate, payments received and copy of final/last bill paid by client shall be submitted.

The following will be applicable for evaluating the eligibility:

- (i) Similar nature of work physically completed within the qualifying period ,i.e. last three financial year and current financial year(even though the work might have commenced before the qualifying period) shall only be considered in evaluating the eligibility.
- (ii) The total value of similar nature of work completed during the qualifying period and not the payment received within qualifying period alone, shall be considered. In case, the final bill of similar nature of work has not been passed and final measurements have not been recorded, the paid amount including statutory deductions is to be considered. If final measurements have been recorded and work has been completed with negative variation, then also the paid amount including statutory deductions is to be considered.

However, if final measurements have been recorded and work has been completed with positive variation but variation has not been sanctioned, original contract agreement value or last sanctioned contract agreement value whichever is lower, shall be considered for judging eligibility.

- (iii) As proof of sufficient financial capacity and organizational resources, contractor should have received total payments against satisfactory execution of all completed /on-going works of all types(not confined to only similar works) during the last three financial years and in the current financial year (upto the date of submission of the tender) of a value not less than 150% of advertised tender value.
- (iv) Tenderer shall submit a statement of contractual payments received during last three financial years and current financial year on the prescribed Performa as per Form No. 2B. The details shall be based on the form 16-A issued by the employer i.e. the certificate of deduction of tax at source as per Income Tax Act 1961. The photo copies of Form 16-A shall be enclosed duly attested by Notary Public with seal and Not a stamp there on or a certificate from audit or audited balance sheet certified by Chartered Accountant clearly indicating the contractual amount received duly attested by Notary Public with seal and Not a Stamp thereon.

- (v) The tenderer shall be considered disqualified/in-eligible if:
- (a) The Tenderer or any of its partners and/or subcontractors included in the tender has been banned for business with Ministry of Railways/DFCCIL along with any of its attached and subordinate offices through an order issued by Ministry of Railways as per list available on Website([http:// www. Indian Railways. gov.in / railway board](http://www.IndianRailways.gov.in/railwayboard)) of Railway Board pertaining to banning of Business, with the banning being valid as on the date of submission the Tender.
 - (b) The Tenderer or any of its partners has suffered bankruptcy / insolvency or it is in the process of winding-up or there is a case of insolvency pending before any Court on the deadline of submission of application.
- (vi) For the purposes of conversion of foreign currency to Indian rupees (INR), Bank Currency(BC) selling exchange rates as published by State Bank of India on the date 28 days prior to date of submission of tender shall be used. For few of the currencies where BC selling rates are not published by SBI or reserve bank of India, the exchange rate may be obtained from website-<http://www.oanda.com/currency/historical-rates> or <http://www.xe.com>.
- (vii) For the purpose of evaluation of proposals, all values given in INR in eligible qualification criteria and the values provided by the applicants in the proposal in the currencies other than INR shall be converted into one i.e. INR as per exchange rate mentioned in para (vi) above.

1.3.14 Period of Completion

The entire work is required to be completed in all respects within 18 months (Eighteen months) from the date of issue of the acceptance letter. Time is the essence of contract. The contractor shall be required to maintain steady and regular progress to the satisfaction of the Engineer to ensure that the work will be completed in all respects within the stipulated time.

- 1.3.15** If the Tenderer/s deliberately gives any wrong information about credentials / documents in his / their tenders and thereby create(s) circumstances for acceptance of his/their tender, DFCCIL reserves the right to reject such tender at any stage, besides, shall suspend business with such tenderer. The EMD of such tenderers shall also be forfeited.

1.3.16 Quantum of work and materials:

The indicative schedule of quantities of various items of works is included in FIN OFFER Tab of the tender documents.

1.3.17 Employer not bound to accept any tender:

The employer shall not be bound to accept the lowest or any tender or to assign any reason for non-acceptance or rejection of a tender. The employer reserves the right to accept any tender in respect of the whole or any portion of the work specified in the tender papers or to reduce the work or to accept any tender for less than the tendered quantities without assigning any reason whatsoever.

1.3.18 Schedule of Prices

The Schedules Considered for working the price of this Tender consist of the following –

- a) CPWD Delhi schedule of Rates 2018
- b) Maharashtra State Schedule of Rates 2019-20
- c) Market Rate items

Based on these, the total tender value has also been worked out.

1.3.19 Performance Guarantee: Refer relevant clause of GCC.

1.3.20 The tenderer shall furnish information for making payment through ECS/ NEFT / RTGS (Tender Form No. 8 placed at Part IV of the tender documents).

1.3.21 Negotiation:

Should DFCCIL decide to negotiate with a view to bring down the rates, the tenderer called for negotiations should furnish the following form of declaration before commencement of negotiations:

"I..... do declare that in the event of failure of contemplated negotiations relating to Tender No..... datedmy original tender shall remain open for acceptance on its original terms and conditions,".

1.3.22 Site Inspection:

Tenderers are requested to inspect the site and carry out careful examination to satisfy them as to the nature of work involved and facilities available at the site. They should note carefully all the existing structures and those under construction through other agencies. They should also study the suitability of utilizing the different equipment and the machinery that they intend to use for the execution of the work. The tenderers should also select suitable sites for the purpose of locating their store yard, laboratory, staff quarters etc., and satisfy themselves with regard to the feasibility of transporting the materials, etc. from the yard to the final site of placement etc.

1.3.23 No form C &D shall be issued to the contractor for this work.

**PART - I
CHAPTER - IV**

GENERAL CONDITIONS OF CONTRACT

PART - I
CHAPTER IV

GENERAL CONDITIONS OF CONTRACT

DEFINITIONS AND INTERPRETATION

- 1. (1) Definition:-** In these General conditions of Contract, the following terms shall have the meaning assigned here under except where the context otherwise requires:-
- (a) "Railway" shall mean the President of the Republic of India or the Administrative Officers of the Railway/DFCCIL or of the Successor Railway / DFCCIL authorized to deal with any matters which these presents are concerned on his behalf.
 - (b) "General Manager of Railway " shall mean the officer -in-charge of the General Superintendence and Control of the Railway and shall mean and include their successors, of the successor Railway;
 - (c) "Chief Engineer" shall mean the officer -in-charge of the Engineering Department of Railway and shall also include Chief Engineer(Construction),Chief Signal and Telecommunication Engineer, Chief Signal and Telecommunication Engineer(Construction), Chief Electrical Engineer, Chief Electrical Engineer(Construction) and shall also include CGM/GM/CPM/SOUTH of DFCCIL.
 - (d) "Divisional Railway Manager" shall mean the Officer in-charge of a Division of the Railway and shall also mean any officer nominated by Managing Director / DFCCIL and shall mean and include their successors of the successor Railway.
 - (e) "Engineer" and Employer's Engineer shall mean the Chief General Manager of DFCCIL / PMC appointed by DFCCIL.
 - (f) "Engineer's Representative" shall mean the Assistant Engineer,Assistant Signal and Telecommunication Engineer and Assistant Electrical Engineer, APM / PM / Dy.CPM / Add.CPM of DFCCIL in direct charge of the work and shall include any Sr.Sec. / Sec / Jr. Engineer / Executive / Sr. Executive, APM/PM / DyCGM of DFCCIL of Civil Engineering / Signal & Telecommunication Engineering / Electrical Engineering Department appointed by the Railway / DFCCIL and shall mean and include the Engineer's Representative of the successor Railway / DFCCIL.
 - (g) "Consultant"-Architect shall mean the person /Firm /Company ,who enters into the contract with the DFCCIL and shall include their executors, administrators, successors, associates and permitted assigns.

- (h) "Contractor" shall mean the person / Firm / Company/ JV whether incorporated or not who enters into the contract with the DFCCIL and shall include their executors, administrators, and successors and permitted assigns.
- (i) "Contract" shall mean and include the Agreement of Work Order, the accepted schedule of rates of the Schedule or Rates of Railway / DFCCIL modified by the tender percentage for items of work quantified, or not quantified, General Conditions of Contract, Special Conditions of Contracts, if any, Drawings, Specifications, Additional / Special Specifications, if any and tender forms, if any, and all other documents included as part of contract.
- (j) "Works" shall mean the works to be executed in accordance with the contract.
- (k) "Specifications" shall mean the Specifications for materials and works referred/ mentioned in tender documents.
- (l) "Schedule of rates of Railway" shall mean the schedule of rates issued under the authority of the Chief Engineer from time to time and shall also include Rates specified in tender document. "Schedule of rates of State Govt." shall mean the schedule of rates issued under the authority of the Chief Engineer/State Govt. Maharashtra from time to time and shall also include Rates specified in tender document
- (m) "Drawing" shall mean the maps, drawings, plans and tracings or prints thereof annexed to the contract and shall include any modifications of such drawings and further drawings as may be issued by the Engineer from time to time.
- (n) "Constructional Plan" shall mean all appliance sort things of whatsoever nature required for the execution, completion or maintenance of the works or temporary works(as here in after defined) but does not include materials or other things intended to form or forming part of the permanent work.
- (o) "Temporary Works" shall mean all temporary works of every kind required for the execution completion and/or maintenance of the works.
- (p) "Site" shall mean the lands and other places on, under, is out/through which the works are to be carried out and any other lands or places provided by the Railway for the purpose of the contract.
- (q) "Period of Maintenance" shall mean the defect liability period from the date of completion of the works as certified by the Engineer.

1.(2) Singular and Plural:- Words importing the singular number shall also

include the plural and vice versa where the context requires.

- 1.(3) Headings & marginal headings:-**The headings and marginal headings in these general conditions are solely for the purpose of facilitating reference and shall not be deemed to be part thereof or be taken into consideration in the interpretation or construction thereof or the contract.

GENERAL OBLIGATION

- 2. (1) Execution Co-relation and intent of contract Documents:-**The contract documents shall be signed in triplicate by the DFCCIL and the Contractor. The contract documents are complementary, and what is called for by any one shall be as binding as if called for by all, the intention of the documents is to include all labour and materials, equipment and transportation necessary for the proper execution of work. Materials or work not covered by or properly inferable from any heading or class of the specifications shall not be supplied by the DFCCIL to the contractors unless distinctly specified in the contract documents. Materials or works described in words which so applied have a well-known technical or trade meaning shall be held to refer to such recognized standards.
- 2.(2)** If a work is transferred from the jurisdiction of one Railway to another Railway or to a Project Authority/ DFCCIL or vice versa while contract is in subsistence, the contract shall be binding on the Contractor and the Successor Railway/Project in the same manner & take effect all respects as if the Contractor and the Successor Railway/Project were parties there to from the inception and the corresponding officer or the Competent Authority in the Successor Railway/Project will exercise the same powers and enjoy the same authority as conferred to the Predecessor Railway/Project under the original contract/agreement entered into.
- 2.(3)** If for administrative or other reasons the contract is transferred to the Successor Railway/Successor Project Authority of DFCCIL the contract shall notwithstanding any things contained herein contrary thereto, be binding on the Contractor and the Successor Railway /Project Authority/ DFCCIL in the same manner and take effect in all respect as if the Contractor and the Successor Railway/ successor Project Authority of DFCCIL had been parties thereto from the date of this contract. The contract shall be Administered/Managed by GGM/GM/CPM/nominated by DFCCIL.
- 3.(1) Law governing the contract:-**The contract shall be governed by the law for the time being in force in the Republic of India.
- 3.(2) Compliance to regulations and bye-laws:-**The contractor shall conform to the provision of any statute relating to the works and regulations and by-laws of any location authority and of any water and lighting companies or undertakings, with whose system the work is proposed to be connected and

shall before making any variation from the drawings or the specifications that may be necessitated by so confirming give to the Engineer notice specifying the variation proposed to be made and the reasons for making the variation and shall not carry out such variation until he has received instructions from the Engineer in respect hereof. The contractor shall be bound to give all notices required by statute, regulations, or bye-laws as aforesaid and to pay all fees and taxes payable to any authority in respect thereof.

4. **Communications to be in writing:-** All notices, communications, reference and complaints made by the DFCCIL or the Engineer or the Engineer's representative or the contractor interest concerning the work shall be in writing and no notice, communication, reference or complaint not in writing shall be recognized.
5. **Service of Notices on Contractors:-** The contractor shall furnish to the Engineer the name designation and address of his authorized agent and all complaints, notices, communications and references shall be deemed to have been duly given to the contractor if delivered to the contractor or his authorized agent or left at or posted to the address so given and shall be deemed to have been so given in the case of posting on day on which they would have reached such address in the ordinary course of post or on the day on which they were so delivered or left. In the case of contract by partners, any change in the constitution of the firm shall be forthwith notified by the contractor to the Engineer.
6. **Occupation and use of land:-** No land belonging to or in the possession of the Railway / DFCCIL / State govt. shall be occupied by the Contractor without the permission of the Railway / DFCCIL. The Contractor shall not use, or allow to be used, the site for any purposes other than that of executing the works. Whenever non-Railway bodies / persons are permitted to use Railway / State Govt. premises with competent authority's approval, conservancy charges as applicable from time to time may be levied.
7. **Assignment or subletting of contract:-** The contractor shall not assign or sublet the contract or any part thereof or allow any person to become interested therein in any manner whatsoever without the special permission in writing of the DFCCIL. Any breach of this condition shall entitle the DFCCIL to rescind the contract under clause 62 of these conditions and also render the contractor liable for payment to the DFCCIL in respect of any loss or damage arising or ensuing from such cancellation. Provided always that execution of the details of the work by petty contractor under the direct and personal supervision of the Contractor or his agent shall not be deemed to be sub-letting under this clause. The permitted subletting of work by the contractor shall not establish any contractual relationship between the sub-contractor and the DFCCIL and shall not relieve the contractor of any responsibility under the contract.

8. **Assistance by the DFCCIL for the Stores to be obtained by the Contractor:-** Owing to difficulty in obtaining certain materials(including Tools & Plant)in the market, the DFCCIL may have agreed without any liability therefore to endeavour to obtain or assist the contractor in obtaining the required quantities of such materials as may be specified in the tender. In the event of delay or failure in obtaining the required quantities of the afore said material the contractor shall not be deemed absolved of his own responsibility and shall keep in touch with day to day positions regarding their availability and accordingly adjust progress of works including employment of labour and the DFCCIL shall not in any way be liable for the supply of materials or for the non-supply thereof for any reasons whatsoever nor for any loss or damage arising in consequence of such delay or no supply.
9. **Deleted**
10. **Carriage of materials:-** No forwarding orders shall be issued by the DFCCIL for the conveyance of contractor's materials, tools and plan by Rail which may be required for use in the works and the contractor shall pay full freight charges at public tariff rates therefore.
11. **Deleted**
12. **Representation on Works:-** The contractor shall, when he is not personally present on the site of the works place and keep a responsible agent at the works during working hours who shall on receiving reasonable notice, present himself to the Engineer and orders given by the Engineer or the engineer's representative to the agent shall be deemed to have the same force as if they had been given to the Contractor. Before absenting himself, the contractor shall furnish the name and address of his agent for the purpose of this clause and failure on the part of the Contractor to comply with this provision at any time will entitle the DFCCIL to rescind the contract under clause 62 of these conditions.
13. **Relics and Treasures:-** All gold, silver, oil and other minerals of any description and all precious stones, coins, treasures relics antiquities and other similar things which shall be found in or upon the site shall be the property of the DFCCIL and the Contractor shall duly preserve the same to the satisfaction of the DFCCIL and shall from time to time deliver the same to such person or persons as the DFCCIL may appoint to receive the same.
14. **Excavated material:-** The contractor shall not sell or otherwise dispose of or remove except for the purpose of this contract, the sand, stones, clay, ballast, earth, rock or other substances or materials which may be obtained from any excavation made for the purpose of the works or any building or produced upon the site at the time of delivery of the possession thereof but

all the substances, materials, buildings and produce shall be the property of the DFCCIL provided that the contractor may, with the permission of the Engineer, use the same for the purpose of the works either free of cost or pay the cost of the same at such rates as maybe determined by the Engineer.

- 15. Indemnity by Contractors:-** The contractor shall indemnify and save DFCCIL from and against all actions, suit proceedings losses, costs, damages, charges, claims and demands of every nature and description brought or recovered against the Railways /DFCCIL by reason of any actor omission of the contractor, his agents or employees, in the execution of the works or in his guarding of the same. All sums pay able by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied to the actual loss or damage sustained, and whether or not any damage shall have been sustained.
- 16.(1) Security Deposit:-**The earnest money deposited by the contractor with this tender will be retained by the Railways / DFCCIL as part of security for the due and faithful fulfilment of the contract by the contractor. The balance to make up the security deposit, the rates for which are given below, may be deposited by the contractor in cash or may be recovered by percentage deduction from the contractor's "on account" bills. Provided also that in case of defaulting contractor the DFCCIL may retain any amount due for payment to the contractor on the pending "on account bills" so that the amounts so retained may not exceed 10% of the total value of the contract.
- 16.(2) Recovery of Security Deposit:-** Unless otherwise specified in the special conditions, if any, the Security Deposit / rate of recovery / mode of recovery shall be as under:-
- (a) Security Deposit for each work should be 5% of the contract value.
 - (b) The rate of recovery should be at the rate of 10% of the bill amount till the full security deposit is recovered.
 - (c) Security Deposits will be recovered only from the running bills of the contract and no other mode of collecting SD such as SD in the form of instruments like BG(except Note(ii) below);FD etc. shall be accepted towards Security Deposit.
- Security deposit shall be returned to the contractor after the expiry of the Defect Liability Period in all the cases other than Note (i) mentioned below and after passing the final bill based on No Claim Certificate with the approval of the Competent Authority. The Competent Authority shall normally be the authority who is competent to sign the contract. If this competent authority is of the rank lower than JA grade /CGM, DFCCIL, then JA grade officer /CGM, DFCCIL (Concerned with the work) should issue the certificate. The certificate, inter alia, should mention that the work has been completed in all respects and that all the contractual obligations have been

fulfilled by the contractor and that there is no due from the contract or to Railways / DFCCIL against the contract concerned. Before releasing the SD, an unconditional and unequivocal no claim certificate from the contract or concerned should be obtained.

Note

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- (i) After the work is physically completed, security deposit recovered from the running bills of a contractor can be returned to him if he so desires, in lieu of FDR / irrevocable Bank Guarantee for equivalent amount to be submitted by him.

16.(3) No interest will be payable upon the Earnest Money and Security Deposit or amounts payable to the contract or under the contract, but Government Securities deposited in terms of Sub-clause(1) of this clause will be payable with interest accrued thereon.

**16.(4) Performance Guarantee
(P.G.)**

The procedure for obtaining Performance Guarantee is outlined below:

- (a) The successful bidder shall have to submit a Performance Guarantee (PG) within 30 (thirty) days from the date of issue of Letter Of Acceptance (LOA). Extension of time for submission of PG beyond 30 (thirty) days and upto 60 days from the date of issue of LOA may be given by the Authority who is competent to sign the contract agreement. However, a penal interest of 15% per annum shall be charged for the delay beyond 30 (thirty) days, i.e. from 31st day after the date of issue of LOA. In case the contractor fails to submit the requisite PG even after 60 days from the date of issue of LOA, the contract shall be terminated duly forfeiting EMD and other dues, if any payable against that contract. The failed contractor shall be debarred from participating in re-tender for that work.
- (b) The successful bidder shall submit the performance Guarantee in any of the following forms amounting to 5% of the contract value:-
 - (i) A deposit of Cash
 - (ii) Irrevocable Bank Guarantee
 - (iii) Government Securities including State Loan Bonds at 5 percent below the market value
 - (iv) Deposit receipts, pay orders, Demand Drafts and Guarantee Bonds. These forms of Performance Guarantee could be either of the State Bank of India or of any of the Nationalized Banks;
 - (v) Guarantee Bonds executed or Deposits Receipts tendered by all Scheduled Banks;
 - (vi) A Deposit in the Post Office Saving Bank;

- (vii) A deposit in the National Savings Certificates.
- (viii) Twelve years National Defence Certificates;
- (ix) Ten years Defence Deposits;
- (x) National Defence Bonds; and
- (xi) Unit Trust Certificates at 5 per cent below market value or at the face value whichever is less.

Note: The instruments as listed above will also be acceptable for Guarantees in case of Mobilization advance.

- (c) The performance Guarantee shall be submitted by the successful bidder after the letter of acceptance has been issued, but before signing of the contract agreement. The agreement should normally be signed within 30 (thirty) days after the issue of LOA and the Performance Guarantee shall also be submitted within this time limit. This P. G. shall be initially valid up to the stipulated date of completion plus 60 days beyond that. In case, the time limit for completion of work gets extended, the contractor shall get the validity of Performance Guarantee extended to cover such extended time for completion of work plus 60 days.
- (d) The value of PG to be submitted by the contractor will not change for variation up to 25 % (either increase or decrease). In case during the course of execution, value of the contract increases by more than 25 % of the original contract value, an additional performance guarantee amounting to 5 % (five percent) for the excess value over the original contract value shall be deposited by the contractor.
- (e) The performance Guarantee (PG) shall be released after the physical completion of the work based on the 'completion certificate' issued by the competent authority stating that the contractor has completed the work in all respects satisfactorily. The security deposit shall, however, be released only after the expiry of the defect liability period and after passing the final bill based on 'No Claim Certificate' from the contractor.
- (f) Whenever the contract is rescinded, the security deposit shall be forfeited and the Performance Guarantee shall be encashed. The balance work shall be got done independently without risk and cost of the failed contractor, the failed contract or shall be debarred from participating in the tender for executing the balance work. If the failed contractor is a JV or a partnership firm, then every member / partner of such a firm shall be debarred from participating in the tender for the balance work in his / her individual capacity or as a partner of any other JV / partnership firm.
- (g) The Engineer shall not make a claim under the Performance Guarantee except for amounts to which the President of India / DFCCIL is entitled under the contract (no withstanding and/or without prejudice to any other provisions in the contract agreement) in the event of:

- (i) Failure by the contractor to extend the validity of the Performance Guarantee as described here in above, in which event ,the Engineer may claim the full amount of the Performance Guarantee.
- (ii) Failure by the contractor to pay President of India / DFCCIL 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 the notice to the effect by Engineer.
- (iii) The contract being determine do rescinded under provision of the GCC the Performance Guarantee shall be forfeited in full and shall be absolutely at the disposal of the President of India.

17. Force Majeure Clause:- If at any time, during the continuance of this contract, the Performance in whole or in part by either party of any obligation under this contract shall be prevented or delayed by reason of any war, hostility, acts of public enemy, civil commotion, sabotage, serious loss or damage by fire, explosions, epidemics, strikes, lockouts or act of God (herein after, referred to events) provided notice of the happening of any such event is given by either party to the other within 30days from the date of occurrence thereof, neither party shall by reason of such event, been titled to terminate this contract nor shall either party have any claim for damages against the other in respect of such non- performance of delay in performance, and works under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist, and the decision of the Engineer as to whether the works have been so resumed or not shall be final and conclusive, PROVIDED FURTHER that if the performance in whole or in part of any obligation under this contract is prevented or delayed by reason of any such event for a period exceeding 120 days, either party may at its option terminate the contract by giving notice to the other party.

17-A Extension of time in Contracts:- Subject to any requirement in the contract as to completion of any portion or portions of the works before completion of the whole, the contractor shall fully and finally complete the whole of the works comprised in the contract (with such modifications as may be directed under conditions of this contract) by the date entered in the contractor extended date in terms of the following clauses:-

- (i) **Extension due to modification:-** If any modifications have been ordered which in the opinion of the Engineer have materially increased the magnitude of the work, then such extension of the contracted date of completion may be granted as shall appear to the Engineer to be reasonable in the circumstances, provided moreover that the Contractor shall be responsible for requesting such extension of the date as may be considered necessary as soon as the cause there of shall arise and in any case not less than one

month before the expiry of the date fixed for completion of the works.

- (ii) **Extension for delay not due to DFCCIL or Contractor:-** If in the opinion of the Engineer the progress of work has anytime been delayed by any act or neglect of DFCCIL's employees or by other contractor employed by the DFCCIL under sub-clause (4) of clause 20 of these conditions or in executing the work not forming part of the contract but on which contractor's performance necessarily depends or by reasons of proceeding taken or threatened by or dispute with adjoining or to neighbouring owners or public authority arising otherwise through the Contractor's own default etc. or by the delay authorized by the Engineer pending arbitration or in consequences of the contractor not having received in due time necessary instructions from the DFCCIL for which he shall have specially applied in writing to the Engineer or his authorized representative then upon happening of any such event causing delay, the contractor shall immediately give notice thereof in writing to the Engineer within 15 days of such happening but shall nevertheless make constantly his best endeavours to bring down or make good the delay and shall do all that maybe reasonably required of him to the satisfaction of the Engineer to proceed with the works. The contractor may also indicate the period for which the work is likely to be delayed and shall be bound to ask for necessary extension of time. The Engineer on receipt of such request from the contractor shall consider the same and shall grant such extension of time as in his opinion is reasonable having regard to the nature and period of delay and the type and quantum of work affected thereby.

No other compensation shall be payable for works so carried forward to the extended period of time, the same rates, terms and conditions of contract being applicable as if such extended period of time was originally provided in the original contract itself.

- (iii) **Extension for delay due to DFCCIL:-** In the event of any failure or delay by the DFCCIL to hand over the Contractor possession of the lands necessary for the execution of the works or to give the necessary notice to commence the works or to provide the necessary drawings or instructions or any other delay caused by the DFCCIL due to any other cause whatsoever, then such failure or delay shall in no way affect or vitiate the contractor alter the character therefore entitle the contractor to damages or compensation therefore, but in any such case, the DFCCIL may grant such extension or extensions of the completion date as maybe considered reasonable.

17-B Extension of time for delay due to contractor:- The time for the execution of the work or part of the works specified in the contract documents shall be deemed to be the essence of the contract and the works must be completed not later than the date(s) as specified in the contract. If the contractor fails to complete the works within the time as specified in the contract for the

reasons other than there as on specified in clause 17 and 17-A, the DFCCIL may if satisfied that they can be completed by the contractor within reasonable short time thereafter, allow the contractor for further extension of (Performa at Form No. 14) time as the Engineer may decide. On such extension the DFCCIL will be titled without prejudice to any other right and remedy available on that behalf, to recover from the contractor as agreed damages and not by way of penalty a sum equivalent to $\frac{1}{2}$ of 1% of the contract value of the works for each week or part of the week.

For the purpose of this clause, the contract value of the works shall be taken as value of work as per contract agreement including any supplementary work order/contract agreement issued. Provided also, that the total amount of liquidated damages under this condition, shall not exceed the undernoted percentage value or of the total value of the item or groups of items of work for which a separate distinct completion period is specified in the contract.

- (i) For contract value up to Rs. 2 lakhs - 10% of the total value of the Contract.
- (ii) For contracts valued above Rs. 2 lakhs- 10% of the first Rs.2 lakhs and 5% of the balance.

Further competent authority while granting extension to the currency of contract under clause 17.(B) of GCC may also consider levy of token penalty as deemed fit based on the merit of the case. Provided further, that if the DFCCIL is not satisfied that the works can be completed by the Contractor and in the event of failure on the part of the contractor to complete the work within further extension of time allowed as afore said, the DFCCIL shall be titled without prejudice to any other right or remedy available in that behalf, to appropriate the contractor's security deposit and rescind the contract under clause 62 of these conditions, whether or not actual damage is caused by such default.

18.(1) Illegal Gratification:- Any bribe, commission, gift or advantage given, promised or offered by or on behalf to the contractor or his partner, agent or servant or, anyone on his behalf, to any officer or employee of the DFCCIL, or to any person on his behalf in relation to obtaining or execution of this or any other contract with the DFCCIL shall, in addition to any criminal liability which he may incur, subject contract or to the rescission of the contract and all other contracts with the DFCCIL and to the payment of any loss or damage resulting from such decision and the DFCCIL shall be entitled to deduct the amounts so payable from any moneys due to the Contractor(s) under this contract or any other contracts with the DFCCIL.

18.(2) The contractor shall not lend or borrow from or have or enter in to any monitory dealings and transactions either directly or indirectly with any employee of the DFCCIL and if he shall do so, the DFCCIL shall be entitled forth with to rescind the contract and all other contracts with the DFCCIL. Any question or dispute as to the commission or any such offence or

compensation payable to the DFCCIL under this clause shall be settled by the General Manager /South /CPM of the DFCCIL, in such a manner as he shall consider fit and sufficient and his decision shall be final and conclusive. In the event of rescission of the contract under this clause, the contractor will not be paid any compensation whatsoever except payments for the work done up to the date of rescission.

EXECUTION OF WORKS

- 19.(1) Contractor's understanding:-** It is understood and agreed that the contractor has, by careful examination, satisfied himself as to the nature and location of the work, the conformation of the ground, the character, quality and quantity of the materials to be encountered, the character of equipment and facilities needed preliminary to and during the progress of the works, the general and local conditions, the labour conditions prevailing therein and all other matters which can in any way affect the works under the contract.
- 19.(2) Commencement of works:-**The contractor shall commence the works within 15 days after the receipt by him of an order in writing to this effect from the Engineer and shall proceed with the same with due expedition and without delay.
- 19.(3) Accepted Programme of work:-** The contractor who has been awarded the work shall as soon as possible but not later than 30 days after the date of receipt of the acceptance letter in respect of contracts with initial completion period of two years or less or not later than 90 days for other contracts have to submit the detailed programme of work indicating the time schedule of various items of works in the form of Bar Chart /PERT/CPM. He shall also submit the details of organization (in terms of labour and supervisors) plant and machinery, that he intends to utilize (from time to time) for execution of the work within stipulated date of completion. The programme of work amended as necessary by discussions with the Engineer, shall be treated as the agreed programme of the work for the purpose of this contract and the contractor shall endeavour to fulfil this programme of work. The progress of work will be watched accordingly and the liquidated damages will be with reference to the overall completion date. Nothing stated herein shall preclude the contractor in achieving earlier completion of item or whole of the works than indicated in the programme.
- 19.(4) Setting out of works:-**The contractor shall be responsible for the correct setting out of all works in relation to original points, lines and levels of reference at his cost. The contractor shall execute the work true to alignment, grade, levels and dimensions as shown in the drawing and as directed by the Engineer's representative and shall check these at frequent intervals. The contractor shall provide all facilities like labour and instruments

and shall co- operate with the Engineer's representative to check all alignment, grades, levels and dimensions. If, at any time, during the progress of the works any error shall appear or arise in any part of the work, the contractor, on being required so to do by the Engineer's representative shall, at his own cost rectify such errors, to the satisfaction of the Engineer's representative. Such checking shall not absolve the contractor of his own responsibility of maintaining accuracy in the work. The contractor shall carefully protect and preserve all benchmarks, sight rails, pegs, and other things used in setting out the work.

- 20.(1) Compliance to Engineer's instructions:-**The Engineer shall direct the order in which the several parts of the works shall be executed and the contractor shall execute without delay all orders given by the Engineer from time to time but the contractor shall not be relieved thereby from responsibility for the due performance of the works in all respects.
- 20.(2) Alterations to be authorized:-**No alterations in or additions to or omissions or abandonment of any part of the works shall be deemed authorized, except under instructions from the Engineer, and the contractor shall be responsible to obtain such instructions in each and every case in writing from the Engineer.
- 20.(3) Extra works:-**Should works over and above those included in the contract require to be executed at the site, the contractor shall have no right to be entrusted with the execution of such works which may be carried out by another contractor or contractors or by other means at the option of the DFCCIL.
- 20.(4) Separate contracts in connection with works:-**The DFCCIL shall have the right to let other contracts in connection with the works. The contractor shall afford other contractors reasonable opportunity for the storage of their materials and the execution of their works and shall properly connect and coordinate his work with theirs. If any part of the contractors work depends for proper execution or result upon the work of another contractor(s) ,the contractor shall inspect and promptly report to the Engineer any defects in such works that render it unsuitable for such proper execution and results. The contractor's failure so-to inspect and report shall constitute an acceptance of the other contractor's work as fit and proper for the reception of his work, except as to defects which may develop in the other contractor's work after the execution of his work.
- 21. Instruction of Engineer's Representative:-**Any instructions or approval given by the Engineer's representative to contract or in connection with the works shall bind the contractor as though it had been given by the Engineer provided always as follows:
- (a) Failure of the Engineer's representative to disapprove any work or materials shall not prejudice ,the power of the Engineer thereafter to disapprove such

work or material and to order the removal or breaking up thereof.

- (b) If the Contractor shall be dissatisfied by reason of any decision of the Engineer's representative, he shall be entitled to refer the matter to the Engineer who shall there upon confirm or vary such decision.

22.(1) Adherence to specifications and drawings:- The whole of the works shall be executed in perfect conformity with the specifications and drawings of the contract. In absence of any detailed Specifications these specification, latest Indian Standard specifications and code of practice shall become applicable. Wherever the codes and specifications are silent then the same shall be governed by sound engineering practices and the decision of the Engineer in matters of interpretation etc., shall be final and binding on the Contractor. If contractor performs any works in a manner contrary to the specifications or drawings or any of them and without such reference to the Engineer he shall bear all the costs arising or ensuing therefore and shall be responsible for all loss to the DFCCIL.

22.(2) Drawings and specifications of the works:- The contractor shall keep one copy of drawings and specifications at the site, in good order, and such contract documents as maybe necessary available to the Engineer or the Engineer's representative. . Measurements and other information concerning the existing site on the drawings are believed to be correct, but the Contractor shall verify them for himself and also examine the nature of the ground as no claim or allowance whatsoever shall be entertained hereinafter on account of any errors or omissions in the levels or the description of the ground turning out to be different from what was expected or shown on the drawings.

22.(2A) . CORRELATION OF DRAWING:

Before commencement of work, the Contractor shall correlate all relevant structural, Construction and services drawings and satisfy himself that the information available is complete and unambiguous. The Contractor shall be responsible for any error / difficulty in execution / damage incurred owing to any discrepancy in the drawings which has been overlooked by him and has not been brought to the notice of the Engineer before execution.

22.(3) Ownership of drawings and specifications:- All drawings and specifications and copies thereof furnished by the DFCCIL to the Contractor are deemed to be the property of the DFCCIL. They shall not be used on other works and with the exception of the signed contract set, shall be returned by the contractor to the DFCCIL on completion of the work or termination of the contract.

22.(4) Compliance with Contractor's request for details:-The Engineer shall furnish with reasonable promptness, after receipt by him of the contractor's request for the same, additional instructions by means of drawings or

otherwise, necessary for the proper execution of the works or any part thereof. All such drawing and instructions shall be consistent with the contract Documents and reasonably inferable therefrom.

- 22.(5) Meaning and intent of specification and drawings:-**If any ambiguity arises as to the meaning and intent of any portion of the specifications and drawings or as to execution or quality of any work or material, or as to the measurements of the works the decision of the Engineer thereon shall be final subject to the appeal (within 7 days of such decision being intimated to the contractor) to the Chief Engineer/ General Manager/south block /CPM who shall have the power to correct any errors, omissions, or discrepancies in a fore mentioned items and whose decision in the matter in dispute or doubt shall be final and conclusive.
- 23 Working during night:-** The contractor shall not carry out any work between sun-set and sun-rise without the previous permission of the Engineer.
- 24. Damage to Railway / DFCCIL property or private life and property:-**The contractor shall be responsible for all risk to the work and fortress pass and shall make good at his own expense all loss or damage whether to the works themselves or to any other property of the Railway or the lives, persons or property of others from whatsoever cause in connection with the works until they are taken over by the Railway / DFCCIL and this although all reasonable and proper precautions may have been taken by the contractor, and in case the Railway / DFCCIL shall be called upon to make good any costs, loss or damages, or to pay an compensation, including that payable under the provisions of the Workmen's Compensation Act or any statutory amendments thereof to any person or persons sustaining damages as a foresaid by reason of any act, or any negligence or omissions on the part of the contractor the amount of any costs or charges including costs and charges in connection with legal proceedings, which the Railway / DFCCIL may incur in reference there to, shall be charged to the contractor .The Railway / DFCCIL shall have the power and right to pay or to defend or compromise any claim of threatened legal proceedings or in anticipation of legal proceedings being instituted consequent on the action or default of the contractor, to take such steps as may be considered necessary or desirable to ward off or mitigate the effect of such proceedings, charging to contractor, as a fore said any sum or sums of money which may be paid and any expenses whether for reinstatement or otherwise which may be incurred and the propriety of any such payment, defence or compromise , and the incurring of any such expenses shall not be called in question by the contractor.
- 25. Sheds, stores houses and Yards:-**The contractor shall at his own expense provide himself with sheds, stores houses and yards in such situations and in such numbers as in the opinion of the Engineer is requisite for carrying on

the works and the contractor shall keep at each such sheds, stores houses and yard a sufficient quantity of materials and plant in stock as not to delay the carrying out of the works with due expedition and the Engineer and the Engineer's representative shall have free access to the said sheds, store houses and yards at any time for the purpose of inspecting the stock of materials or plants kept in hand, and any materials or plan which the Engineer may object to shall not be brought upon or used in the works, but shall be forth with removed from the sheds, store houses or yards by the contractor. The contractor shall at his own expenses provide and maintain suitable equipment's necessary for the execution of the works.

26. Provision of efficient and competent Staff at work sites by the Contractor:-

26.1 The contractor shall place and keep on the works at all times efficient and competent staff to give the necessary directions to his workmen and to see that they execute their work in sound and proper manner and shall employ only such supervisors, workmen and labourers in or about the execution of any of these works as are careful and skilled in the various trades.

26.2 The contractor shall at once remove from the works any agents, permitted sub-contractor, supervisor, workman or labourer who shall be objected to by the Engineer and if and whenever required by the Engineer, he shall submit a correct return showing the names of all staff and work men employed by him.

26.3 In the event of the Engineer being of the opinion that the contractor is not employing on the works a sufficient number of staff and work men as is necessary for the proper completion of the works within the time prescribed, the contractor shall forth with on receiving intimation to this effect deploy the additional number of staff and labour specified by the Engineer within seven days of beings required and failure on the part of the contractor to comply with such instructions will entitle the DFCCIL to rescind the contract under clause 62 of these conditions.

26A. Deployment of Qualified Engineers at Work Sites by the Contractor:-

26A.1 The contractor shall also employ Qualified Graduate Engineer or Qualified Diploma Holder Engineer, based on value of contract, as may be prescribed by the Ministry of Railways through separate instructions from time to time.

26A.2 In case the contractor fails to employ the Engineer, as aforesaid in Para 26A.1, he shall be liable to pay penalty at the rates, as may be prescribed by the Ministry of Railways through separate instructions from time to time for the default period for the provisions, as contained in Para 26A.1.

27.(1) Workmanship and testing:- The whole of the work and / or supply of materials specified and provided in the contract that may be necessary to be done in order to form and complete any part thereof shall be executed in the best and most substantial workman like manner with materials of the best and most approved quality of their respective kinds, agreeable to the particulars contained in or implied by the specifications and as referred to in and represented by the drawings or in such other additional particulars, instructions and drawings may be found requisite to be given during the carrying on of the works and to the entire satisfaction of the Engineer according to the instructions and directions which the contractor may from time to time receive from the Engineer. The materials may be subjected to tests by means of such machines, instruments and appliances as the Engineer may direct and wholly at the expense of the contractor.

27.(2) Removal of improper work and materials:-The Engineer or the Engineer's Representative shall be entitled to order from time to time:

- (a) The removal from the site within the time specified in the order of any materials which in his opinion are not in accordance with the specifications or drawings.
- (b) The substitution of proper and suitable materials, and
- (c) The removal and proper re-execution, notwithstanding any previous tests thereof or on account payments therefore, of any work which in respect of materials or workmanship; his noting his opinion in accordance with the specifications and in case of default on the part of the contractor in carrying out such order the DFCCIL shall be entitled to rescind the contract under clause 62 of these conditions.

28. Facilities for inspection:- The contractor shall afford the Engineer and the Engineer's Representative /Consultant, every facility for entering in and upon every portion of the work at all hours for the purpose of inspection or otherwise and shall provide all labour, materials, planks, ladders, pumps, appliances and things of every kind required for the purpose and the Engineer and the Engineer's Representative/Consultant shall at all times have free access to every part of the works said, to all places at which materials for the works are stored or being prepared.

29. Examination of work before covering up:-The contractor shall give 7 days' notice to the Engineer or the Engineer's representative/Consultant whenever any work or materials are intended to be covered up in the earth

,in bodies or walls or otherwise to be placed beyond the reach of measurements in order that the work may be inspected or that correct dimensions may be taken before being so covered, placed beyond there, each of measurement in default whereof, the same shall at the option of the Engineer or the Engineer's representative be uncovered and measured at the contractor's expense or no allowance shall be made for such work or materials.

30. Temporary Works:- All temporary works necessary for the proper execution of the works shall be provided and maintained by the contractor and subject to the consent of the Engineer shall be removed by him at his expenses when they are no longer required and in such manner as the Engineers may direct. In the event of failure on the part of the contractor to remove the temporary works, the Engineer will cause them to be removed and cost as increased by supervision and other incidental charges shall be recovered from the contractor. If temporary huts are provided by the contractor on the Railway / DFCCIL land for labour engaged by him for the execution of works, the contractor shall arrange for handing over vacant possession of the said land after the work is completed; if the contractor's labour refuse to vacate, and have to be rejected by the Railway / DFCCIL, necessary expenses incurred by the Railway / DFCCIL in connection therewith, shall be borne by the contractor.

31.(1) Contractor to supply water for works:- Unless otherwise provided in the contract, the contractor shall be responsible for the arrangements to obtain supply of water necessary for the works.

31.(2)(a) Contractor to arrange supply of Electric power for works:- Unless otherwise provided in the contract, the contractor shall be responsible for arrangements to obtain supply of electric power for the works.

32. Property in materials and plant:- The materials and plant brought by the Contractor upon the site or on the land occupied by the Contractor in connection with the works and intended to be used for the execution thereof shall immediately, they are brought upon the site of the said land, be deemed to be the property of the Railway / DFCCIL. Such of them as during the progress of the works are rejected by the Engineer under Clause 25 of these conditions or are declared by him not to be needed for the execution of the works or such as on the grant of the certificate of completion remain unused shall immediately on such rejection, declaration or grant cease to be deemed the property of the Railway / DFCCIL and the Contractor may then (but not before) remove them from the site or the said land. This clause shall not in any way diminish the liability of the Contractor nor shall the Railway / DFCCIL be in any way answerable for any loss or damage which may happen to or in respect of any such materials or plant either by the same being lost, stolen, injured or destroyed by fire, tempest or otherwise.

- 33.(1) Tools, Plant and Materials Supplied by DFCCIL:-** The Contractor shall take all reasonable care of all tools, plant and materials or other property whether or alike description or not belonging to the DFCCIL and committed to his charge for the purpose of the works and shall be responsible for all damage or loss caused by him, his agents, permitted subcontractor, or his work men or others while they are in his charge. The Contractors shall sign accountable receipts for tools, plants and materials made over to him by the engineer and on completion of the works shall hand over the unused balance of the same to the Engineer in good order and repair, fair wear and tear excepted, and shall be responsible for any failure to account for the same or any damaged one thereto.
- 33.(2) Hire of DFCCIL / Railway's Plant:-** The DFCCIL may hire to the Contractor such plant as concrete mixers, compressors and portable engines for use during execution of the works on such terms as maybe specified in the special conditions or in a separate agreement for Hire of Plant.
- 34.(1) Precaution during progress of works:-** During the execution of works, unless otherwise specified, the Contractor shall at his own cost provide the materials for and execute all shoring, timbering and strutting works as is necessary for the stability and safety of all structures, excavations and works and shall ensure that no damage ,injury or loss is caused or likely to be caused to any person or property.
- 34.(2) Roads and Water courses:-** Existing roads or water courses shall not be blocked, cut through, altered, diverted Or obstructed in any way by the Contractor, except with the permission of the Engineer. All compensations claimed for any unauthorized closure, cutting through, alterations, diversion or obstruction to such roads or water courses by the Contractor or his agent or his staff shall be recoverable from the Contractor by deduction from any sums which may become due to him in terms of contract ,or otherwise according to law.
- 34.(3) Provision of access to premises:-** During progress of work in any street or thorough fare, the Contractor shall make adequate provision for the passage of traffic, for securing safe access to all premises approached from such street or thorough fare and for any drainage, water supply or means of lighting which may be interrupted by reasons of the execution of the works and shall react and maintain at his own cost barriers, lights and other safeguards as prescribed by the Engineer, for the regulation of the traffic, and provide watchmen necessary to prevent accidents. The works shall in such cases be executed night and day if so ordered by the Engineer and with such vigour so that the traffic way be impeded for as short a time as possible.
- 34.(4) Safety of Public:-** The Contractor shall be responsible to take all

precautions to ensure the safety of the public whether on public or DFCCIL/Railway property and shall post such look out men as may in the opinion of the Engineer be required to comply with regulations pertaining to the work.

35.(1) Suspension of works:- The Contractor shall on the order of the Engineer, suspend the progress of the works or any part thereof or such time or times and in such manner as the Engineer may consider necessary and shall during such suspension properly protect and secure the work so far as is necessary in the opinion of the Engineer. If such suspension is:-

- (a) Provided for in the contract, or
- (b) Necessary for the proper execution of the works or by the reason of weather conditions or by some default on the part of the Contractor, and/or
- (c) Necessary for the safety of the works or any part thereof.

35.(2) The Contractor shall not be entitled to the extra costs, if any, incurred by him during the period of suspension of the works, but in the event of any suspension ordered by the Engineer for reasons other than a fore mentioned and when each such period of suspensions exceeds 14 days, the contractor shall be entitled to such extension of time for completion of the work as the Engineers may consider proper having regard to the period or periods of such suspensions and to such compensations as the Engineer may consider reasonable in respect of salaries or wages paid by the Contractor to his employees during the periods of such suspension.

35.(3) Suspension lasting more than 3 months:- If the progress of the works or any part thereof is suspended on the order of the Engineer for more than three months at a time, the Contractor may serve a written notice on the Engineer requiring permission within 15 days from the receipt thereof to proceed with the works or that part thereof in regard to which progress is suspended and if such permission is not granted within that time the Contractor by further written notice so served may, but is not bound to, elect to treat the suspension where it affects part only of the works as a no mission of such part or where it affects the whole of the works, as an abandonment of the contract by the DFCCIL.

36. Rates for items of works:- The rates entered in the accepted Schedule of Rates of the Contract are intended to provide for works duly and properly completed in accordance with the general and special (if any) conditions of the contract and the specifications and drawings together with such enlargements, extensions, diminutions, reductions, alterations or additions as may be ordered in terms of Clause 42 of these conditions and without prejudice to the generality thereof and shall be deemed to include and cover superintendence and labour, supply, including full freight, of materials,

stores, patterns, profiles, moulds, fittings, centring, scaffolding, shoring props, timber, machinery, barracks, tackle, roads, pegs, posts, tools and all apparatus and plant required on the works, except such tools, plant or materials as may be specified in the contract to be supplied to the Contractor by the DFCCIL, the erection, maintenance and removal of all temporary works and, buildings, all watching, lighting, bailing, pumping and draining, all prevention of or compensation for trespass, all barriers and arrangements for the safety of the public or of employees during the execution of works, all sanitary and medical arrangements for labour camps as may be prescribed by the DFCCIL, the setting of all work and of the construction, repair and upkeep of all centrelines, benchmarks and level pegs thereon, site clearance, all fees ,duties, royalties, rent and compensation to owners for surface damage or taxes and impositions payable to local authorities in respect of land, structures and all material supplied for the work or other duties of expenses for which the Contractor may become liable or maybe put to under any provision of law for the purpose of or in connection with the execution of the contract, and all such other incidental charges or contingencies as may have been specially provided for in the specifications.

- 37.(1) Rates for extra items of works:-** Any type of work carried out by the Contractor on the instructions of the Engineer which is not included in the accepted schedules of rates shall be executed at the rates set forth in the "Schedule of Rates of Railway "modified by the tender percentage and such items are not contained in the latter, at the rate agreed upon between the Engineer and the Contractor before the execution of such items of work and the Contractors shall be bound to notify the Engineer at least seven days before the necessity arises for the execution of such items of works that the accepted schedule of rates does not include rate or rates for the extra work involved. The rates payable for such items shall be decided at the meeting to be held between the Engineer and Contractor, in as short a period as possible after the need for the special item has come to the notice. In case the Contractor fails to attend the meeting after being notified to do so or in the event of no settlement being arrived at, the DFCCIL shall be entitled to execute the extra works by other means and the Contractor shall have no claim for loss or damage that may result from such procedure.
- 37.(2)** Provided that if the Contractor commences work or incurs any expenditure in regard there to before the rates as determined and agreed upon as lastly here unto fore-mentioned, then and in such a case the Contractor shall only be entitled to be paid in respect of the work carried out or expenditure incurred by him prior to the date of determination of rates as aforesaid according to the rates as shall be fixed by the Engineer. However if the Contractor is not satisfied with the decision of the Engineer in this respect he may appeal to the CGM/South/Mumbai within 30 days of getting the decision of the Engineer, supported by analysis of the rates claimed. The CGM's/ South/Mumbai's decision after hearing both the parties in the matter would

be final and binding on the Contractor and the DFCCIL.

- 38.(1) Handing over of works:-** The Contractor shall be bound to hand over the works executed under the contract to the DFCCIL complete in all respects to the satisfaction of the Engineer. The Engineer shall determine the date on which the work is considered to have been completed, in support of which his certificate shall be regarded as sufficient evidence for all purposes. The Engineer shall determine from time to time, the date on which any particular section of the work shall have been completed, and the contractor shall be bound to observe any such determination of the Engineer.
- 38.(2) Clearance of site on completion:-** On completion of works, the Contractor shall clear away and remove from the site all constructional plant, surplus materials, rubbish and temporary works of every kind and leave the whole of the site and works clean and in a workman like condition to the satisfaction of the Engineer. No final payment in settlement of the accounts for the works shall be paid, held to be due or shall be made to the Contractor till, in addition to any other condition necessary for final payment, site clearance shall have been effected by him, and such clearance may be made by the Engineer at the expense of the Contractor in the event of his failure to comply with this provision within 7 days after receiving notice to that effect. Should it become necessary for the Engineer to have the site cleared at the expenses of the Contractor, the DFCCIL shall not be held liable for any loss or damage to such of the Contractor's property as may be on the site and due to such removal there from, which removal may be effected by means of public sales of such materials and property or in such away as deemed fit and convenient to the Engineer.

VARIATIONS IN EXTENT OF CONTRACT

- 39. Modification to contract to be in writing:** -In the event of any of the provisions of the contract requiring to be modified after the contract documents have been signed, the modifications shall be made in writing and signed by the DFCCIL and the Contractor and no work shall proceed under such modifications until this has been done. Any verbal or written arrangement abandoning, modifying, extending, reducing or supplementing the contract or any of the terms there of shall be deemed conditional and shall not be binding on the DFCCIL unless and until the same is incorporated in a formal instrument and signed by the DFCCIL and the Contractor, and till then the DFCCIL shall have the right to repudiate such arrangements.
- 40.(1) Powers of modification to contract:-** The Engineer on behalf of the DFCCIL shall be entitled by order in writing to enlarge or extend, diminish or reduce the works or make any alterations in their design, character position, site, quantities, dimensions or in the method of their execution or in the combination and use of materials for the execution thereof or to order any

additional work to be done or any works not to be done and the contractor will not be entitled, to any compensation for any increase/reduction in the quantities of work but will be paid only for the actual amount of work done and for approved materials supplied against a specific order.

40.(2) (i) Unless otherwise specified in the contract, the accepted variation in quantity of each individual item of the contract would be up to 25% of the quantity originally contracted, excepting case of foundation work. The contractor shall be bound to carry out the work at the agreed rates and shall not be entitled to any claim or any compensation whatsoever up to the limit of 25% variation in quantity of individual item of works.

(ii) In case of earth work, the variation limit of 25% shall apply to the gross quantity of earth work and variation in the quantities of individual classifications of soil shall not be subject to this limit.

(ii) In case of foundation work, no variation limit shall apply and the work shall be carried out by the contractor on agreed rates irrespective of any variation.

40.(3) Valuation of variations:- The enlargements, extensions, diminution, reduction, alterations or additions referred to in sub-clause(2) of this clause shall in no degree affect the validity of the contract but shall be performed by the Contractor as provided there in and be subject to the same conditions, stipulations and obligations as if they had been originally and expressly included and provided for in the specifications and drawings and the amounts to be paid therefore shall be calculated in accordance with the accepted schedule of rates. Any extra items / quantities of work falling outside the purview of the provisions of sub-clause (2) above shall be paid for at the rates determined under clause-39 of these conditions.

40.(4) Variations In Quantities During Execution Of Works Contracts :- The procedure detailed below shall be adopted for dealing with variations in quantities during execution of works contracts:

1. Individual NS items in contracts shall be operated with variation of plus or minus 25% and payment would be made as per the agreement rate.
2. In case an increase in quantity of an individual item by more than 25% of the agreement quantity is considered unavoidable, the same shall be got executed by floating a fresh tender. If floating a fresh tender for operating that item is considered not practicable, quantity of that item may be operated in excess of 125% of the agreement quantity subject to the following conditions:

- (a)** Operation of an item by more than 125% of the agreement quantity needs the approval of DFCCIL;
 - (i)** Quantities operated in excess of 125% but up to 140% of the agreement quantity of the concerned item, shall be paid at 98% of the rate awarded for that item in that particular tender;
 - (ii)** Quantities operated in excess of 140% but up to 150% of the agreement quantity of the concerned item shall be paid at 96% of the rate awarded for that item in that particular tender;
 - (iii)** Variation in quantities of individual items beyond 150% will be prohibited and would be permitted only in exceptional unavoidable circumstances with the concurrence of associate finance and shall be paid at 96% of the rate awarded for that item in that particular tender.
 - (b)** The variation in quantities as per the above formula will apply only to the Individual items of the contract and not on the overall contract value.
 - (c)** Execution of quantities beyond 150% of the overall agreemental value should not be permitted and, if found necessary, should be only through fresh tenders or by negotiating with existing contractor, with approval of DFCCIL .
- 3.** In cases where decrease is involved during execution of contract:
- (a)** The contract signing authority can decrease the items upto 25% of individual item.
 - (b)** For decrease beyond 25% for individual items or 25% of contract agreement value, the approval of competent authority, after obtaining 'No Claim Certificate' from the contractor and with finance concurrence, giving detailed reasons for each such decrease in the quantities.
 - (c)** It should be certified that the work proposed to be reduced will not be required in the same work.
- 4.** The limit for varying quantities for minor value items shall be 100% (as against 25% prescribed for other items). A minor value item for this purpose is defined as an item whose original agreement value is less than 1 % of the total original agreement value.
- 5.** No such quantity variation limit shall apply for foundation items.
- 6.** As far as SOR items are concerned, the limit of 25% would apply to the value of SOR schedule as a whole and not on individual SOR items.

However, in case of NS items, the limit of 25% would apply on the individual items irrespective of the manner of quoting the rate (single percentage rate or individual item rate).

7. The aspect of variation of tender with respect to variation in quantities should be checked and avoided. In case of vitiation of the tender (both for increase as well as decrease of value of contract agreement), sanction of the competent authority as per schedule of power of DFCCIL as per single tender should be obtained.

Note: Variation to be approved should be limited so as not to completely change the scope, character, and purpose of the original contract.

CLAIMS

- 41.(1) **Monthly Statement of Claims:-** The Contractor shall prepare and furnish to the Engineer on every month an account giving full and detailed particulars of all claims for any additional expenses to which the Contractor may consider himself entitled to and of all extra or additional works ordered by the Engineer which he has executed during the preceding month and no claim for payment for and such work will be considered which has not been included in such particulars.
- 41.(2) **Signing of“ No Claim” Certificate:-** The Contractor shall not be entitled to make any claim whatsoever against the DFCCIL under or by virtue for arising out of this contract, nor shall the DFCCIL entertain or consider any such claim, if made by the Contractor, after he shall have signed a “No Claim” Certificate in favour of the DFCCIL in such form as shall be required by the DFCCIL after the works are finally measured up. The contractor shall be debarred from disputing the correctness of the items covered by “No Claim” Certificate or demanding a clearance to arbitration in respect thereof.

MEASUREMENTS, CERTIFICATES AND PAYMENTS

42. **Quantities in schedule annexed to Contract:-** The quantities set out in the accepted schedule of rates with items of works quantified are the estimated quantities of the works and they shall not be taken as the actual and correct quantities of the work to be executed by the Contractor in fulfilment of his obligations under the contract.
43. **Measurement of works:-** The Contractor shall be paid for the works at the rates in the accepted schedule of rates and for extra works at rates determined under Clause 39 of these conditions on the measurements taken by the Engineer or the Engineer’s representative in accordance with the

rules prescribed for the purpose by the DFCCIL. The quantities for items the unit of which in the accepted schedule of rates is 100 or 1000 shall be calculated to the nearest whole number, any; fraction below half being dropped and half and above being taken as one; for items the unit of which in the accepted schedule of rates is single, the quantities shall be calculated to two places of decimals. Such measurements will be taken of the work in progress from time to time and at such intervals as in the opinion of the Engineer shall be proper having regard to the progress of works. The date and time on which "on account" or final measurements are to be made shall be communicated to the Contractor who shall be present at the site and shall sign the results of the measurements (which shall also be signed by the Engineer or the Engineer's representative) recorded in the official measurements book as an acknowledgement of his acceptance of the accuracy of the measures. Failing the Contractor's attendance the work may be measured up in his absence and such measurements shall, notwithstanding such absence, be binding upon the Contractor whether or not he shall have signed the measurement books provided always that any objection made by him to measurements shall be duly investigated and considered in the manner set out below:-

- (a) It shall be open to the Contractor to take specific objection to any recorded measurements or Classification on any ground within seven days of the date of such measurements. Any re-measurement taken by the engineer or the Engineer's representative in the presence of the Contractor or in his absence after due notice has been given to him in consequence of objection made by the Contractor shall be final and binding on the Contractor and no claim whatsoever shall thereafter be entertained regarding the accuracy and classification of the measurements.
- (b) If an objection raised by the Contractor is found by the Engineer to be incorrect the Contractor shall be liable to pay the actual expenses incurred in measurements.

44.(1) "On-Account" Payments:- The Contractor shall be entitled to be paid from time to time by way of "On-Account" payment only for such works as in the opinion of the Engineer he has executed in terms of the contract.

All payments due on the Engineer's or the Engineer's representative's certificates of measurements shall be subject to any deductions which may be made under these presents and shall further be subject to, unless otherwise required by Clause 16 of these conditions, a retention of ten per cent by way of security deposits, until the amount of security deposit by way of retained earnest money and such retentions shall amount to 10% of the total value of the contract provided always that the Engineer may by any certificate make any correction or modification in any previous certificate which shall have been issued by him and that the Engineer may withhold any certificate if the works or any part thereof are not being carried out to his satisfaction.

- 44.(2) Rounding off amounts:-** The total amount due on each certificate shall be rounded off to the nearest rupee i.e. sum less than 50 paise shall be omitted and sums of 50 paise and more upto Re.1/- will be reckoned as Re.1/-
- 44.(3) On Account Payments not prejudicial to final settlement:** - "On-Account" payments made to the 'Contractor shall be without prejudice to the final making up of the accounts(except where measurements are specifically noted in the Measurement Book as "Final Measurements" and as such have been signed by the Contractor) and shall in no respect be considered or used as evidence of any facts stated in or to be inferred from such accounts nor of any particular quantity of work having been executed nor of the manner of its execution being satisfactory.
- 44.(4) Manner of payment:** - Unless otherwise specified payments to the Contractor will be made by cheque but no cheque will be issued for and amount less than Rs.100/- .

44A PRICE VARIATION CLAUSE:

- 44A.1** Applicability: Price variation clause shall be applicable for this contract and irrespective of the contract completion period. Variation in quantities shall not be taken into account for applicability of PVC in the contract. Materials supplied free of cost by DFCCIL to the contractors shall fall outside the purview of price variation clause. If, in any case, accepted offer include some specific payment to be made to consultant or some materials supplied by DFCCIL free or at fixed rate, such payment shall be excluded from the gross value of the work for the purpose of payment /recovery of price variation.
- 44A.2** Base month: The base month for the 'Price Variation Clause' shall be taken as month of opening of tender including extensions, if any, unless otherwise stated elsewhere. The quarter of applicability of PVC shall commence from the month following the month of opening of tender. The price variation shall be based on the average price Index of the quarter under consideration.
- 44A.3** Validity : Rates accepted by DFCCIL shall hold good till completion of work and no additional claim shall be admissible on account of fluctuations in market rates increase in taxes / any other levies / tolls etc. except for increase/decrease in GST on works contract and that for payment/recovery for overall market situation shall be made as per Price variation clause given hereunder.
- 44A.4** Adjustment for variation in prices of materials, labour, fuel, steel, concreting, ferrous, nonferrous, insulator, zinc and cement shall be determined in the manner prescribed hereunder.

44A.5 Components of various items in a contract on which variation in prices be admissible shall be material, labour, fuel, explosives detonators, steel, cement and lime, concreting, ferrous, nonferrous, insulator, zinc, erection, etc. However, for fixed component, no price variation shall be admissible.

44A.6 The percentages of labour, material, fuel, component etc. in various types of Engineering Works shall be as under:

Component	% age	Component	% age
(A) Earthwork contracts	N.A		
Labour component	-	Other material components	-
Fuel component	-	Fixed component *	-
(B) Ballast and Quarry products Contracts	N.A		
Labour component	-	Other material components	-
Fuel component	-	Fixed component*	-
(C) Tunneling Contracts	N.A		
Labour component		Detonator Component	-
Fuel component	-	Other material components	-
Explosive Component	-	Fixed component*	-
(D) Other work Contracts**			
Labour component	30%	Fuel component	15%
Material component	40%	Fixed component*	15%

* It shall not be considered for any price variation

** Category of PVC applicable for Schedule A(CPWD) and B (STATE) excluding reinforcement steel (Variation for which shall be paid separately as given below).

44A.7 Formulae: The amount of variation in prices (increase/ decrease)in the several components(labour, material etc.) shall be worked out by the following formulae:

$$(i) L = \frac{W \times (LQ - LB)}{LB} \times \frac{L_c}{100}$$

$$(ii) M = \frac{W \times (M_Q - M_B)}{M_B} \times \frac{M_c}{100}$$

$$(iii) F = \frac{W \times (F_Q - F_B)}{F_B} \times \frac{F_c}{100}$$

$$(iv) S = \frac{S_w \times (S_Q - S_B)}{S_B}$$

(v)
$$C = \frac{C_V \times (C_Q - C_B)}{C_B}$$

- Applicable if Cement supply is paid under separate item (In this tender cement is not paid under separate item).

L Amount of price variation in Labour.

M Amount of price variation in Materials.

F Amount of price variation in Fuel.

S Amount of price variation in Steel.

C Amount of price variation in Cement.

W Gross value of the work done by the contractor as per on account bill(s), excluding cost of materials supplied by DFCCIL at fixed price, minus the price values of cement and steel. This will also exclude specific payment, if any, to be made to the consultants engaged by contractors (such payment shall be indicated in the contractor's offer)

L_B Consumer price index number for industrial workers-All India- published in RBI bulletin for the base period.

L_Q Consumer Price Index Number for industrial workers-All India- Published in RBI bulletin for the average Price Index of the three months of the quarter under consideration.

M_B Index Number of wholesale prices–By groups and subgroups-All commodities-As published in the RBI Bulletin for the base period

M_Q Index Number of wholesale prices – By Groups and sub Groups-All commodities as published in the RBI Bulletin for the average Price Index of the three months of the quarter under consideration.

F_B Index Number of wholesale prices–By Groups and sub Groups for fuel and power as published in the RBI Bulletin for the base period

F_Q Index Number of wholesale prices–By Groups and sub Groups for fuel and power as published in the RBI Bulletin for the average Price Index of the three months of the quarter under consideration.

S Amount of Price Variation in Reinforcement Steel

S_w Gross value of the Reinforcement Steel supplied by the contractor as per the 'on account' bill for the Month under consideration.

- S_Q The index Number of commodities 'MS Bright Bars of group item (d) Mild Steel- Long Products under (N) MANUFACTURE OF BASIC METAL' of Wholesale Price Index published by Office of Economic Adviser, Govt. of India, Ministry of Commerce & Industry Department of Industrial Policy & Promotion (DIPP) in the month on the day 28 days prior to the last day of the period to which a particular RA Bill is related. (Ref: CO letter No. HQ/EN/ED/WDFC/PVC Steel-ROB/2019 dated 12-03-2019)
- S_B The index Number of commodities 'MS Bright Bars of group item (d) Mild Steel- Long Products under (N) MANUFACTURE OF BASIC METAL' of Wholesale Price Index published by Office of Economic Adviser, Govt. of India, Ministry of Commerce & Industry Department of Industrial Policy & Promotion (DIPP) in the month on the day 28 days prior to the closing date of submission of Bids. (Ref: DFCCIL CO letter No. HQ/EN/ED/WDFC/PVC Steel-ROB/2019 dated 12-03-2019)
- . If the rates in negotiated tenders are accepted, this will be the month in which negotiations were held.
- C_V Value of cement supplied by contractor as per on account bill in the quarter under consideration.
- C_B Index Number of wholesale prices of sub Group (of cement, lime & plaster) as published in the RBI Bulletin for the base period.
- C_Q Index Number of wholesale prices of sub Group (of cement, lime & plaster) as published in the RBI Bulletin for the average price index of three months of quarter under consideration.
- L_C % of labour component
- M_C % of Material component
- F_C % of Fuel component

Note: No PVC shall be paid on Schedule "C" Market rate items.

- 44A.8** The demands for escalation of cost shall be allowed on the basis of provisional indices made available by Reserve Bank of India. Any adjustment needed to be done based on the finally published indices shall be made as and when they become available.
- 44A.9** Relevant categories of material for the purpose of operating the above price variation, as mentioned in this clause, based on works price plus GST thereof .

Special Note

- (1) It is clearly indicated that price variation implies both increase as well decrease in input prices and therefore price variation during the currency of the contract may result in extra pay mentor recovery as the case maybe.
- (2) The Index Number for the base period will be the Index Number as obtained for the month of opening of the tender and the quarter will commence from the month following the month of opening of tender. If the rates quoted in negotiated tenders are accepted, the base month for PVC will be month in which Negotiations are held.
- (3) General Conditions of Contract shall be applicable in context of Price variation. However, decision of Engineer shall be final & finding, in case of any conflict.

44A.10 Price Variation During Extended Period of Contract

The price adjustment as worked out above, i.e. either increase or decrease shall be applicable up to the stipulated date of completion of work including the extended period of completion where such extension has been granted under Clause 17-A of the General Conditions of Contract. However, where extension of time has been granted due to contractor's failure under Clause 17-B of the General Conditions of Contract, price adjustment shall be done as follows:

- (a) In case the indices increase above the indices applicable to the last month of original completion period or the extended period under Clause 17-A, the price adjustment for the period of extension granted under Clause 17-B shall be limited to the amount payable as per the Indices applicable to the last month of the original completion period or the extended period under Clause 17-A of the General Conditions of Contract; as the case may be.
- (b) In case the indices fall below the indices applicable to the last month of original/extended period of completion under Clause 17-A, as the case may be; then the lower indices shall be adopted for the price adjustment for the period of extension under Clause 17-B of the General Conditions of Contract.

- 45.0 Maintenance of works:-** The Contractor shall at all times during the progress and continuance of the works and also for the period of maintenance specified in the Tender Form after the date of passing of the certificate of completion by the Engineer or any other earlier date subsequent to the completion of the works that may be fixed by the Engineer be responsible for and effectively maintain and up holding good substantial, sound and perfect

conditional land every part of the works and shall make good from time to time and at all times as often as the Engineer shall require, any damage or defect that may during the above period arise in or be discovered or be in any way connected with the works, provided that such damage or defect is not directly caused by errors in the contract documents, act of providence or insurrection or civil riot, and the contractor shall be liable for and shall pay and make good to the DFCCIL or other persons legally entitled there to whenever required by the Engineer so to do, all losses ,damages ,costs and expenses they or any of them may incur or be put or be liable to by reasons or in consequence of the operations of the Contractor or of his failure in any respect.

46.(1) Certificate of completion of works:-As soon as in the opinion of the Engineer, the works has been completed and has satisfactorily passed an final test or tests that may be prescribed, the Engineer shall issue a certificate of completion duly indicating the date of completion in respect, of the work and the period of maintenance of the work shall commence from the date of completion mentioned in such certificate. The Engineer may also issue such a certificate indicating date of completion with respect to any part of the work(before the completion of the whole of work), which has been both completed to the satisfaction of the Engineer and occupied or used by the DFCCIL. When any such certificate is given in respect of part of a work, such part shall be considered as completed and the period of maintenance of such part shall commence from the date of completion mentioned in the completion certificate issued for that part of the work.

46.(2)Contractor not absolved by completion Certificate:-The Certificate of completion in respect of the works referred to in sub-clause(1) of this clause shall not absolve the Contractor from his liability to make good any defects imperfections, shrinkages or fault which may appear during the period of maintenance specified in the tender arising in the opinion of the Engineer from materials or workmanship not in accordance with the drawings or specifications or instruction of the Engineer, which defects, imperfections, shrinkages or faults shall upon the direction in writing of the Engineer be amended and made good by the Contractor at his own cost: and in case of default on the part of Contractor the Engineer may employ labour and materials or appoint an other Contractor to amend and make good such defects, imperfections, shrinkages and faults and all expenses consequent there on and incidental there to shall be borne by the Contractor and shall be recoverable from any moneys due to him under the contract.

47.0 Approval only by maintenance Certificate:- No certificate other than maintenance certificate referred to in Clause 50 of the conditions shall be deemed to constitute approval of any work or other matter in respect of which it is issued or shall be taken as an admission of the due performance of the contractor any part thereof or of the accuracy of any claim or demand made by the Contractor or of additional varied work having been ordered by the

Engineer nor shall any other certificate conclude or prejudice any of the powers of the Engineer.

48.(1) Maintenance Certificate:- The Contract shall not be considered as completed until a Maintenance Certificate shall have been signed by the Engineer stating the at the works have been completed and maintained to his satisfaction. The Maintenance Certificate shall be given by the Engineer upon the expiration of the period of maintenance or as soon thereafter as any works ordered during such period pursuant to sub clause (2) Clause 48 of these conditions shall have been completed to the satisfaction of the Engineer and full effect shall be given to this Clause notwithstanding the taking possession of or using the work so any part thereof by the DFCCIL.

48.(2) Cessation of DFCCIL Liability:- The DFCCIL shall not be liable to the Contractor for any matter arising out of or in connection with the contract of the execution of the works unless the contractor shall have made a claim in writing in respect thereof before the issue of the Maintenance Certificate under this clause.

49.(3) Unfulfilled Obligations:- Notwithstanding the issue of the Maintenance certificate the Contractor and (subject to sub-clause 2 of this clause) the DFCCIL shall remain liable for the fulfilment of any obligation incurred under the provision of the contract prior to the issue of the maintenance Certificate which remains unperformed at the time such certificate is issued and for the purposes of determining the nature and extent of any such obligations the contract shall be deemed to remain in force between the parties thereto.

50.(1) Final Payment:- On the Engineer's certificate of completion in respect of the works, adjustment shall be made and the balance of account based on the Engineer or the Engineer's representative's certified measurements of the total quantity of work executed by the contract or up to the date of completion and on the accepted schedule or rates and for extra works on rates determined under Clause 39 of these conditions shall be paid to the Contractor subject always to any deduction which may be made under these presents and further subject to the Contractor having delivered to the Engineer either a full account in detail of all claims he may have on the DFCCIL in respect of the works or having delivered "No Claim Certificate" and the Engineer having after the receipt of such account given a certificate in writing that such claims are correct, that the whole of the works to be done under the provisions of the Contracts have been completed, that they have been inspected by him since their completion and found to be in good and substantial order, that all properties, works and things, removed, disturbed or injured in consequence of the works have been properly replaced and made good and all expenses and demands incurred by or made upon the DFCCIL for or in the respect of damage or loss by from or in consequence of the works, have been satisfied agreeably and in conformity with the contract.

50.(2) Post Payment Audit:-It is an agreed term of contract that the DFCCIL reserves to itself the right to carry out a post-payment audit and or technical examination of the works and the final bill including all supporting vouchers, abstracts etc. and to make acclaim on the contractor for the refund any excess amount paid to him if as a result of such examination any over-payment to him is discovered to have made in respect of any works done or alleged to have been done by him under the contract.

50A. Production of vouchers etc.by the Contractor:-

- (i) For a contract of more than one crore of rupees, the contractor shall, when ever required, produce or cause to be produced for examination by the Engineer any quotation, invoice, cost or other account, book of accounts, voucher, receipt, letter, memorandum, paper of writing or any copy of or extract from any such document and also furnish information and returns verified in such manner as maybe required in anyway relating to the execution of this contract or relevant for verifying or ascertaining cost of execution of this contract(the decision of the engineer on the question of relevancy of any documents, information or return being final and binding in the parties).The contractor shall similarly produce vouchers; etc., if required to prove to the Engineer, that materials supplied by him, are in accordance with the specifications laid down in the contract.
- (ii) If any portion of the work in a contract of value more than one crore of rupees be carried out by a sub-contractor or any subsidiary or allied firm or company (as per Clause 7 of the General Conditions of Contract),the Engineer shall have power to secure the books of such sub-contract or any subsidiary or allied firm or company, through the contractor, and such books shall be open to his inspection.
- (iii) The obligations imposed by sub clause (i)&(ii)above is without prejudice to the obligation soft he contractor under any statute rules or orders binding on the contractor.

51.0 With holding and lien in respect of sums claimed:- Whenever any claim or claims for payment of a sum of money arises out of or under the contract against the contractor, the DFCCIL 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 a foresaid, the DFCCIL shall be entitled to withhold the said cash security deposit or the security 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 in sufficient to cover the claimed amount or amounts or if no security has been taken from the contractor, the DFCCIL shall be entitled to withhold and have alien to the extent of the such claimed amount or amounts referred to supra, from any sum or sums found payable or which at

any time thereafter may become payable to the contract or under the same contractor any other contract with this or any other DFCCIL or any Department of the Central Government pending finalization or 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 DFCCIL will be kept withheld or retained as such by the DFCCIL till the claim arising out of or under the contract is determined by the arbitrator(if the contract governed by the arbitration clause) or by the competent court as the case may be and that the contractor will have no claim for interest or damages whatsoever on any account in respect of such withholding or retention under the lien referred to supra 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 DFCCIL 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 maybe whether in his individual capacity or otherwise.

51A. Lien in respect of claims in Other Contracts:-

- (i) Any sum of money due and payable to the contractor (including the security deposit return able to him) under the contract may be withheld or retained by way of lien by the DFCCIL, against any claim of this or any other DFCCIL or any other Department of the Central Government in respect of a payment of a sum of money arising out for under any other contract made by the contractor with this or any other Department of the Central Government.
- (ii) However, recovery of claims of DFCCIL in regard to terminated contracts may be made from the Final Bills, Security Deposits and Performance Guarantees of other contract or contracts, executed by the contractor. The Performance Guarantees submitted by the Contractor against other contracts, if required, may be withheld and encashed. In addition, 10% of each subsequent 'on-account bill' may be withheld, if required, for recovery of DFCCIL's dues against the terminated contract.
- (iii) It is an agreed term of the contract that the sum of money so withheld or retained under this clause by the DFCCIL will be kept withheld or retained as such by the DFCCIL till the claim arising out of or under any other contract is either mutually settled or determined by arbitration, if the other contract is governed by arbitration clause or by the competent court as the case may be and contractor shall have no claim for interest or damages whatsoever on this account or on any other ground in respect of any sum of money withheld or retained under this clause and duly notified as such to the contractor.

52.0 Signature on Receipts for Amounts:- Every receipt for money which may become payable or for any security which may become transferable to the

Contractors under these presents, shall, if signed in the partnership name by any one of the partners of a Contractor's firm be a good and sufficient discharge to the DFCCIL in respect of the moneys or security purported to be acknowledged thereby and in the event of death of any of the Contractor, partners during the pendency of the contract it is here by expressly agreed that every receipt by anyone of the surviving Contractor partners shall if so signed as aforesaid be good a sufficient discharge as aforesaid provided that nothing in this clause contained shall be deemed to prejudice or effect any claim which the DFCCIL may hereafter have against the legal representative of any contract or partner so dying for or in respect to any breach of any of the conditions of the contract ,provided also that nothing in this clause contained shall be deemed to prejudice or effect the respective rights or obligations of the Contractor partners and of the legal representatives of any deceased Contractor partners in terse.

LABOUR

- 53.0 Wages to Labour:-** The Contractor shall be responsible to ensure compliance with the provision of the Minimum Wages Act,1948(hereinafter referred to as the "said Act" and the Rules made there under in respect of any employees directly or through petty contractors or subcontractors employed by him on road construction or in building operations or in stone breaking or stone crushing for the purpose of carrying out this contract.

If, in compliance with the terms of the contract, the Contractor supplied any labour to be used wholly or partly under the direct orders and control of the DFCCIL whether in connection with any work being executed by the Contractor or otherwise for the purpose of the DFCCIL such labour shall, for the purpose of this clause, still be deemed to be persons employed by the Contractor.

If any moneys shall, as a result of any claim or application made under the said Act be directed to be paid by the DFCCIL, such money shall be deemed to be moneys paid by it as aforesaid within seven days after the same shall have been demanded, the DFCCIL shall be entitled to recover the same for many moneys due or accruing to the Contractor under this or any other Contract with the DFCCIL.

- 53A. Apprentices Act:-** The Contractor shall be responsible to ensure compliance with the provisions of the Apprentices Act,1961 and the Rules and Orders issued there under from time to time in respect of apprentices directly or through petty contractors or sub-contractors employed by him for the purpose of carrying out the Contract.

If the contract or directly or through petty contractors or sub-contractors fails to do so, his failure will be a breach of the contract and the DFCCIL may ,in

its discretion, rescind the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation of the provisions of the Act.

Note: The contractors are required to engage apprentices when the works undertaken by them last for a period of one year or more and / the cost of works is rupees one lakh or more.

54.0 Provisions of payments of Wages Act: - The Contractor shall comply with the provisions of the Payment of Wages Act, 1936 and the rules made there under in respect of all employees directly or through petty contractors or sub-contractors employed by him in the works. If Incompliance with the terms of the contract, the Contract or directly or through petty contractors of sub-contractors shall supply any labour to be used wholly or partly under the direct orders and control of the Engineer whether in connection with the works to be executed here under or otherwise for the purpose of the Engineer such labour shall nevertheless be deemed to comprise persons employed by the contractor and any moneys which may be ordered to be paid by the Engineer shall be deemed to be moneys payable by the Engineer on behalf of the Contractor and the Engineer may on failure of the contractor to repay such money to the DFCCIL deduct the same from moneys due to contractor in the terms of contract. The DFCCIL shall be entitled to deduct from any moneys due to the contractor (whether under this contract or any other contract) all moneys paid or payable by the DFCCIL by the way of compensation of afore said or for costs of expenses in connection with any claim there to and the decision of the Engineer upon any question arising out of the effect or force of this clause shall be final and binding upon the Contractor.

55A. Provisions of Contract labour (Regulation and Abolition) Act, 1970:

55A.(1) The contractor shall comply with the provision of the contract labour (Regulation and Abolition) Act, 1970 and the Contract labour (Regulation and Abolition) Central Rules 1971 as modified from time to time, wherever applicable and shall also indemnify the DFCCIL from and against any claims under the aforesaid Act and the Rules.

55A.(2) The Contractor shall obtain a valid licence under the aforesaid Act as modified from time to time before the commencement of the work and continue to have a valid licence until the completion of the work. Any failure to fulfil the requirement shall attract the penal provision of the Contract arising out of the resultant non-execution of the work.

55A.(3) The Contractor shall pay to the labour employed by him directly or through subcontractors the wages as per provision of the afore said Act and the Rules wherever applicable. The Contractor shall notwithstanding the provisions of the contract to the contrary, cause to be paid the wages to

labour indirectly engaged on the works including any engaged by sub-contractors in connection with the said work, as if the labour had been immediately employed by him.

55A.(4) In respect of all labour directly or indirectly employed in the work for performance of the contractor's part of, the contract, the Contractor shall comply with or cause to be complied with the provisions of the aforesaid Act and Rules wherever applicable.

55A.(5) In every case in which, by virtue of the provisions of the aforesaid Act or the Rules, the DFCCIL is obliged to pay any amount of wages to a workman employed by the Contractor or his sub-contractor in execution of the work or to incur any expenditure on account of the Contingent, liability of the DFCCIL due to the contractor's failure to fulfil his statutory obligations under the aforesaid Act or the rules the DFCCIL 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 DFCCIL under the section 20, sub-section(2) and section 21, sub-section(4) of the aforesaid Act, the DFCCIL shall be at liberty to recover such amount or part thereof by deducting it from the security deposit and/ or from any sum due by the DFCCIL to the contractor or whether under the contract or otherwise. The DFCCIL shall not be bound to contest any claim made against it under sub-section(1) of section 20 and sub-section(4) of section 21 of the aforesaid Act except on the written request of the contractor and upon his giving to the DFCCIL full security for all costs for which the DFCCIL might become liable in contesting such claim. The decision of the DFCCIL regarding the amount actually recoverable from the contractor as stated above shall be final and binding on the Contractor.

55B. Provisions of Employees Provident Fund and Miscellaneous Provisions Act, 1952 :

The Contractor shall comply with the provisions of Para 30 & 36-B of the Employees Provident Fund Scheme, 1952; Para 3 & 4 of Employees' Pension Scheme, 1995; and Para 7 & 8 of Employees Deposit Linked Insurance Scheme, 1976; as modified from time to time through enactment of "Employees Provident Fund & Miscellaneous Provisions Act, 1952", wherever applicable and shall also indemnify the DFCCIL from and against any claims under the aforesaid Act and the Rules.

55C. Provisions of "The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996" and "The Building and Other Construction Workers' Welfare Cess Act, 1996" :

The tenderers, for carrying out any construction work, must get themselves registered with the Registering Officer under Section-7 of the Building and Other Construction Workers Act, 1996 and rules made thereto by the concerned State Govt. and submit certificate of Registration, issued from

the Registering Officer of the concerned State Govt. (Labour Dept.). As per this Act, the tenderer shall be levied a cess @1% of cost of construction work, which would be deducted from each bill. Cost of material, when supplied under a separate schedule item, shall be outside the purview of cess.

- 56.0 Reporting of Accidents of Labour:** - The Contractor shall be responsible for the safety of all employees directly or through petty contractors or sub-contractor employed by him on the works and shall report serious accidents to any of them however and wherever occurring on the works to the Engineer or the Engineers Representative and shall made every arrangements to render all possible assistance.
- 57.0 Provision of Workmen's Compensation Act:-** In every case in which by virtue of the provisions of section 12 sub-section (1) of the Workmen's Compensation Act 1923,DFCCIL is obliged to pay compensation to a workman directly or through petty contractor or subcontractor employed by the Contractor in executing the work, DFCCIL will recover from the Contractor the amount of the compensation so paid, and, without prejudice to the rights of DFCCIL under Section12Sub-section(2)of the said Act, DFCCIL shall be at liberty to recover such amount or any part thereof by deducting it from the security depositor from any sum due by DFCCIL to the Contractor whether under these conditions or otherwise, DFCCIL shall not be bound to contest any claim made against it under Section 12Sub-section(1)of the said Act except on the written request of the Contractor and upon his giving to DFCCIL full security for all costs for which DFCCIL might become liable in consequence of contesting such claim.
- 57A. Provision of Mines Act:-** The contract or shall observe and perform all the provisions of the Mines Act,1952 or any statutory modifications or re-enactment thereof for the time being in force and any rules and regulations made there under in respect of all the persons directly or through the petty contractors or sub-contractors employed by him under this contract and shall indemnify the DFCCIL from and against any claims under the Mines Act, or the rules and regulations framed there under, by or on behalf of any persons employed by him or otherwise.
- 58.0 DFCCIL not to provide quarters for Contractors:** - No quarters shall normally be provided by the DFCCIL for the accommodation of the contractor or any of his staff employed on the work.
- 59.(1) Labour Camps:-** The contractor shall at his own expense make adequate arrangements for the housing, supply of drinking water and provision of latrines and urinals for his staff and workmen, directly or through the petty contractors or sub-contractors and for temporary crèche(Bal-mandir) where 50 or more women are employed at a time. Suitable sites on DFCCIL land, if available, maybe allotted to the contractor for the erection of labour camps,

either free of charge or on such terms and conditions that may be prescribed by the DFCCIL. All camp sites shall be maintained in clean and sanitary conditions by the contractor at his own cost.

- 59. (2) Compliance to rules for employment of labour:-**The contractor(s) shall conform to all laws, by-laws rules and regulations for the time being in force pertaining to the employment of local or imported labour and shall take all necessary precautions to ensure and preserve the health and safety of all staff employed directly or through petty contractors or sub-contractors on the works.
- 59. (3) Preservation of peace:-**The contractor shall take requisite precautions and use his best endeavours to prevent any riotous or unlawful behaviour by or amongst his workmen and other employed directly or through the petty contractors or sub-contractors on the works and for the preservation of peace and protection of the inhabitants and security of property in the neighbourhood of the works. In the event of the DFCCIL requiring the maintenance of a special Police Force at or in the vicinity of the site during the tenure of works, the expenses there of shall be borne by the contractor and if paid by the DFCCIL shall be recoverable from the contractor.
- 59. (4) Sanitary arrangements:-**The contractor shall obey all sanitary rules and carry out all sanitary measures that may from time to time be prescribed by the Railway Medical Authority and permit inspection of all sanitary arrangements at all times by the Engineer, the Engineer's Representative of the Medical staff of the DFCCIL. Should the contractor fail to make the adequate sanitary arrangements, these will be provided by the DFCCIL and the cost therefore recovered from the contractor.
- 59.(5) Outbreak of infectious disease:-** The contractor shall remove from his camp such labour and their families as refuse protective inoculation and vaccination when called upon to do so by the Engineer or the Engineer's representative on the advice of the DFCCIL. Should cholera, plague or other infectious disease breakout, the contractor shall burn the huts, beddings, clothes and other belonging so for used by the infected parties and promptly erect new huts on health sites as required by the engineer, failing which within the time specified in the Engineer's requisition, the work maybe done by the DFCCIL and the cost therefore recovered from the contractor.
- 59. (6) Medical facilities at site: -** The Contractor shall provide medical facilities at the site as maybe prescribed by the Engineer on the advice of the DFCCIL in relation to the strength of the Contractor's resident staff and workmen.
- 59.(7) Use of intoxicants: -** The sale of ardent spirits or other intoxicating beverages upon the work or in any of the buildings, encampments or tenements owned, occupied by or within the control of the contractor or any

of his employees shall be forbidden and the Contractor shall exercise his influence and authority to the utmost extent to secure strict compliance with this condition.

- 59.(8) Non-employment of female labour:-**The Contractor shall see that the employment of female labour on / in Cantonment areas, particularly in the neighbourhood of soldier's barracks, should be avoided as far as possible.
- 59.(9) Restrictions On The Employment Of Retired Engineers Of Railway/DFCCIL Services Within one Year Of Their Retirement :** The Contractor shall not, if he is a retired Government Engineer of Gazetted rank, himself engage in or employ or associate a retired Government Engineer of Gazetted rank, who has not completed one year from the date of retirement, in connection with this contract in any manner whatsoever without obtaining prior permission of the President and if the Contractor is found to have contravened this provision it will constitute a breach of contract and administration will be entitled to terminate the contract and forfeit Earnest Money Deposits (EMD), Performance Guarantee (PG) and Security Deposits (SD) of that contract.
- 60.(1) Non-employment of labours below the age of 15:-** the Contractor shall not employ children below the age of 15 as labourers directly or through petty contractors or subcontractors for the execution of work.
- 60.(2) Medical Certificate of fitness for labour:-**It is agreed that the contractor shall not employ a person above 15 and below 19 years of age for the purpose of execution of work under the contract unless a medical certificate of fitness in the prescribed form (Proforma at Form No.15) granted to him by a certifying surgeon certifying that he is fit to work as an adult is obtained and kept in the custody of the contractor or a person nominated by him in this behalf and the person carries with him, while at work; a token giving a reference to such certificate. It is further agreed that the responsibility for having the adolescent examined medically at the time of appointment or periodically till he attains the age of 19 years shall devolve entirely on the contractor and all the expenses to be incurred on this account shall be borne by him and no fee shall be charged from the adolescent or his parent for such medical examination.
- 60. (3) Period of validity of medical fitness certificate: -** A certificate of fitness granted or renewed for the above said purposes shall be valid only for a period of one year at a time. The certifying surgeon shall revoke a certificate granted or renewed if in his opinion the holder of it is, no longer fit for work in the capacity stated there in. Where a certifying surgeon refuses to grant or renew a certificate or revoke a certificate, he shall, if so required by the person concerned, state his reasons in writing for doing so.
- 60.(4) Medical re-examination of labourer: -** Where any official appointed in this

behalf by the Ministry of labour is of the opinion that any person employed in connection with the execution of any work under this contract in the age group 15 to 19 years is without a certificate of fitness or is having a certificate of fitness but no longer fit to work in the capacity stated in the certificate, he may serve on the Contractor, or on the person nominated by him in the regard, a notice requiring that such persons shall be examined by a certifying surgeon and such person shall not if the concerned official so directs, be employed or permitted to do any work under this contract unless he has been medically examined and certified that he has been granted a certificate of fitness or a fresh certificate of fitness, as the case maybe.

EXPLANATIONS:

- (1) Only qualified medical practitioners can be appointed as “Certifying Surgeons” and the term “ Qualified Medical Practitioners” means a person holding a qualification granted by an authority specified in the Schedule to the Indian Medical Degrees Act, 1916 (VII of 1916) or in the Schedule to the Indian Medical Council Act, 1933 (XXVII of 1933).
- (2) The Certifying surgeon may be a medical officer in the service of State or Municipal Corporation.

DETERMINATION OF CONTRACT

- 61. (1) Right of DFCCIL of determine the contract:** - The DFCCIL shall be entitled to determine and terminate the contract at any time should, in the DFCCIL's opinion, the cessation of work becomes necessary owing to paucity of funds or from any other cause whatever, In which case the value of approved materials at site and of work done to date by the Contractor will be paid for in full at the rate specified in the contract. Notice in writing from the DFCCIL of such determination and the reasons therefore shall be conclusive evidence thereof.
- 61. (2) Payment on determination of contract:** - Should the contract be determined under sub clause (1) of this clause and the Contractor claims payment for expenditure incurred by him in the expectation of completing the whole of the work, the DFCCIL shall admit and consider such claims as are deemed reasonable and are supported by vouchers to the satisfaction of the Engineer. The DFCCIL's decision on the necessity and propriety of such expenditure shall be final and conclusive.
- 61. (3)** The contractor shall have no claim to any payment of compensation or otherwise, how so ever on account of any profit or advantage which he might have derived from the execution of the working full but which he did not derive in consequence of determination of contract.
- 62. (1) Determination of contract owing to default of contractor:** -If the

Contractor should: -

- (i) Becomes bankrupt or insolvent, or
- (ii) Make an arrangement with of assignment in favour of his creditors, or agree to carry out the contract under a Committee of Inspection of his creditors, or
- (iii) Being a Company or Corporation, go into liquidation(other than a voluntary liquidation for the purposes of amalgamation or reconstruction),or
- (iv) Have an execution levied on his goods or property on the works, or
- (v) Assign the contract or any part thereof otherwise than as provided in Clause7 of these conditions, or
- (v) Abandon the contract, or
- (vii) Persistently disregard the instructions of the Engineer, or contravene any provision of the contract, or
- (viii) Fail to adhere to the agreed programme of work by a margin of 10% of the stipulated period, or
- (ix) Fail to remove materials from the site or to pull down and replace work after receiving from the Engineer notice to the effect that the said materials or works have been condemned or rejected under clause 25 and 27 of these conditions, or
- (x) Fail to take steps to employ competent or additional staff and labour as required under clause 26 of the conditions
- (xi) Fail to afford the Engineer or Engineer's representative proper facilities for inspecting the work or any part there of as required under clause 28 of the conditions, or
- (xii) Promise, offer or give any bribe, commission, gift or advantage either himself or through his partner, agent or servant to any officer or employee of the DFCCIL or to any person on his or on their behalf in relation to the execution of this or any other contract with this DFCCIL.
- (xiii)(A) At any time after the tender relating to the contract, has been signed and submitted by the Contractor, being a partnership firm admit as one of its partners or employee under it or being an incorporated company elect or nominate or allow to act as one of its directors or employee under it in any capacity whatsoever any retired engineer of the gazetted rank or any other retired gazetted officer working before his

retirement, whether in the executive or administrative capacity, or whether holding any pensionable post or not, in the DFCCIL for the time being owned and administered by the President of India before the expiry of one year from the date of retirement from the said service of such Engineer or Officer unless such Engineer or Officer has obtained permission from the President of India or any officer duly authorized by him in this behalf to become a partner or a director or to take employment under the contract as the case may be, or

(xiii) (B) Fail to give at the time of submitting the said tender:-

- (a) The correct information as to the date of retirement of such retired engineer or retired officer from the said service, or as to whether any such retired engineer or retired officer was under the employment of the Contractor at the time of submitting the said tender, or
- (b) The correct information as to such engineers or officers obtaining permission to take employment under the contractor, or
- (c) Being a partnership firm, the correct information as to, whether any of its partners was such a retired engineer or a retired officer, or
- (d) Being in incorporated company, correct information as to whether any of its directors was such a retired engineer or a retired officer, or
- (e) Being such a retired engineer or retired officer suppress and not disclose at the time of submitting the said tender the fact of his being such a retired engineer or a retired officer or make at the time of submitting the said tender a wrong statement in relation to his obtaining permission to take the contractor if the contractor be a partnership firm or an incorporated company to be a partner or director of such firm or company as the case may be or to seek employment under the contractor.

Then and in any of the said clause, the Engineer on behalf of the DFCCIL may serve the Contractor with a notice (Pro-forma at Form No.16) in writing to that effect and if the contractor does not within seven days after the delivery to him of such notice proceed to make good his default in so far as the same is capable of being made good and carry on the work or comply with such directions as a fore said of the entire satisfaction of the Engineer, the DFCCIL shall be titled after giving 48 hours' notice (Pro-forma at Form No. 17) in writing under the hand of the Engineer to rescind the contract as a whole or in part or parts(as may be specified in such notice)and after expiry of 48 hours' notice, a final termination notice (Proforma at Form No. 18) should be issued and adopt the following courses:

To measure up or the whole or part of the work from which the contractor has been removed and get it completed by another contractor, the manner and method in which such work is completed shall be in the entire discretion of the Engineer whose decision shall be final.

62.(2) Right of DFCCIL after, rescission of contract owing to default of contractor:

In the event of any or several of the courses, referred to in sub-clause (1) of the clause, being adopted.

- (a) the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any material so entered into any commitments or made any advances on account of or with a view to the execution of the works or the performance of the contract and contractor shall not be entitled to recover or be paid any sum for any work thereto for actually performed under the contract unless and until the Engineer shall have certified the performance of such work and the value payable in respect thereof and the contractor shall only be entitled to be paid the value so certified.
- (b) The Engineer or the Engineer's representative shall be entitled to take possession of any materials, tools, implements, machinery and buildings on the works or on the property on which these are being or ought to have been executed, and to retain and employ the same in the further execution of the works or any part thereof until the completion of the works without the contractor being entitled to any compensation for the use and employment thereof or for wear and tear or destruction thereof.
- (c) The Engineer shall as soon as maybe practicable after removal of the contractor fix and determine ex-parte or by or after reference to the parties or after such investigation or enquiries as he may consider fit to make or institute and shall certify what amount(if any) had at the time of rescission of the contract been reasonably earned by or would reasonably accrue to the contractor in respect of the work then actually done by him under the contract and what was the value of any unused, or partially used materials, any constructional plan and any temporary works upon the site. The legitimate amount due to the contractor after making necessary deductions and certified by the Engineer should be released expeditiously.

STATEMENT OF DISPUTES - INDIAN RAILWAY ARBITRATION RULES

- 63.0 Matters finally determined by the DFCCIL**—All disputes and differences of any kind whatsoever arising out of or in connection with the contract, whether during the progress of the work or after its completion and whether before or after the determination of the contract, shall be referred by the contractor to the Director /General Manager/CPM, DFCCIL and the Director/General Manager/CPM, DFCCIL shall within 120 days after receipt of the contractor's

representation make and notify decisions on all matters referred to by the contractor in writing provided that matter for which provision has been made in clauses 8, 18, 22.(5), 39, 43.(2), 45.(a), 55, 55A.(5), 57A, 61.(1), 61.(2) and 62.(1) to(xiii)(B)of General Conditions of contract or in any special clause of the conditions of the contract shall be deemed as 'excepted matters'(matters not arbitrable) and decisions of the DFCCIL authority, thereon shall be final and binding on the contractor; provided further that 'excepted matters' shall stand specifically excluded from the purview of the arbitration clause.

64. (1) Demand for Arbitration:-

64. (1) (i) In the event of any dispute or difference between the parties here to as to the construction or operation of this contract, or the respective rights and liabilities of the parties on any matter in question, dispute or difference on any account or as to the withholding by the DFCCIL of any certificate to which the contractor may claim to be entitled to, or if the DFCCIL fails to make a decision within 120 days, then and in any such case, but except in any of the 'excepted matters' referred to in clause 63 of these conditions, the contractor, after 120 days but within 180 days of his presenting his final claim on disputed matters shall demand in writing that the dispute or difference be referred to arbitration.

64.(1) (ii) The demand for arbitration shall specify the matters which are in question, or subject of the dispute or difference as also the amount of claim item wise. Only such dispute or difference, in respect of which the demand has been made, together with counter claims or setoff, given by the DFCCIL, shall be referred to arbitration and other matters shall not be included in the reference.

64.(1) (iii) (a) The arbitration proceedings shall be assumed to have commenced from the day, a written and valid demand for arbitration is received by the DFCCIL.

(b) The claimant shall submit his claim stating the facts supporting the claims along with all the relevant documents and the relief or remedy sought against each claim within a period of 30 days from the date of appointment of the Arbitral Tribunal.

(c) The DFCCIL shall submit its defence statement and counter claim(s), if any, within a period of 60 days of receipt of copy of claims from Tribunal thereafter, unless otherwise extension has been granted by Tribunal.

(d) The place of arbitration would be New Delhi /Mumbai. The decision of DFCCIL shall be final and binding.

64.(1) (iv) No new claim shall be added during proceedings by either party. However, a party may amend or supplement the original claim or defence

thereof during the course of arbitration proceedings subject to acceptance by Tribunal having due regard to the delay in making it.

64.(1) (v)—If the contractor(s) does/do not prefer his/their specific and final claims in writing, within a period of 90 days of receiving the intimation from the DFCCIL that the final bill is ready for payment, he/they will be deemed to have waived his/their claim(s) and the DFCCIL shall be discharged and released of all liabilities under the contract in respect of these claims.

64.(2) Obligation During Pendency of Arbitration:—Work under the contract shall, unless otherwise directed by the Engineer, continue during the arbitration proceedings, and no payment due or payable by the DFCCIL shall be withheld on account of such proceedings, provided, however, it shall be open for Arbitral Tribunal to consider and decide whether or not such work should continue during arbitration proceedings.

64.(3) Appointment of arbitrator

64.(3)(a)(i) In cases where the total value of all claims in question added together does not exceed Rs.25,00,000 (Rupees twenty five lakhs only), the Arbitral tribunal shall consist of a sole arbitrator nominated by the MD/DFCCIL. The sole arbitrator shall be appointed within 60 days from the day when a written and valid demand for arbitrator is received by MD/DFCCIL.

64.(3)(a)(ii) In cases not covered by the clause 64(3)(a)(i), the Arbitral Tribunal shall consist of a Panel of three officials, as the arbitrators. For this purpose, the DFCCIL will send a panel of more than 3 names of DFCCIL officers which may also include the name(s) of Officer(s) empanelled to work as Arbitrator to the contractor within 60 days from the day when a written and valid demand for arbitration is received by the MD/DFCCIL. Contractor will be asked to suggest to MD/DFCCIL at least 2 names out of the panel for appointment as contractor's nominee within 30 days from the date of dispatch of the request by DFCCIL. The MD/DFCCIL shall appoint at least one out of the contractor's nominee and will, also simultaneously appoint the balance number of arbitrators either from the panel or from outside the panel, duly indicating the 'presiding arbitrator' from amongst the 3 arbitrators so appointed. MD/DFCCIL shall complete this exercise of appointing the Arbitral Tribunal within 30 days from the receipt of the names of contractor's nominees. While nominating the arbitrators it will be necessary to ensure that one of them is from the Accounts department. An officer of selection grade of accounts department shall be considered of equal status to the officers in SA grade of other department of DFCCIL for the purpose of appointment of arbitrator.

64. (3)(a)(iii) If one or more of the arbitrators appointed as above refuses to act as arbitrator, withdraws from his office as arbitrator, or vacates his/their office/offices or is/are unable or unwilling to perform his functions as

arbitrator for any reason whatsoever or dies or in the opinion of the MD/DFCCIL fails to act without undue delay, the MD/DFCCIL shall appoint new arbitrator/arbitrators to act in his/their place in the same manner in which the earlier arbitrator/arbitrators had been appointed. Such re-constituted tribunal may, at its discretion, proceed with the reference from the stage at which it was left by the previous arbitrator(s).

64.(3) (a) (iv) The arbitral Tribunal shall have power to call for such evidence by way of affidavits or otherwise as the arbitral Tribunal shall think proper, and it shall be the duty of the parties here to do or cause to be done all such things as may be necessary to enable the arbitral Tribunal to make the award without any delay. The arbitral Tribunal should record day-to-day proceedings. The proceedings shall normally be conducted on the basis of documents and written statements.

64.(3)(a)(v) While appointing arbitrator(s) under sub-clause(i),(ii)&(iii)above, due care shall be taken that he/they is/are not the one/those who had an opportunity to deal with the matters to which the contract relates or who in the course of his/their duties as DFCCIL servant(s) expressed views on all or any of the matters under dispute or differences. The proceedings of the arbitral Tribunal or the award made by such Tribunal will, however, not be invalid merely for the reason that one or more arbitrator had, in the course of his service, opportunity to deal with the matters to which the contract relates or who in the course of his/their duties expressed views on all or any of the matters under dispute.

64.(3)(b)(iii) A party may apply to tribunal within 60 days of receipt of award to make an additional award as to claims presented in the arbitral proceedings but omitted from the arbitral award.

64.(4) In case of the Tribunal, comprising of three Members, any ruling on award shall be made by a majority of Members of Tribunal. In the absence of such a majority, the views of the Presiding Arbitrator shall prevail.

64.(5) Where the arbitral award is for the payment of money, no interest shall be payable on whole or any part of the money for any period till the date on which the award is made.

64.(6) The cost of arbitration shall be borne by the respective parties. The cost shall inter-alia include fee of the arbitrator(s), as per the rates fixed by the DFCCIL from time to time and the fee shall be borne equally by both the parties.

64(7) Subject to the provisions of the aforesaid Arbitration and Conciliation Act 1996 and the rules there under and any statutory modifications there of shall apply to the arbitration proceedings under this clause.

JOINT VENTURE (JV) FIRMS IN WORKS TENDERS

- 65.0 Participation Of Joint Venture (JV) Firms In Works Tender:** This Clause shall be applicable for works tenders of value as approved and communicated by Railway Board /DFCCIL from time to time.
- 65.1** Separate identity / name shall be given to the Joint Venture Firm.
- 65.2** Number of members in a JV Firm shall not be more than three.
- 65.3** A member of JV Firm shall not be permitted to participate either in individual capacity or as a member of another JV Firm in the same tender.
- 65.4** The tender form shall be purchased and submitted only in the name of the JV Firm and not in the name of any constituent member.
- 65.5** Normally earnest money deposit (EMD) shall be submitted only in the name of Employer "Dedicated Freight Corridor Corporation of India Limited" A/C JV Firm and not in the name of constituent member. However, in exceptional cases EMD in the name of Employer "Dedicated Freight Corridor Corporation of India Limited" A/C JV Firm and not in the name of Lead Member can be accepted subject to written confirmation from JV members to the effect, that EMD submitted by the Lead Member may be deemed as EMD submitted by JV Firm.
- 65.6** One of the members of the JV Firm shall be its Lead Member who shall have a majority (at least 51%) share of interest in the JV Firm and also, must have satisfactorily completed in the last three previous financial years and the current financial year up to the date of opening of the tender, one similar single work for a minimum value of 35% of advertised tender value and as defined in technical eligibility criteria. The other members shall have a share of not less than 20% each in case of JV Firms with up to three members. In case of JV Firm with foreign member(s), the Lead Member has to be an Indian Firm with a minimum share of 51%.
- 65.7** A copy of Memorandum of Understanding (MoU) executed by the JV members shall be submitted by the JV Firm along with the tender. The complete details of the members of the JV Firm, their share and responsibility in the JV Firm etc. particularly with reference to financial, technical and other obligations shall be furnished in the MOU. (The MOU format for this purpose is enclosed along with the tender, Form No. 9).
- 65.8** Once the tender is submitted, the MoU shall not be modified / altered / terminated during the validity of the tender. In case the tenderer fails to observe/comply with this stipulation, the full Earnest Money Deposit (EMD) shall be liable to be forfeited.

- 65.9** Approval for change of constitution of JV Firm shall be at the sole discretion of the Employer (DFCCIL). The constitution of the JV Firm shall not be allowed to be modified after submission of the tender bid by the JV Firm, except when modification becomes inevitable due to succession laws etc. and in any case the minimum eligibility criteria should not get vitiated. However, the Lead Member shall continue to be the Lead Member of the JV Firm. Failure to observe this requirement would render the offer invalid.
- 65.10** Similarly, after the contract is awarded, the constitution of JV Firm shall not be allowed to be altered during the currency of contract except when modification become inevitable due to succession laws etc. and in any case the minimum eligibility criteria should not get vitiated. Failure to observe this stipulation shall be deemed to be breach of contract with all consequential penal action as per contract conditions.
- 65.11** On award of contract to a JV Firm, a single Performance Guarantee shall be submitted by the JV Firm as per tender conditions. All the Guarantees like Performance Guarantee, Bank Guarantee for Mobilization Advance, Machinery Advance etc. shall be accepted only in the name of the JV Firm and no splitting of guarantees amongst the members of the JV Firm shall be permitted.
- 65.12** On issue of LOA (Letter Of Acceptance), an agreement among the members of the JV Firm (to whom the work has been awarded) shall be executed and got registered before the Registrar of the Companies under Companies Act or before the Registrar/Sub-Registrar under the Registration Act, 1908. This JV Agreement shall be submitted by the JV Firm to the DFCCIL before signing the contract agreement for the work. In case the tenderer fails to observe/comply with this stipulation, the full Earnest Money Deposit (EMD) shall be forfeited and other penal actions due shall be taken against partners of the JV and the JV. This Joint Venture Agreement shall have, inter-alia, following Clauses :
- 65.12.1** Joint And Several Liability - Members of the JV Firm to which the contract is awarded, shall be jointly and severally liable to the Employer (DFCCIL) for execution of the project in accordance with General and Special Conditions of Contract. The JV members shall also be liable jointly and severally for the loss, damages caused to the Railways / DFCCIL during the course of execution of the contract or due to non-execution of the contract or part thereof.
- 65.12.2** Duration of the Joint Venture Agreement - It shall be valid during the entire currency of the contract including the period of extension, if any and the defect liability period after the work is completed.
- 65.12.3** Governing Laws - The Joint Venture Agreement shall in all respect be governed by and interpreted in accordance with Indian Laws.

- 65.13** Authorized Member - Joint Venture members shall authorize one of the members on behalf of the Joint Venture Firm to deal with the tender, sign the agreement or enter into contract in respect of the said tender, to receive payment, to witness joint measurement of work done, to sign measurement books and similar such action in respect of the said Tender/contract. All notices/correspondences with respect to the contract would be sent only to this authorized member of the JV Firm.
- 65.14** No member of the Joint Venture Firm shall have the right to assign or transfer the interest right or liability in the contract without the written consent of the other members and that of the employer (DFCCIL) in respect of the said tender/contract.
- 65.15** Documents to be enclosed by the JV Firm along with the tender:
- 65.15.1** In case one or more of the members of the JV Firm is/are partnership firm(s), following documents shall be submitted:
- (a) Notary certified copy of the Partnership Deed,
 - (b) Consent of all the partners to enter into the Joint Venture Agreement on a stamp paper of appropriate value (in original).
 - (c) Power of Attorney (duly registered as per prevailing law) in favour of one of the partners of the partnership firm to sign the JV Agreement on behalf of the partnership firm and create liability against the firm.
- 65.15.2** In case one or more members is/are Proprietary Firm or HUF, the following documents shall be enclosed:
- Affidavit on Stamp Paper of appropriate value declaring that his/her Concern is a Proprietary Concern and he/she is sole proprietor of the Concern OR he/she is in position of "KARTA" of Hindu Undivided Family (HUF) and he/she has the authority, power and consent given by other partners to act on behalf of HUF.
- 65.15.3** In case one or more members is/are limited companies, the following documents shall be submitted:
- (a) Notary certified copy of resolutions of the Directors of the Company, permitting the company to enter into a JV agreement, authorizing MD or one of the Directors or Managers of the Company to sign JV Agreement, such other documents required to be signed on behalf of the Company and enter into liability against the company and/or do any other act on behalf of the company.
 - (b) Copy of Memorandum and Articles of Association of the Company.

- (c) Power of Attorney (duly registered as per prevailing law) by the Company authorizing the person to do/act mentioned in the para (a) above.

65.16 Credentials & Qualifying Criteria : Technical and financial eligibility of the JV Firm shall be adjudged based on satisfactory fulfillment of the following criteria :

65.16.1 Technical Eligibility Criteria : As defined in Preamble and General Instructions to tenderers.

65.16.2 Financial Eligibility Criteria : As defined in Preamble and General Instructions to tenderers.

**PRE-CONTRACT INTEGRITY PACT
PART-I
CHAPTER IV (B)**

Annexure – I

PRE CONTRACT INTEGRITY PACT

1.4.1 General

This pre-bid pre-contract Agreement (hereinafter called the Integrity Pact) is made on _____ day of the month of _____ 2020, between, on one hand, the DFCCIL acting through Shri _____ Designation of the officer, (hereinafter called the CLIENT, which expression shall mean and include, unless the context otherwise requires, his successors in office and assigns) of the First Part and M/s _____ represented by Shri _____, Chief Executive Officer (hereinafter called the “BIDDER/SELLER” which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the Second part.

WHEREAS the CLIENT proposes to procure (Name of the Stores/Equipment/Item, Name of the Consultancy Service, Name of works Contract, Name of Services) and the [A] is willing to offer/has offered for stores or works.

WHEREAS the [A] is a private company/public company/Government undertaking/partnership/registered export agency, constituted in accordance with the relevant law in the matter and the CLIENT is a PSU performing its functions on behalf of the President of India.

NOW, THEREFOR,

To avoid all forms of corruption by following a system that is fair, transparent and free from any influence/prejudiced dealings prior to, during and subsequent to the currency of the contract to be entered into with a view to:-

Enabling the CLIENT to obtain the desired said (Name of the Stores/Equipment/Items, Name of the Consultancy Service, Name of Works Contract, Name of Services) at a competitive price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption on public procurement, and

Enabling BIDDERS to abstain from bribing or including in any corrupt practice in order to secure [B] by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and the CLIENT will commit to prevent corruption, in any form, by its officials by following transparent procedures.

The parties hereto hereby agree to enter into Integrity Pact and agree as follows:

Commitments of the CLIENT

- 1.1 The CLIENT undertakes that no official of the CLIENT, connected directly or indirectly with the [B], will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favour or any material or immaterial benefits or any other advantage from the [A] either for themselves or for any person, organization or third party related to the [B], in exchange for the advantage in the bidding process, bid evaluation, contracting or implementation process related to the [B].
 - 1.2 The CLIENT will, during the pre-contract stage, treat all BIDDERS alike, and will provide to all BIDDERS the same information and will not provide any such information to any particular BIDDER which could afford an advantage to that particular[A] in comparison to other BIDDERS.
 - 1.3 All the officials of the CLIENT will report to the appropriate Government office any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.
2. In case any such preceding misconduct on the part of such official (s) is reported by the [A] to the CLIENT with full and verifiable facts and the same is prima facie found to be correct by the CLIENT, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings may be initiated by the CLIENT and such a person shall be debarred from further dealings related to the [B] process. IN such a case while an enquiry is being conducted by the CLIENT the proceedings under the [B] would not be stalled.

Commitments of BIDDERS

3. The [A] commits itself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of its bid or during any pre-contract or post-contract stage in order to secure the [B] contract or in furtherance to secure it and in particular commit itself to the following :-
 - 3.1 The [A] will not offer, directly or through intermediaries any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the

- CLIENT, conducted directly or indirectly with the bidding process, or to any person, organisation or third party related to the [B] in exchange for any advantage in the bidding, evaluation, contracting and implementation of the [B].
- 3.2 The [A] further undertakes that it has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the CLIENT or otherwise in procuring the Contract of forbearing to do or having done any act in relation to the obtaining or execution of the [B] or any other [B] with the Government for showing or forbearing to show favour or disfavour to any person in relation to the [B] or any other [B] with the Government.
- 3.3 [A] shall disclose the name and address of agents and representatives and Indian [A] shall disclose their foreign principals or associates.
- 3.4 [A] shall disclose the payments to be made by them to agents/brokers or any other intermediary, in connection with this bid/document.
- 3.5 The [A] further confirms and declares to the CLIENT that the [A] is the original manufacturer/integrator/authorized government sponsored export entity of the defence stores and has not engaged any individual or firm or company whether Indian or foreign to intercede, facilitate or in any way to recommend to the CLIENT or any of its functionaries, whether officially or unofficially to the award of the [B] to the [A] nor has any amount been paid, promised or intended to be paid to any such individual, firm or company in respect of any such intercession, facilitation or recommendation.
- 3.6 The [A] either while presenting the bid or pre-contract negotiations or before signing the [B] shall disclose any payments he has made, is committed to or intends to make to officials of the CLIENT or their family members, agents, brokers or any other intermediaries in connection with the [B] and the details of services agreed upon for such payments.
- 3.7 The [A] will not collude with other parties interested in the [b] to impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the [B].
- 3.8 The [A] will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.
- 3.9 The [A] shall not use improperly, for purposes of competition or personal gain, or pass on to others, any information provided by the CLIENT as part of the business relationship, regarding plans, technical proposals and business details, including information contained in any electronic data carrier. The [A] also undertakes to exercise due and adequate care lest any such information is divulged.
- 3.10 The [A] commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts.
- 3.11 The [A] shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.

- 3.12 If the [A] or any employee of the [A] or any person acting on behalf of the [A], either directly or indirectly, is a relative of any of the officers of the CLIENT, or alternatively, if any relative of an officer of the CLIENT has financial interest/stake in the BIDDERS firm, the same shall be disclosed by the [A] at the time of filling of tender.

The term 'relative' for this purpose would be as defined in section 6 of the Companies Act 1956.

- 3.13 The [A] shall not lend to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly, with any employee of the CLIENT.

4. **Previous Transaction:**

- 4.1 The [A] declares that no previous transgression occurred in the last three years immediately before signing of this Integrity Pact, with any other company in any country in respect of any corrupt practices envisaged hereunder or with any Public Sector Enterprise in India or any Government Department in India that could justify BIDDERS exclusion from the tender process.
- 4.2 The [A] agrees that if it makes incorrect statement on this subject, [A] can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

5. **Earnest Money (Security Deposit)**

- 5.1 While submitting commercial bid, the [A] shall deposit an amount _____ (to be specified in RFP) as Earnest Money/Security Deposit, with the CLIENT through any of the following instruments:
- (i) Bank Draft or a Pay Order in favour of _____
 - (ii) A confirmed guarantee by an Indian Nationalized Bank, promising payment of the guaranteed sum of the CLIENT on demand within three working days without any demur whatsoever and without seeking any reasons whatsoever. The demand for payment by the CLIENT shall be treated as conclusive proof or payment.
 - (iii) Any other mode or through any other instrument (to be specified in the RFP)
- 5.2 The Earnest Money/Security Deposit shall be valid upto a period of five years or the complete conclusion of the contractual obligations to the complete satisfaction of both the BIDDER and the CLIENT, including warranty period, whichever is later.
- 5.3 In case of the successful [A] a clause would also be incorporated in the Article pertaining to Performance Guarantee in the [B] that the provisions of Sanction for Violation shall be applicable for forfeiture of Performance Bond in case of a decision by the CLIENT to forfeit the same without assigning any reason for imposing sanction for violation of this pact.

- 5.4 No interest shall be payable by the CLIENT to the [A] on Earnest Money/Security Deposit for the period of its currency.

6. **Sanctions for Violations:**

- 6.1 Any breach of the aforesaid provisions by the [A] or any one employed by it or acting on its behalf (whether with or without the knowledge of the [A]) shall entitle the CLIENT to take all or any one or the following actions, wherever required.
- (i) To immediately call off the pre-contract negotiations without assigning any reason or giving any compensation to the [A]. However, the proceedings with the BIDDER(s) would continue.
 - (ii) The Earnest Money Deposit (in pre-contract stage) and /or Security Deposit/performance Bond (after the [B] is signed) shall stand forfeited fully and the CLIENT shall not be required to assign any reason therefore.
 - (iii) To immediately cancel the [B], if already signed, without giving any compensation to the [A].
 - (iv) To recover all sums already paid by the CLIENT, and in case of an Indian [A] with interest thereon at 2% higher than the prevailing Prime Lending Rate of State Bank of India, while in case of a [A] from the country other than LIBOR. If any outstanding payment is due to the [A] from the CLIENT in connection with any other [B], such outstanding payment could also be utilized to recover the aforesaid sum and interest.
 - (v) To encash the advance bank guarantee and performance bond/ warranty bond, if furnished by the [A], in order to recover the payments, already made by the CLIENT, along with interest.
 - (vi) To cancel all or any other Contracts with the [A]. The [A] shall be liable to pay compensation for any loss or damage to the CLIENT resulting from such cancellation/ rescission and the CLIENT shall be entitled to deduct the amount so payable from the money(s) due to the [A].
 - (vii) To debar the [A] from participating in future bidding processes of the Government of India for a minimum period of five years, which may be further extended at the discretion of the CLIENT.
 - (viii) To recover all sums paid in violation of this Pact by [A] to any middleman or agent or broker with a view to securing [B] the contract.
 - (ix) In cases where irrevocable Letters of Credit have been received in respect of any [B] signed by the CLIENT with the [A], the same shall not be opened.
 - (x) Forfeiture of Performance Bond in case of a decision by the CLIENT to forfeit the same without assigning any reason for imposing sanction for violation of this pact.
- 6.2 The CLIENT will be entitled to take all or any of the actions mentioned at para 6.1(i) to (x) of this Pact also on the Commission by the [A] or any one employed by it or

acting on its behalf (whether with or without the knowledge of the [A], of an offence as defined in chapter IX of the Indian Penal Code, 1860 or Prevention of Corruption Act, 1988 or any other statute enacted for prevention of corruption.

- 6.3 The decision of the CLIENT to the effect that a breach of the provisions of this Pact has been committed by the [A] shall be final and conclusive on the [A]. However, the [A] can approach the independent Monitor(s) appointed for the purposes of this Pact.

7. Fall Clause

- 7.1 The [A] undertakes that it has not supplied /is not supplying similar product/system or sub systems at a price lower than that offered in the present bid in respect of any other Ministry/Department of the Government of the India or PSU and if it is found at any stage that similar product/ systems or sub systems was supplied by the [A] to any other Ministry/ Department of the Government India or a PSU at a lower price, then that very price, with due allowance for elapsed time, will be applicable to the present case and the difference in the cost would be refunded by the [A] to the CLIENT, if the [B] has already been concluded.

8. Independent Monitors

- 8.1 The CLIENT has appointed Independent Monitors (hereinafter referred to as Monitors) for this Pact in consultant with the Central Vigilance Commission (Names and Addresses of the Monitors to be given).
- 8.2 The task of the Monitors shall be to review independently and objectively, whether and to what extent the parties comply with the obligations under this pact.
- 8.3 The monitors shall not be subject to instructions by the representatives of the parties and perform their functions neutrally and independently.
- 8.4 Both the parties accept that the Monitors have the right to access all the documents relating to the project/ procurement, including minutes of meetings.
- 8.5 As soon as the Monitor notices, or has reason to believe, a violation of this Pact, he will so inform the Authority designed by the CLIENT.
- 8.6 The BIDDER(s) accepts that the Monitors has the right to access without restriction to all project documentation of the CLIENT including that provided by the BIDDER. The [A] will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor shall be under contractual obligation to that treat the information and documents of the [A] with confidentially.
- 8.7 The CLIENT will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the parties. The parties will offer to the Monitor the option to participate in such meetings.

- 8.8 The Monitor will submit a written report to the MD/DFCCIL within 8 to 10 weeks from the date of reference or intimation to him by the CLIENT/BIDDER and, should the occasion arise, submit proposals for correcting problematic situations.

9. **Facilitation of Investigation**

In case of any allegation of violation of any provisions of this Pact of payment of commission, the CLIENT or its agencies shall be entitled to examine all the documents including the Books of Accounts of the [A] and the [A] shall provide necessary information and documents in English and shall extend all possible help for the purpose of such examination.

10. **Law and Place of Jurisdiction**

This Pact is subject to Indian Law. The place of performance and jurisdiction is the seat of the CLIENT.

11. **Other Legal Actions**

The action stipulated in this Integrity Pact is without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

12. **Validity**

12.1 The validity of this Integrity Pact shall be from date of its signing and extend upto 5 years or the complete execution of the [B] to the satisfaction of both the CLIENT and the [A], including warranty period, whichever is later. In case [A] is unsuccessful, this Integrity Pact shall expire after six months from the date of the signing of the [B].

12.2 Should one or several provisions of this pact turn out to be invalid; the remainder of this Pact shall remain valid. In this case, the parties will strive to come to an agreement to their original intentions.

13. The parties hereby sign this Integrity Pact at _____ on _____

CLEINT
Name of the Officer
Designation
Deptt. /Ministry/ PSU

BIDDER
CHIEF EXECUTIVE OFFICER

Witness

1. _____

2. _____

Witness

1. _____

2. _____

CHAPTER V

SPECIAL CONDITIONS OF CONTRACT

Chapter-V

SPECIAL CONDITIONS OF CONTRACT

- 1.5.1** This Tender shall be governed by Preamble and General instructions to tenderers, General condition of Contract, Special conditions of contract, Technical Specifications, Additional Technical specifications (if any), Drawings, Forms, Annexures, etc.
- 1.5.2** If there are varying or conflicting provisions in the documents forming part of the contract, Engineer shall be deciding authority with regard to the intentions of the provision and decision of Engineer will be final and binding on the contractor.
- 1.5.3** **Scheme of work :-** Within a period of 30 days beginning from the date of issue of Letter of Acceptance of Tender, the Contractor shall submit the detailed time schedule for execution of work and various documents enumerated in tender papers to the employer.

1.5.4 Quality Assurance Plan for Substructure and foundation

All materials used in the work shall be of the best quality as per codes. Quality Assurance Plan shall include for materials used and for workmanship of work. The contractor shall submit Quality Assurance Plan for the substructure and foundation. The contractor shall also ensure that the Employer's prescribed Quality Assurance Standards are rigidly followed in for the construction of substructure and foundation. These are to be approved from the client / DFCCIL

1.5.5 Quality Assurance Plan for Superstructure

- (a) All materials used in the work shall be of the best quality as per codes / Specifications. The contractor is responsible for constructing the work in accordance with the plans and specifications. Each contractor is also responsible for controlling the quality of its work to meet contract plans, specifications, and related requirements. The contractor's QC is the systematic implementation of a program of inspections, tests, and production controls to attain the required standards of quality and to preclude problems resulting from noncompliance. Pursuant to Technical Specification Section and Quality Requirements, each contractor will establish an independent QC program and write a Contractor Quality Control Plan (CQCP). The CQCP must provide for tests and inspections pursuant to various technical specifications. It will define procedures to ensure that activities affecting

quality are properly documented and accomplished in accordance with contract documents; written instructions; and industry standards, codes and procedures. Furthermore, the CQCP will define methods for ensuring that activities affecting quality will be accomplished under controlled conditions.

- (b) The contractor shall give the above plan to Engineer-in-charge within 21 days from the date of issue of letter of acceptance. The Engineer-in-charge will approve the plan at the earliest. The contractor shall adhere to the procedure stipulated in the tender document and quality assurance plan prepared by him.
- (c) Contractor shall submit weekly progress report as well as monthly progress reports in printed form.
- (d) Contractor shall prepare and submit Minutes of Meeting (MoM) of all the meeting.

1.5.6 Expenses of Employer' Representative – All the expenses for inspection of Engineer's representative shall be borne by the Employer whether the inspected material is finally utilised in work or not.

1.5.7 The decision of the Engineer shall be final in respect of acceptability or otherwise of any material, fittings, component or equipment required for the work.

1.5.8 This programme of the Contractor shall generally covers the following :-

1.5.8.1 The organization to manage and implement the Quality Assurance programme.

1.5.8.2 The documentation control system:

- (i) Basic control system.
- (iii) Adopted at the Contractor Depot and work site.

1.5.8.3. Procedure adopted for:

- (i) Source Inspection.
- (ii) Incoming raw material inspection.
- (iii) Verification of material purchased.
- (v) Site erection controls.

1.5.8.4 Inspection and Test Procedure for:

- (i) Manufacture and quality control procedure.
- (ii) Field activity.

1.5.8.5 System of handling and storage.

1.5.8.6 System of quality audit.

1.5.8.7 System of maintenance of records.

1.5.8.8 For the purpose of obtaining 'On Account Payment', the Contractor shall submit along with the invoice, the documents indicated in the prescribed quality Assurance standards which should inter alia cover the following as maybe applicable in each case.

- (i) Material test reports on raw materials used.
- (ii) Material type and routine test report on components specification.
- (iii) Inspection Plan with reports of the inspection Plan check points.
- (iv) Routine test report.
- (v) Factory test results as required under the specification.
- (vi) Quality audit report including test check report of Employer's representative if any.

1.5.9 Work By Other Agencies

- (a) Any other works undertaken at the same time by the Engineer directly through some other agency at the same time or section where the contractor is carrying out his work will not entitle the contractor or to prefer any claim regarding any delays or hindrances he may have to face on this account but the Employer shall grant a reasonable extension of time to the contractor. The contractor shall comply with any instruction which may be given to him by the Employer in order to permit simultaneous execution of his own works and those undertaken by other contractors or the DFCCIL without being entitled on this account on any extra charge.
- (b) The contractor shall not be entitled to any extra payment due to hindrance resulting from normal Railway operations, such as delay on account of adequate number of and duration of blocks not being granted, operational delay in movement of work trains nor any extension of time to the contractor.

1.5.10 Infringement of patents:

- (a) The Contractor is for bidden to use any patents or registered drawings, process or pattern in fulfilling his contract without the previous consent in writing of the owner of such patent, drawing, pattern or trademark, except where these are specified by the Employer himself. Royalties where payable for the use of such patented processes, registered drawings of patterns shall be borne exclusively by the Contractor. The contractor shall advise the Employer of any proprietary right that may exist on such processed drawings or patterns which he may use of his own accord.

- (b) In the case of patent taken out by the Contractor of the drawings or patterns registered by him, or of those patents, drawings, or patents for which he holds a licence, the signing of the Contract automatically gives the Employer the right to repair by himself the purchased articles covered by the patent or by any person or body chosen by him and to obtain from any sources he desires the component parts required by him in carrying out the repair work. In the event of infringement of any patent rights due to above action of the Employer, he shall be entitled to claim damages from the contractor on the grounds of any loss of any nature which he may suffer e.g. in the case of attachment because of counterfeiting.
- (a) **Indemnification by contractor :-** In the event of any claim or demand being made or action being brought against the Employer for infringement of later patent in respect of any equipment, machine, plant, work or thing used or supplied by the Contractor under this contract in respect of any methods of using or working by the Employer of such equipment machine, plant work or thing, the contractor shall indemnify the employer and keep him indemnified and harmless against all claims, costs, charges and expenses arising from or incurred by reason of such claim provided that the Employer shall notify the contractor immediately any claim is made and that the contractor shall be at liberty, if he so desires with the assistance of the Employer if required but at the Contractor's expense, to conduct all negotiations for the settlement of the same or any litigation that may arise there from and provided that no such equipment, machine, plant work or thing, shall be used by the Employer for any purpose or in any manner other than that for which they have been supplied by the Contractor and specified under this contract.

1.5.11 Insurance:-

Before commencing of works, it shall be obligatory for the contractor to obtain, at his own cost, insurance cover in the joint name of the contractor and employer from reputed companies under the following requirements:

- (a) Liability for death of or injury to any person/ employer's staff / animals or things or loss of or damage to any property / things / the work of other contractor (other than the work) arising out of the performance of the Contract.
- (b) Construction Plant, Machinery and equipment brought to site by the Contractor.
- (c) Any other insurance cover as may be required by the law of the land.

The contractor shall provide evidence to the Employer / Engineer before commencement of work at site that the insurances required under the contract have

been effected and shall within 60 days of the commencement date, provide the insurance policies to the Employer/Engineer, the contractor shall, whenever, called upon, produce to the engineer or his representative the evidence of payment of premiums paid by him to ensure that the policies indeed continue to be in force.

The Contractor shall also obtain any additional insurance cover as per the requirements of the Contract.

The Employer/Engineer shall not be liable for or in respect of any damages or compensation payable to any workman or other person in the employment of the Contractor or his sub-contractor or petty contractor / other contractor working there. The Contractor shall indemnify and keep indemnified the employer / Engineer against all such damages and compensation for which the contractor is liable.

The Policies of the contractor shall remain in force throughout the period of execution of the works and till the expiry of the defect liability period except for any specific insurance covers necessary for shorter period.

If the Contractor fails to effect or keep in force or provide adequate cover as acceptable to the engineer in the insurance policies mentioned above, then in such cases, the engineer may effect and keep in force any such insurance or further insurance on behalf of the Contractor. The recovery shall be made at the rate of 1.5 times the premium/premiums paid by the engineer in this regard from the payment due to the Contractor or from the contractor's Performance security. However, the Contractor shall not be absolved from his responsibility and /or liability in this regard.

1.5.12 Accident:-

- (a)** The contractor shall, in respect of all staff engaged by him or by his sub-contractor, indemnify and keep the employer at all times indemnified and protected against all claims made and liabilities incurred under Workman's Compensation Act, the Factories Act and the Payment of Wages Act, and rules made there under from time to time or under any other labour and Industrial Legislation made from time to time.
- (b)** The contractor shall indemnify and keep the employer indemnified and harmless against all actions, suits, claim demands, costs, charges or expenses arising in connection with any death or injury sustained by any person or persons sustained due to the acts or omission of the contractor, his sub-contractors, his agents or his staff during the executions of this contract irrespective of whether such liability arises under the Workman's Compensation Act, or Fatal Accident Act or any other statute in force for the time being.

- (c) The contractor's liability to meet third party claims of the type outlined above will be applicable only in cases where accidents have been caused by workmanship, material, execution or negligence on the part of the contractor and further the liability of the contractor will be limited to Rs.5 lakh for any one accident.
- (d) The contractor shall be responsible for all repairs and rectification of damages to completed works or works under execution due to DFCCIL accidents, thefts, pilferage or any other cause, without delay to minimize or to avoid traffic detentions, in a section until the installation are provisionally handed over to the employer.

1.5.13 Safety Measures :-

- (a) The contractor shall take all precautionary measures in order to ensure the protection of his own personnel moving about or working on the railway premises, but shall then conform the rules and regulations of the Railway if and when, in the course of the work there is likely to be any danger to persons in the employment of the contractor due to running traffic while working in the Railway siding and premises, the contractor shall provide flag man or look out men for protection of such persons. The employer shall remain indemnified by the contractor in the event of any accident occurring in the normal course of work, arising out of the failure of contractor or his men to exercise reasonable precaution at all places of work.
- (b) Blasting of rocks for foundation work shall be done only after due notice is given to the employer and time/s and date/s for blasting operations agreed to by the employer. Blasting, if required to be done in the vicinity of the track, shall not be undertaken until the Employer's flagmen on duty take necessary step to protect trains and the track is adequately protected by the contractor against damage by blasted rock. The contractor shall follow detailed instructions which will be issued to him regarding blasting operations in the vicinity of tracks.
- (c) The contractor shall abide by all Railway regulations in force for the time being and ensure that the same are followed by his representatives, Agents or sub - contractors or workmen. He shall give due notice to his employees and workers about provision of this para.
- (d) The works must be carried out most carefully without any infringement of the Indian Railway Act or the General and Subsidiary Rules in force on the Railway, in such a way that they do not hinder Railway operation or affect the proper functioning of or damage any DFCCIL equipment, structure or rolling stock

except as agreed to by the employer, provided that all damage and disfiguration caused by the contractor at his own cost failing which cost of such repairs shall be recovered from the contractor.

- (b) If safety of track or track drainage etc. is affected as a consequence of works undertaken by the contractor, the contractor shall take immediate step store normal conditions. In case of delay, the employer shall, after giving due notice to the contract or in writing, take necessary steps and recover the costs from the contractor.

1.5.14 Guarantee / Defect Liability Period :-

- (a) The Contractor shall guarantee that all the works executed under this contract shall be free from all defects and faults in material, workmanship and manufacture and shall be of acceptable standards for the contracted work and in full conformity with the technical specifications, drawings and other contract stipulations, **for a period of 6 months from the date of taking over by the Employer**
- (b) During the period of guarantee the Contractor shall keep available an experienced engineer /manpower to attend to any defective works / installations resulting from defective erection and/or defect in the installation supplied by the Contractor. This engineer shall not attend to rectification of defects which arise out of normal wear and tear and come within the purview of routine maintenance work. The contractor shall bear the cost of modifications, additions or substitutions that may be considered necessary due to faulty materials or workmanship for the satisfactory working of the equipment. The final decision shall rest with the Engineer his successor(s)/Nominee.
- (c) During the period of Guarantee the Contractor shall be liable for the replacement at site of any parts which may be found defective in the executed work whether such parts / structural elements of his own manufacture or those of his sub-contractor / supplier whether arising from faulty materials, workmanship or negligence in any manner on the part of the Contractor provided always that such defective parts as are not repairable at site are promptly returned to the Contractor if so required by him at his (Contractor's) own expenses. In case of parts of executed work detected during guarantee period, contractor should replace all such items irrespective of the fact whether all such items have failed or not. The Contractor shall bear the cost of repairs carried out on his behalf by the Employer at site. In such a case, the contractor shall be informed in advance of the works proposed to be carried out by the Employer.

- (d)** If it becomes necessary for the Contractor to replace or renew any defective portion of the structural elements until the expiration of six month from the date of such replacement or renewal or until the end of the above mentioned period whichever is later.

Such extension shall not apply in case of defects of a minor nature, the decision of the CGM/South/Mumbai or his successor/ nominee being final in the matter. If any defect be not remedied within a reasonable time during the aforesaid period the Employer may proceed to do work at the Contractor's risk and expense, but without prejudice to any other rights and remedies which the Employer may have against the Contractor in respect of such defects or faults.

- (e)** The repaired or renewal parts structure shall be delivered / supplied and erected / executed on site free of charge to the employer.
- (e)** Any materials, fittings, components or equipment's / structure supplied under items for supplying / providing and fixing in schedule shall also be covered by the provisions of this paragraph. The liability of the Contractor under the guarantee will be limited to re-supply of components / structure installation and fittings.

1.5.15 Final Acceptance:-

- (a)** The final acceptance of the entire work executed shall take effect from the date of expiry of the period of guarantee / Defect Liability period as defined in paragraph 1.5.14 above of the expiry of the last of the respective periods of guarantee of buildings, provided in any case that the Contractor has complied fully with his obligations under clause 1.5.14 in respect of each building, provided also that the attention has been paid by way of maintenance by the Employer.
- (b)** If on the other hand the contract or has not so complied with his obligation under Para 1.5.14 above in respect of any work, the Employer may either extend the period of guarantee in respect of that work until the necessary works are carried out by the Contractor or carry out those works or got them carried out suo moto on behalf of the Contractor at the Contractor's expenses. After expiry of the period of guarantee for each work, a certificate of final acceptance for the section shall be issued by the Employer and the last of such certificate will be called the last and final acceptance certificate. The contract shall not be considered as completed until the issue of final acceptance certificate by the Employer.
- (c)** The Employer shall not be liable to the Contractor for any matter arising out of

or in connection with the contract or execution of the work unless the Contractor shall have made a claim in writing in respect thereof before the issue of final acceptance certificate under this clause.

Notwithstanding the issue of final acceptance certificate the Contractor and the Employer (subject to sub-clause as above) shall remain liable for fulfilment of any obligation incurred under the provision of the contract prior to the issue of final acceptance certificate which remains unperformed at the time such certificate is issued and for determining the nature and extent of such obligation the contract shall be deemed to remain in force between the parties hereto.

1.5.16 Payment:-

Payment will be governed by the terms specified in Part-I, Chapter IV and in accordance with accepted schedule of prices, read with relevant para of the other parts and Chapters of the Tender Papers. The employer retains the right to withhold money due to the contractor arising out of this contract for any default of the contractor.

- (i) The Contractor shall, whenever required, produce or cause to be produced for examination by the Employer any quotation / invoice, cost of other account, book of account, voucher, receipt letter, memorandum paper or writing or any copy of or extract from any such document and also furnish information and returns verified in such manner as may be required in anyway relating to the execution of this contract relevant for verifying or ascertaining the cost of the execution of this Contract (the decision of the employer on the question of relevancy of any documents, information or return being final and binding on the parties). The Contractor shall similarly produce vouchers etc., if required, to prove to the Employer that materials supplied by him are in accordance with the specifications laid down in the contract.
- (ii) If any portion of the work be carried out by a sub-contractor or any subsidiary or allied firm or company the Employer shall have power to secure the books of such sub-contractor or any subsidiary or allied firm or company, through the Contractor, and such books shall be open to his inspection. The Contractor is not allowed to sublet the complete work. However, for any specialized work (for which specialized agencies are available), the Contractor should seek prior permission from the Employer for subletting the work to any sub-contractor. The Contractor will be required to submit the credential to the Engineer/Employer proving the specialization of the agency in that particular item of work.
- (iii) The obligations imposed by sub-clause (i) and (ii) above are without prejudice to the obligation of the Contractor under any statute, rules or order binding to the

Contractor or other conditions of the contract.

- (iv) It is an agreed term of the contract that the employer reserves the right to carry out post-payment Audit and /or technical examination of the work and the final bill, including all supporting vouchers, abstracts etc. and to make a claim on the Contract or for the refund of any excess amount paid to him if as a result of such examination any over payment to him is discovered to have been made in respect of any work done or alleged to have been done by him under the contract.

1.5.17 All payments in respect of the contract during the currency of the contract shall be made through Electronic Clearing System(ECS) / National Electronic Funds Transfer(NEFT/RTGS). The successful tenderer on award of contract must submit ECS/NEFT/RTGS Mandate Form complete in all respects as detailed at Form No. 8 of the tender document. However, if the facility of ECS/NEFT/RTGS is not available at a particular location, the payments shall be made by cheque.

1.5.18 Performance Guarantee:-

- (i) The Bank Guarantee for performance Guarantee shall remain valid until a date 60 days (or as specified in the Contract) after expiry of Defects Liability Period.
- (ii) The Bank Guarantee for performance Guarantee shall be submitted in variably in the format given in the bidding document.
- (iii) The performance Guarantee shall be released 21 days after issue of performance certificate.

1.5.19 Arbitration: - Refer to clause 63 of GCC.

PART – I
CHAPTER VI

ADDITIONAL SPECIAL CONDITIONS OF CONTRACT

PART – I

CHAPTER VI

1.0 Additional SPECIAL CONDITIONS OF CONTRACT

1.1 GENERAL:

In these Special Conditions of Contract the following terms shall have the meaning hereby assigned to them except where the context otherwise requires:

"General Condition of Contract" shall mean General Conditions of Contract – as contained in this Tender/ Bid document vide chapter IV First Sheet.

Standard Specifications shall mean "CPWD DSR 2018 Vol –I &II and MAHARASHTRA state SSR 2019-20" as the case (Schedule) may be in Tender form .

Standard Schedule Items/Rates shall mean the Items/Rates in the CPWD Delhi Schedule of Rates-2018 (Vol-1 & 2) and MAHARASHTRA SSR 2019-20.

All other terms shall have the same meaning as assigned to them in the General Conditions of Contract and Standard Specifications.

Where there is any conflict in conditions/Specifications contained in various parts, order of precedence will be as given below-

Any foot note given by the DFCCIL in the schedule of quantities and rates.

Description of item in the Schedule of Quantities and rates.

Special Specifications.

Additional Special Conditions/of Contract.

Standard Specifications.

Special Conditions of Contract.

General Conditions of Contract.

Where there is any conflict in the description, Unit, rate etc. of items based on CPWD DSR 2018 / Maharashtra state SSR 2019-20, as included in the "Schedule of items, Quantities and rate " incorporated in the tender/Contract document on the one hand and the CPWD DSR 2018 / MAHARASHTRA state SSR 2019-20 on the other hand, CPWD DSR 2018 / MAHARASHTRA and State SSR 2019-20 should prevail.

Every endeavour has been made to avoid any error which can materially affect the basis of the Tender and it is understood that the Contractor has taken upon himself and provided for the risk

of any error which may be subsequently noted and shall make no subsequent claim on account thereof.

1.2 PRODUCTION OF TEST CERTIFICATES:

The contractor shall have to produce Test Certificates for any items of material procured by him for use in the work as may be called for by the Engineer or his representative to establish that the materials conform to the specification for the works. The Contractor shall produce Test Certificates issued by an authority acceptable to the Engineer in regard to the relevant properties of high tensile steel wires, reinforcement steel or structural steel (as supplied and used by the Contractor) including the country name of manufacturer) .

1.3. PAYMENT OF ROYALTY CHARGES:

All taxes, royalty charges, etc. of whatever nature in connection with the work including extraction and supply of rubble stone/stone ballast/sand/moorum/earth or any other material used on the work shall have to be borne by the Contractor. The Contractor will be required to obtain a royalty clearance certificate from the concerned Revenue Authorities/Collector and produce the same to the Engineer after completion of the supply but before release of the final bill.

1.4. ROYALTIES AND PATENT RIGHTS:

The Contractor shall defray the cost of all royalties, fees and other payments in respect of patents, patent rights and licenses which may be payable to patentee, licensee or other person or corporation and shall obtain all necessary licenses.

The contractor shall indemnify, the Railway or any agent, servant or employee of the Railway against any action, claim or proceedings relating to infringement use of any patent or design any alleged patent or design rights and shall pay any royalties or other charges which may be payable in respect of any articles or materials or part thereof included in the contract. In the event of any claim being made or action being brought against the Railway or any agent, servant or employee of the Railway in respect of any such matters , as aforesaid, The contractor shall indemnify notified thereof. Provided that such indemnify shall not apply when such infringement has taken place in complying with the specific direction issued by the Railway but the contractor shall pay any royalties or other charges payable in respect of any such use.

1.5. INCOME TAX

Income Tax as per rates applicable/amended under the Income Tax Act of work shall be deducted at source unless the contractor is exempted by Income Tax Authorities.

1.6 GST

All the rates are inclusive of GST. No claim whatsoever shall be entertained for refund of GST.

1.7 PERMITS, FEES, TAXES & ROYALTIES

Unless otherwise provided in the contract documents, the contractor shall secure and pay for all permits, Government fees and licenses necessary for the execution and completion of the works. The contractor shall pay all taxes and duties, **including GST**. The quoted price includes GST. However, while submitting his bill, the contractor shall give the breakup of total amount of his bill by showing the GST (@ current rate of 12%) included in the price. Further, necessary deductions towards GST, TDS and Income Tax TDS shall be deducted from the Contractor's bills.

The DFCCIL authorities will not take any responsibility of refund of such taxes/fees. Any violation, in the legal provision of taxes, duties, permits and fees, carried out by the Contractor and detected subsequently shall be sole responsibility of the Contractor and his legal heirs.

1.8 STATUTORY INCREASE IN DUTIES, TAXES ETC

Tenderers will examine the various provisions of the Central Goods and Service Tax Act, 2017 (CGST)/Integrated Goods and service Tax Act, 2017(IGST)/ Union Territory Goods and service Tax Act, 2017(UTGST)/ respective state's State Goods and Service Tax Act (SGST) also, as notified by Central / State Govt. & as amended from time to time and applicable taxes before bidding. Tenderers will ensure that full benefit of input Tax Credit (ITC) likely to be availed by them is duly considered while quoting rates.

All the taxes and duties levied by the State and Central Govt. and by Local Bodies at the prevailing rates applicable on the date of receipt of tender shall be fully borne by the contractor and shall not be reimbursed to him on any account. The tender shall be inclusive of all taxes levies as mentioned in 1.7 above.

Further, **DFCCIL** shall not honour any claim arising out of any increase in any of the prevailing statutory duties, taxes, levies, octroi, etc. **(except GST)** At the time of quoting/ bidding contractor should bear the above fact in mind.

The successful tenderer who is liable to be registered under CGST/IGST/UTGST/SGST Act shall submit GSTIN along with other details required under CGST/IGST/UTGST/SGST Act to DFCCIL immediately after the award of contract, without which no payment shall be released to the contractor. The contractor shall be responsible for deposition of applicable GST to the concerned authority.

1.9. EXCISE DUTY OR ANY OTHER TAXES/DUTIES:

The contractor shall bear full excise duty, sales tax and / or any other taxes/ duties levied by State Government and / or Central Government/Local bodies from time to time. This would be entirely a matter between the contractor and the State / Central Government/Local bodies. No claim, what so ever, on this account shall be entertained by DFCCIL.

1.10. ROAD TAX CHARGES:

Road Tax/Charges levied by Government for movement of vehicles of contractor, used in transportation, shall be borne by the contractor and no re-imbursement on this account will be made by the DFCCIL.

1.11. FOREIGN EXCHANGE REQUIREMENTS:

Any demand of foreign exchange for importing of equipment's and materials shall not be accepted.

1.12: EMERGENCY WORKS

In the event of any accident or failure occurring in the execution of work/ arising out of it which in the opinion of the Engineer requires immediate attention, the Railway may bring its own workmen or other agency/agencies to execute or partly execute the necessary work or carry out repairs if the Engineer-in-charge considers that the contractor(s) is/are not in a position to do so in time without giving any notice and charge the cost thereof, to be determined by the Engineer-in-charge, to the contractor.

1.13. CUTTING/UP ROOTING OF TREES:

No extra rate shall be paid for cutting or up-rooting trees but the contractor would be authorised to take away the tree observing the forest laws of the land.

1.14. OBSERVANCE OF BONDED LABOUR SYSTEM (ABOLITION ORDINANCE ACT, 1975):

The "Bonded Labour System (Abolition Ordinance, 1975)" would apply to the present contract. The contractors shall duly observe the provisions thereof.

1.15. JURISDICTION OF COURTS:

If any dispute arises between the parties with respect to this contract, any application or suit shall be instituted only in the court within the local limits of whose jurisdiction, the CGM / SOUTH/ MUMBAI / DFCCIL Office is situated and both the parties shall be bound by this clause.

1.16. ANTI PROFITEERING CLAUSE:

The contractor should adhere to anti profiteering provisions as per section 171 of the CGST Act. Where due to change in the rates of GST / Change in law, the contractor gets any credits / benefits, the same shall be passed on to DFCCIL by way of reduction in prices.

2.0 EXTRA SAFETY PRECAUTIONS

2.1 SAFE METHODS:

The Contractor shall at all times, adopt such safe methods of working as will ensure safety of structures, equipment and labour. Safety rules that should be adhered to are given as guidelines in Annexure C. If at any time, the DFCCIL finds the safety arrangements inadequate or method of working unsafe, the Contractor shall take immediate corrective actions as directed by the Engineer's representative. Any directions in the matter shall in no way absolve the Contractor of his sole responsibility to adopt safe working methods. The Contractor is responsible for providing skilled personnel and adequate expert supervision so as to ensure complete safety.

It is the responsibility of the Contractor to ensure safe loading, transportation and unloading of materials and equipment etc. Any loss or damage caused to adjacent Railway property will have to be made good by the contractor at his/their own cost, failing which recoveries shall be effected from the running bill of the contractor as per the Clause No. 46(1) of the General Conditions of Contract.

The liability arising out of accidents, if any, to persons will be met by the contractors and the Railway will not be responsible for any damage or compensation thereof. The contractor shall follow the provisions laid down in Contract Labour Act, 1972.

The contractor shall be entirely responsible for ensuring safety of his labour, vehicles, plant or equipment while working along or near the track and highways and shall programme his working so as not to interfere with the movement of trains and road traffic. No extra payment shall be allowed to the contractor for all safety precautions to be observed during the execution of the work. The cost of all such precautions shall be deemed to be included in the rates for all items of the schedule.

2.2. PRECAUTIONS WHILE WORKING IN THE VICINITY OF TRACK:

2.2.1 The contractor shall not allow any road vehicle belonging to him or his suppliers etc., to ply in railway land next to the running line. If for execution of certain works e.g. excavation or construction of any part of the building, where road vehicles are necessary to be used in railway land next to the railway line, the contractor shall apply to the engineer in-charge for permission giving the type and no. of individual vehicles, names and license particulars of the drivers, location, duration and timings for such work/movement. The engineer-in charge or his authorised representative will personally counsel examine & certify, the road vehicle drivers, contractor's flagmen and supervisor and will give written permission giving

names of road vehicle drivers, contractor's flagmen and supervisor to be deployed on the work, location, period and timing of the work. This permission will be subject to the following obligatory conditions:

The road vehicles and drivers will ply only between sunrise and sunset.

Nominated vehicles and drivers will be utilized for work in the presence of at least one flagman and one supervisor certified for such work.

The vehicles shall ply 6m clear of track. Any movement/work at less than 6m and upto minimum 3.5 clear of track centre shall be done only in the presence of DFCIL / Railway employee authorised by the Engineer-incharge, along with erection of safety fencing. No part of the road vehicle will be allowed at less than 3.5m from track centre. Cost of such railway employee shall be borne by the railway.

The contractor shall remain fully responsible for ensuring safety & in case of any accident, shall bear cost of all damages to this equipment & men and also damages to railway and its passengers.

Semi-permanent fencing as approved by the Railway Engineer should be provided by the contractor at his own cost along the running line at a distance of 3.5 metres from the centreline of the nearest track at work sites where vehicles/machineries are likely to ply close to the track. This fencing should remain in position till the vehicles/machinery are required to work adjacent to running line.

Engineer-incharge may impose any other condition necessary for a particular work or site.

Suitable scaffolds should be provided for workmen for all works that cannot safely be done from the ground or from solid construction except for such short period 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 hand-holds shall be provided on the ladder and the ladder shall be given an inclination not steeper than 1/4 to 1 (1/4 horizontal to one vertical).

2.2.3 Scaffolding or staging more than 3.5 meters above the ground or floor, swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly attached bolted, braced and otherwise secured at least 1 meter high above the floor or platform 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 so fastened as to prevent it from swaying from the building or structure.

2.2.4 Working platform gangways and stairways should be so constructed that they should not sag unduly or unequally, and where the height of the platform or the gangway or the

stairway is more than 3.5 meters 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.

2.2.5 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 ladders upto and including 3.5 metres in length. For longer ladders this width should be increased by at least 20 mm for each additional metre of length. Uniform steps spacing shall not exceed 300 mm. Adequate precautions shall be taken to prevent danger from electrical equipment's. No materials on any of the sites of 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 the defence. of every suit, 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 be awarded in any suits, action or proceedings to any such persons or which may with the consent of the contractor be paid to compromise any claim by any such persons.

2.2.6 Demolition: Before any demolition is commenced and also during the process of the work:

All roads and open areas adjacent to the work site shall either be closed or suitably protected;

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;

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.

All necessary personal safety equipment as considered adequate by the Engineer should be kept available for the use of the persons 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. In addition, workers employed on mixing asphalted materials, cement and lime mortar shall be provided with protective goggle.

workers engaged in white-washing and mixing or stacking of cement bags or any materials which is injurious to the eyes shall be provided with protective goggles;

workers engaged in welding works shall be provided with protective goggles;

stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.

2.2.7 The contractor shall submit the methodology proposed to be adopted for execution of works for approval of the Railway Engineer with a view to ensure safety of trains, passengers & workers and he shall also ensure the methods and arrangements are actually available at site before start of work and contractor's supervisors and workers have clearly understood the safety aspects and requirements to be adopted / followed while executing the work.

2.2.8 The contractor shall maintain an assurance register at each site, which shall be got signed by both DFCCIL supervisor as well as contractor's supervisor in token of their having understood the safety precautions to be observed at site.

2.2.9 JOINT PROCEDURE ORDER FOR UNDERTAKING DIGGING WORK IN THE VICINITY OF UNDERGROUND SIGNALLING, ELECTRICAL AND TELECOMMUNICATION CABLES.

A	A number of Engineering works in connection with gauge conversion / doubling / third line are in progress on various railways, which require extensive digging work near the running track, in close vicinity of the working S&T cables carrying vital safety circuits as well as electrical cables feeding the power supply to Cabins, ASM room, RRI Cabin, Intermediate Block Huts (IBH) etc. Similarly, S&T organization under open line on construction units under CAO/C are executing various signaling and telecommunication works requiring digging of earth for laying of cables or casting of foundations for the erection of signal posts etc. RailTel are also executing the work of laying of quad cable and OFC on various Railways as a part of sanctioned works for exclusive use of Railways for carrying voice and data i.e. administrative and control communication, PRS, FOIS etc. or shared by RailTel Corporation of India Ltd. On certain sections digging is also required for laying of electrical cable and casting of foundation for the erection of OHE masts by Electrical Deptt. Generally, these works are executed by contractors employed by these organizations.
B	However, while carrying out these works in the vicinity of working signaling, telecommunication and electrical cables, at times, cable cuts take place due to JCB machines working along the track or during the digging work being done by Contractors carrying out the Civil Engineering Works. Similarly, such cable cuts are also resulting due to works undertaken by S&T or Electrical deptts. Such Cable faults results in the failure of vital signaling and telecommunication circuits.
C	Henceforth, the following joint procedure shall be followed by Engineering, Electrical and S&T (and RailTel organization, wherever such works are being done by them) Officers of the respective divisions and by the Construction Organization, while carrying out any digging work near to existing signaling & telecommunication and electrical cables, so that the instances of cable cut due to execution of works can be controlled and minimized.

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1	S&T Department (and RailTel, where they have laid the cables) & Electrical Deptts. shall provide a detailed cable route plan showing exact location of cable at an interval of 200m or wherever there is change in alignment so that the same is located easily by the Civil Engineering official/contractor. This cable route plans shall be made available to the PM/DyCPM of DFCCIL as the case may be by Sr.DSTE/DSTE or Sr.DEE/DEE of the divisions within a reasonable time in duplicate. DPM/DyCPM of DFCCIL will send copies to their field unit i.e. Ex./Sr.Ex./APM/DPM
2	Before taking up any digging activity on a particular work by any agency, Sr.DSTE / DSTE or Sr.DEE/DEE of the section shall be approached in writing by the concerned Engg. or S&T or Electrical officer for permitting to undertake the work. After ensuring that the concerned executing agencies, including the contractor have fully understood the S&T and Electrical cable route plan shall be permitted the work in writing.
3	After getting the permission from S&T or Electrical Deptt. as the case may be, the relevant portion of the cable route plan shall be attached to the letter through which permission is issued to the contractor by concerned Engg. official for commencement of work and ensuring that the contractors have fully understood the cable route plan and precautions to be taken to prevent damage to the underground cables. The contractor shall be asked to study the cable plan and follow it meticulously to ensure that the safety of the cable is not endangered. Such a provision, including any penalty for default, should form part of agreement also. It is advisable that a suitable post of SE (Sig) or SE (Tele) or SE (Elect) shall be created chargeable to the estimates of doubling / Gauge conversion, who can help engg. agencies in the execution of the work. However basic responsibility will be of the Department executing the work and the Contractor.
4	The DFCCIL shall pass on the information to the concerned SE (Sig) or SE (Tele) or SE (Elect) about the works being taken up by the contractors in their sections at least 3 days in advance of the day of the work. In addition, Engineering control shall also be informed by DFCCIL, which in turn shall pass on the information to the Test Room / Network Operation Centre of RailTel / TPC / Electrical Control.
5	On receiving the above information, SE (Sig) or SE (Tele) or SE (Elect) shall visit the site on or before the date of taking up the work and issue permission to the contractor to commence the work after checking that adequate precautions have been taken to avoid the damage to the cables. The permission shall be granted within 3 days of submission of such requests.
6	The name of the contractor, his contact telephone number, the nature of the work shall be notified in the Engineering Control as soon as the concerned Engg. official issued the letter authorizing commencement of work to the contractor. Test Room be given a copy and Test Room shall collect any further details from the Engineering Control and shall pass it on to S&T / RailTel& Elect. Officials regularly.
7	In case of works being taken up by the State Government, National Highway Authority etc., the details of the permission given i.e. the nature of work, kilometer etc. be given to the Engineering Control including the contract person's number so that the work can

	be done in a planned manner. The permission letter shall indicate the contact numbers of Test Room / Network Operations Centre of RailTel / TPC/ Elect. Control.
8	Where the nature of the work taken up by the Engineering department is such that the OFC or other S&T cables or Electrical cables is to be shifted and relocated, notice of minimum one week shall be given so that the Division / RailTel / Construction can plan the works properly for shifting. Such shifting works shall, in addition, for security and integrity of the cables, be supervised by S&T supervisors / TailTel supervisors / Electrical Supervisors.
9	The concerned DFCCIL supervisors, supervising the work of the contractor shall ensure that the existing emergency sockets are not damaged in view of their importance in providing communication during accident / emergency.
10	In case of minor nature of works where shifting of cable is not required, in order to prevent damage to the cable, the civil Engineering Contractor shall take out the S&T or optical fibre cable or Electrical cable carefully from the trench and place it properly alongside at a safe location before starting the earthwork under the supervision of SE (Sig) or SE (Tele) or SE (Electrical). The cable shall be reburied soon after completion of excavation with proper care including placement of the brick over the cable by the concerned S&T supervisors or Electrical Supervisors. However, the work will be charged to the concerned engineering works.
11	In all the sections where major project are to be taken up / going on RailTel / S&T Deptt. shall deploy their official to take preventive / corrective action at site of work.
12	No new OFC/Quad cable shall be laid close to existing track. It shall be laid close to Railway boundary as per extant instructions i.e. 1.0 m from the Railway boundary to the extent possible to avoid any interference with future works (doubling etc). It shall be ensured in the new works of cable laying that the cable route is properly identified with electronic or Concrete markers. Henceforth, wherever cable laying is planned and before undertaking the laying work, the cable route plan of the same shall be got approved from the concerned Sr. DEN or Dy. CE / Constn. to avoid possible damages in future. Such approvals shall be granted within 07 days of submission of the requests.
13	The works of excavating the trench and laying of the cable should proceed in quick succession, leaving a minimum time between the two activities.
14	Any damage caused to OFC/Quad cable or Electrical cable during execution of the work, necessary debit shall be raised on Engineering Department who shall bear the cost of the corrective action.
15	All types of bonds i.e. rail bond, cross bond and structure bond shall be restored by the Contractor with a view to keep the rail voltage low to ensure safety of personnel.
16	Above joint circular shall be applicable for construction as well as open line organization of Engineering, S&T & Electrical.
17	The S&T cable and Electrical cable route plan should be got approved from the concerned Sr. DSTE / DSTE & Sr. DEE / DEE respectively, before undertaking the work and completion cable route plan should be finalized Block section by Block section as soon the work is completed.

2.2.10 FORM FOR ENGINEERING WORK PERMIT (EWP)

1. Name of the Contractor Supervisor
2. Location of work
3. Nature of work
4. Agency
5. Machineries deployed
6. Working hours
7. I have personally checked the arrangements of rope barricading, fencing at turning locations, posting of staff by the railway by the Contractor, erection of display boards training of staff, issue of permits to drivers and I am satisfied that it shall be possible to adhere to the standard safety precautions at site as reproduced in the enclosed Annexure 'S' except those indicated in para 8 below. Further I have made all the departmental arrangement require for adherence of safety precautions.
8. In case of following it shall not be possible to adhere to Annexure 'S' provisions as mentioned below.
9. However, in view of Para 8 following extra safety provisions will be taken at site to ensure safety.

Executive/ DFCCIL

Remarks of APM/DFCCIL

Remarks of Dy.CPM/DFCCIL

Based on the above certificate, I hereby permit the above work for a period of _____ days i.e. upto _____.

Dy.CPM/Engg/DFCCIL

Date:

C/- Sr. DSO-BCT, Sr. DEN (NE) CSMT or DEN/E/CSMT, AEN concerned, Contractor's representative. (with 5 spare copies).

APM/DFCCIL In-Charge

PWI © Safety

CGM/South/DFCCIL

Notes

1. A copy of this permit on issue shall be pasted on the site order book.
2. Each work location shall require separate EWP

ANNEXURE 'C'

1.0 Safety precautions: General

Safe working of contractors: A large number of men and machinery are deployed by the contractors for running room building works, it is therefore essential that adequate safety measures are taken for safety of the trains as well as the work force. The following measures should invariably be adopted.

- i) The contractor shall not start any work without the presence of DFCCIL / Railway supervisor or his representative and contractors supervisor at site.
- ii) Where ever the road vehicles and/or machinery are required to work in the close vicinity of railway line, the work shall be so carried out that there is no infringement to the railway's schedule of dimensions. For this purpose the area where road vehicles and/or machinery are required to ply, shall be demarcated and acknowledged by the Contractor. Special care shall be taken for turning/reversal of road vehicles/machinery without infringing the running track. Barricading shall be provided wherever justified and feasible as per site conditions.
- iii) The look out and whistle caution orders shall be issued to the trains and speed restrictions imposed where considered necessary. Suitable flagmen/detonators shall be provided where necessary for protection of trains.
- iv) The supervisor/workmen should be counselled about safety measures. A competent certificate to the contractor's supervisor as per proforma annexed shall be issued by APM which will be valid only for the work for which it has been issued.
- v) The unloaded ballast/rails/sleepers/other P. Way materials after unloading along track should be kept clear off moving dimensions and stacked as per the specified heights and distance from the running track.
- vi) Supplementary site specific instructions, wherever considered necessary, shall be issued by the Engineer-in-charge.
- (vii) The Engineer-in-charge shall approve the methodology proposed to be adopted by the contractor, with a view to ensure safety of trains, passengers and workers and he shall also ensure that the methods and arrangements are actually available at site before start of the work and the contractor's supervisors and the workers have clearly understood the safety aspects and requirements to be adopted/followed while executing the work.

There shall be an assurance register kept at each site, which will have to be signed by both, i.e. DFCCIL Supervisor or his representative as well as the contractor's supervisor as a token of their having understood the safety precautions to be observed at site."

2.2.11 Supplementary Precautions for working at Running Room site.

- i) Barbed wire fencing containing 4 horizontal and 2 cross wires with posts at every 3m shall be erected along the running line at a minimum distance of 3.5m from the nearest centre of tracks to indicate the area not to be infringed under any circumstances. The remaining area of work should be demarcated by providing rope barricades and sign boards which will enable the workman posted at site and also the lorry drivers to have clear demarcation of the work site and guidelines on movement of vehicles.
- ii) At places of turning of vehicles planned out a safety guard/flagman in special orange colour luminous/reflective uniform shall be posted during execution of the work who shall supervise the turning of vehicles after seeing the movement of trains and shall ensure that under no circumstances the vehicle touches the fencing erected. These safety guards shall also carry Binoculars so as to watch the vehicles/trains from a distance as well for any necessary action by him if need be. Executive/DFCCIL in charge of the work shall ensure that slopes of the nominated places are kept away from the running lines so as to avoid the possibility of any rolling down of vehicles.
- iii) These nominated places shall have the status as of a Station for a run through train and the safety guard/flagman shall stand attentively facing the track and should hold green and red hand signal flags furled up on separate sticks, the green flag in the left hand and red flag in the right hand during day time and a lighted hand signal lamp with white light pointing towards passing trains during night time. If any unsafe condition is noticed on the train he shall attract the attention of Train crew by blowing whistle as well as showing danger or other signal as warranted. At the nominated turning place of each location, a board with text "Vehicle Turning station/W" shall be erected by the safety guard. 'W' indicates the need for whistling by incoming train motorman / driver on the nearest track. In the event of any untoward incident like say a vehicle infringing the track safety guard/flagman shall arrange to stop the train by planting short circuit operating clip and putting detonators, showing red hand signal as in case of obstruction on a track.
- iv) At such nominated places temporary "whistle boards" shall be erected so as to invite the attention of Motorman/drivers to whistle when passing such locations.
- v) At each site where construction vehicles of the contractor are required to ply along the track a patrolman by the Contractor shall be deployed to see that the driver do not have any tendency to come closer to the track and infringe.

- vi) The Drivers/Motormen of trains plying on the nearest track shall be served with caution orders to look out for any obstruction at the places of work that infringes the train movements.
- vii) All the authorized Drivers of the road vehicles/machines shall be given a red flag/ red lamp so that in the event of any obstruction they atleast stop the incoming trains.
- viii) The Executive/DFCCIL incharge shall inspect every site every alternate working day and record his observations in Site order Book clearly indicating if the safety precautions are being adhered to or not /in case of violation or inadequacy, he shall suspend the work and report to APM / DPM or his Superiors.
- ix) APM in charge shall carry out safety inspection once in a week and record his observations in the site order book pointing out deficiencies if any. In case he finds that safety precautions being taken are not as per the Standing procedure order he shall suspend the work and report to Dy.CGM/Engg/DFCCIL and all others as listed in the permit to work.
- x) Contractor's representative. as well as APM I/C while taking measurements & recording the bill shall certify that all safety precautions stipulated in General/Special conditions of Contract have been followed by the Contractor.
- xi) Dy.CPM/Engg/DFCCIL in charge shall carry out detailed safety inspection once in a month of each site and shall scrutinize site order book in respect of adherence to safety precaution once in a fortnight. It shall be the responsibility of each APM to bring his site order books per bearer once in a fortnight to his Dy.CPM/Engg/DFCCIL incharge & put up to him. Dy.CPM/Engg/DFCCIL I/C must return the site order book the same day so as not to keep the site without site order book for more than a working day.
- xii) All the contractors shall be given copy of the procedure order so that they in turn drill/train their staff.
- xiii) The Contractor shall not allow any road vehicle (even belonging to him or his suppliers etc.) to ply in railway land next to the running line. If for execution of certain works viz. Earthwork for parallel railway line and supply of ballast for new or existing rail line gauge conversion etc. road vehicles are necessary to be used in railway land next to the railway line, the contractor shall apply to the engineer-in-charge for permission giving the type & no. of individual vehicles, names & licence particulars of the drivers, location, duration & timings for such work/movement. The engineer-in-charge or his authorized representative shall personally check the validity of road vehicles, driving license and counsel, examine & certify, the road vehicle Drivers, contractor's flagmen & supervisor and will give written permission giving names or road vehicle drivers, contractor's flagmen and supervisor to

be deployed on the work, stating location, period and timing of the work. This permission will be subject to the following obligatory conditions.

- a) The road vehicles shall NOT ply between sunset and sunrise and when visibility is impaired due to dust storm/for etc. during day hours.
- b) Nominated vehicles & drivers will be utilized for work in the presence of at least one flagman & one supervisor certified for such work.
- c) The vehicles shall ply 6 m clear of track. Any movement/work at less than 6 m up to minimum 3.5m clear of track centre, shall be done only in the presence of DFCCIL employee authorized by the Engineer-in-charge. No part of the road vehicle will be allowed at less than 3.5m from track centre.

XVII) The movement of Lorries near the track shall be prohibited during night as well as during day when visibility & adequate protective measures including lighting shall be ensured & specific approval of Dy. Chief Engineer obtained for each such occasion.

XVIII) Machines and vehicles which are required to move at less than 8 mts. away from the track, it shall be in the presence of railway employee authorized by Engineer-in-charge.

XIX) The contractor's representative shall be issued a certificate by DPM/APM to the effect that they have acquired sufficient knowledge about the Safety precautions that are needed to be followed while working near the track.

2.2.12 On receiving the application for permit to work through APM/DPM, Dy.CPM/Engg/DFCCIL© shall issue permit to work to the Contractor's representative..

2.2.13 A copy of the permit to work shall be endorsed to Sr. DSO-BCT Sr.DEN(N), AEN under SR DEN(N) BCT o, Chief Contractor's representative. (P. Way) concerned, Contractor's representative. (P. Way) concerned with 5 spare copies.

3.0 Site Lab

3.1 The contractor shall set up a site lab with minimum equipment listed below;

- 1. IS sieve sets for sieve analysis.
- 2. 15 X 15 X15 cms cubes minimum 15 nos.
- 3. Cubes for cement test of 7.09 X 7.09 X cm
- 4. Vicate apparatus.
- 5. Cube testing machine of minimum 100 T capacities.
- 6. Measuring cylinder.

In case they have not brought the aforesaid articles or have not set up the lab, DFCCIL shall set up the same and actual cost plus 10% shall be recovered from the bills.

4.0 Disaster management

1.7.7.1 "All the available vehicles and equipment of the contractor can be drafted by the DFC/Railway Administration in case of accidents/natural calamities involving human lives. The payment for such drafting shall be made according to the rates as shall be fixed by the Engineer. However, if the contractor is not satisfied with the decision of the Engineer in this respect he may appeal to the CGM-DFCCIL within 30 Days of getting the decision of the Engineer, supported by analysis of the rates claimed. The CGM-DFCCIL decision after hearing both the parties in the matter would be final and binding on the contractor and the Railway."

5.0 Submission of Photographs and Videos:

5.1 The contractor shall arrange to submit three sets of minimum 200 Nos. of photographs of size 5"x7" showing various operations and stages of different activities of the project. The photograph shall be taken for every important activity during execution of work as decided by the Engineer for display and record purpose. In addition, the contractor will submit 3 sets of 2 laminated photographs of size 20"x30". If the photograph as listed above are not submitted then recovery of Rs.75,000/- shall be made from the contractor's bill.

6.0 Special Conditions for working of Road Cranes:

6.1 No machine shall be selected to do any lifting on a specific job until its size and characteristics are considered against the weights, dimensions and lift radii of the heaviest and largest loads.

6.2 The contractor shall ensure that a valid Certificate of Fitness is available before use of Road Cranes.

6.3 Contractor can utilise the services of any competent person as defined in Factories Act, 1948 and approve by Chief Inspector of Factories.

6.4 The laminated photocopies of fitness certificate issued by competent person, the operator's photo, manufacturer's load chart and competency certificate shall always be either kept in the operator cabin or pasted on the visible surface of the lifting appliances.

6.5 All lifting appliances including all parts and gears thereof, whether fixed or movable shall be thoroughly tested and examined by a competent person once at least in every six months or after it has undergone any alterations or repairs liable to affect its strength or stability.

6.6 In addition, it is also advised that for all the works being executed by the Road Cranes, the above stipulations should be checked. These instructions should be strictly observed.

PART II

TECHNICAL SPECIFICATION

PART – II

TECHNICAL SPECIFICATION

1.0 GENERAL INFORMATION

GENERAL: The work under this tender shall be executed strictly in accordance with constructional and material requirements defined under these specifications. The Contractor shall carefully acquaint himself with these specifications to determine his contractual obligations for the work. For technical specifications, refer 1) CPWD Specifications 2019 (Vol-1 & 2) amended upto 28 days prior to the opening of the tender 2) Standard specification book published by Govt. of Maharashtra, Volume 1 (latest edition) amended upto 28 days prior to the date of opening of tender. The tender has reference of three schedules – 1) CPWD DSR 2018 (vol -1 & 2), items therein, 2) Govt of Maharashtra SSR (19-20) and 3) Market Rate items. Accordingly, the corresponding specifications shall be applicable to those items. The conditions of these specifications will be binding on the Contractor and no deviation shall be permissible unless specifically approved by the Consultant / Engineer's representative in writing. In absence of any detailed Specifications, these specifications, latest Indian Standard specifications and code of practice shall become applicable. Wherever the codes and specifications are silent then the same shall be governed by sound engineering practices and the decision of the DFCCIL in matters of interpretation etc, shall be final and binding on the Contractor.

CPWD DSR 2018, Volume I & II and CPWD Specifications 2019 (Vol-1 & 2) are available on-line and can be downloaded from the site www.cpwd.gov.in while Maharashtra SSR 2019-20 is also available on-line and can be downloaded from the site <https://dsr.emahapwd.com>.

A. DRAWINGS / DIMENSIONS:

Figured dimensions on drawings shall supersede measurements by scale and drawings to a large scale take precedence over those to a smaller scale. Special dimensions or directions in the specifications shall be checked on site. Measurements and other information concerning the existing site on the drawings are believed to be correct, but the Contractor shall verify them for himself and also examine the nature of the ground as no claim or allowance whatsoever shall be entertained hereinafter on account of any errors or omissions in the levels or the description of the ground turning out to be different from what was expected or shown on the drawings.

B. CORRELATION OF DRAWING:

Before commencement of work, the Contractor shall correlate all relevant structural, Construction and services drawings and satisfy himself that the information available is

complete and unambiguous. The Contractor shall be responsible for any error / difficulty in execution / damage incurred owing to any discrepancy in the drawings which has been overlooked by him and has not been brought to the notice of the Engineers representative / Consultant before execution.

C. B.I.S CODES OF PRACTICE:

Wherever any reference is made in the specifications to **any bureau of Indian Standard (IS)** code of practice, it shall be understood to indicate the latest version of the code of practice in usage at the time of construction.

D. ALL SIMILAR RATES TO HAVE SAME QUOTED RATE

It shall be noted by the bidder that a similar item repeated at various sub heads of the tender, he should quote same rates. For any reasons different rates are quoted the lowest rate shall be considered for deriving the substituted / extra item rate if required.

2.1 SPECIFICATIONS FOR EXCAVATION AND EARTHWORK

2.1.1 SCOPE

The scope of work broadly includes but is not necessarily limited to the following i.e. clearing of the site, excavation of foundation trenches, back-filling, disposal of surplus earth as required including dewatering, shoring and strutting. Contractor shall provide all tools, labour, equipment and incidentals necessary, required for completion of all aspects of work covered in these specifications.

2.1.2 TYPES OF SOIL

Contractor shall thoroughly acquaint himself with the types of soil in excavation by an inspection of nature of the ground at site & scrutiny of the investigation details available with DFCCIL.

2.1.3 CLEARING THE SITE

The site on which the structure is to be built shown on the drawing and the area required for setting out and other operations like road, drains, sheds, etc. should be cleared and all

obstructions, loose stones, materials, and rubbish of all kinds, stump, brush wood and trees removed as directed, roots being entirely grubbed up. All useful materials obtained will be the properly stacked or stored as directed by Engineer in charge. Rejected materials will be removed by the contractor to his own dump.

2.1.4 GROUND LEVELS AND SITE LEVEL PLAN

Before starting the excavations, the requisite block levels of the entire plot shall be taken by the contractor in consultation with the Consultant and a proper record of these levels to be kept, which shall be jointly signed by the Contractor and the Consultant. A block level plan showing-all the ground levels of the plot shall be prepared and shall jointly be signed by the Contractor the Consultant and the Engineers representative.

2.1.5 SETTING OUT

After completion of ground improvement work in the earmarked area where Running Room Building will be erected and after the field and laboratory tests are repeated to assess the degree and adequacy of the subsoil conditions ,the data will be shared with the contractor ,for him to commence his scope of works, after clearing the site, and preparing the site level plan, the Contractor will set out the center lines of the building or other involved works and get the same approved from the Consultant. It shall be the responsibility of the Contractor to install substantial reference marks; bench marks etc. and maintain them as long as required by the Consultant. The Contractor will assume full responsibility for proper setting out, alignment, elevation and dimension of each and all parts of the works.

2.1.6 EXCAVATION AND PREPARATION OF FOUNDATIONS FOR CONCRETING

The Foundation trenches shall be dug ,wet or dry, to the dimensions as shown on the drawings or as directed by the Consultant. The excavated materials shall be stacked at a sufficient distance away from the edge, of the excavated pit so as not to endanger the stability of the sides. The soil heap shall not exceed more than 2 mtrs. from the ground.

The contractor shall, at his expense and without any extra charge, make provision for all shoring and strutting, extra excavation in slope, extra excavation in working space, dredging or bailing out water, and the excavation shall be kept free from water when the foundation work is in progress.

If excavation is carried out to greater width, length or depth than specified, extra depth shall be made up by filling in lean concrete and extra length or width by filling in with earth rammed hard or by masonry, as shall be borne in full by the contractor.

If required to protect the sides of pits and trenches, timber shoring and strutting shall be erected. The timbering shall be closed or open depending on the nature of the soil and work, and arrangement of timbering including sizes and spacing of members used shall be as approved by the Consultant. NO extra charges shall be admissible on this account. During the execution of work it is likely that the Contractor may meet with telephone cable, electrical cables, water supply lines, sanitary lines etc. it will, therefore, be the responsibility of the Contractor to protect them carefully. All such cases should be brought to the notice of the Engineer-in-charge by the Contractor and also to the concerned Department. Any damages whatsoever done to these cables and pipelines by the Contractor shall be made good by him at his cost.

The bottoms of all excavation shall be trimmed and leveled in accordance with drawings / directions of the Consultant / Engineers representative. The bottoms of all excavation shall be rammed and compacted upto 95% proctor density and wetted before deposition of concrete. The contractors shall report to the Consultant / Engineers representative when the excavation is ready to receive concrete. NO concrete shall be placed in foundations until the contractor has obtained the approval of Consultant /Engineers representative.

The Contractor shall be entirely and exclusively responsible for the horizontal and vertical alignment, the levels and correctness of every part of the work and shall rectify effectually any errors or imperfections therein, such rectifications shall be carried out by the Contractor, at his own cost, when instructions are issued to that effect by the Engineer-in-charge.

2.1.6.1 PROTECTION

All foundation trenches and similar excavations shall be strong, fenced and marked with red lights at night for watchmen to avoid accidents. Adequate protective measures shall be taken to see that the excavation does not affect or damage adjoining structures. All measures required for the safety of the excavation, the people working in and near the foundation trenches, property and the people in the vicinity shall be taken care by the Contractor at his own cost, being entirely responsible for any injury and damage to property caused by his negligence or accident due to his construction operations.

2.1.6.2 STACKING OF EXCAVATED MATERIALS:

Work for excavation shall include sorting out of useful materials and stacking them on site as directed. Materials suitable and useful for back-filling, plinth, filling, leveling of the plot or other use shall be stacked at convenient places, but not in such a way as to obstruct free movement of men, equipment and vehicles or encroach on the area required for constructional purposes.

2.1.7 BACKFILLING

- 2.1.7.1 Earth obtained from excavation (or approved earth brought from outside for which no extra payment shall be made) shall be filled in layers as described in 2.1.7.3 around the foundations and under floors, In case extra earth used for filling is required under floors, plinth protection etc the contractor will do at their own cost. The lump sum offer shall be deemed to include the earth filling required under floors and plinth protection with plinth height shown in Drawing,

2.1.7.2 QUALITY OF FILL

Fill shall be of well compacted, well graded earth or sand and shall be free from tree stumps, organic matter, seed and peat etc ,where earth or sand from source other than excavation at site is used, the quality of such earth or sand shall be the same as that obtained from excavation at site, or superior to it. Fine sand for filling is River Sand. Black cotton soil shall not be used for back filling or plinth filling.

2.1.7.3 COMPACTION

The fill shall be spread in layers not exceeding 20 cm thick and each layer shall be watered and thoroughly consolidated by suitable mechanical rollers, rammers, vibrators or other approved plant or system of compaction. The fill material shall be pulverized before depositing in place. An optimum moisture content shall be maintained for the filled materials. Compaction shall be done so as to achieve a dry density of not less than 90% of the maximum density obtained at optimum moisture content, except for the upper 20 cm layer which shall be compacted to a density of not less than 95% of the maximum density. In order that the fill shall be reasonably uniform through out, the material shall be dumped in place in approximately horizontal layers "Edge dumping", a process by which the materials is pushed off edge of the fill and allowed to roll down the slope shall not be carried out. If there is traffic over the fill during construction, either by construction equipment or otherwise, it should be routed to make the compaction as uniform load shall be maintained and also care shall be taken to prevent any wedging action.

2.1.8 SURPLUS EXCAVATED MATERIAL

All excavated material certified as surplus and not useful, shall be removed by the Contractor from the site in an approved manner at his own cost and risk so as indemnify owner from any claims any time of whatsoever nature.

2.2 . SPECIFICATIONS FOR ANTI-TERMITE TREATMENT

2.2.1 GENERAL

Prevention of termite from reaching the super structure can be achieved by creating a chemical barrier between the ground and the building by treating the soil beneath the building and around the foundations. The work shall be carried out as per IS 6313 part II. of 2001 or the latest edition. This shall be provided to sides and bottom of trenches and footings including treating the backfill of foundations up to ground level and the vertical surface of wall, and filling of each under floors and treating the surface at ground level 900 mm around the building.

2.2.2 MATERIAL

Anti-termite treatment, shall be carried out strictly in accordance with CPWD specifications using Chloropyrifos (CPP) an **Emulsified concentrate @ 1% concentration or any other approved chemical.**

2.2.3 PRE-CONSTRUCTION CHEMICAL TREATMENT

This is a process in which chemical treatment is applied to a building in the early stages of its construction as specified In **IS 6313 part II of 2001** or the latest edition. Hand operated pressure pump shall be used for uniform spraying of the chemical. To have proper check for uniform spraying of chemical graduated containers shall be used. Proper check should be kept that specified quantity of chemical is used for the required areas during the operation.

2.2.4 TIME OF APPLICATION

Soil treatment shall start when foundation trenches and pits are ready to take lean concrete in foundations. Laying of lean concrete shall start when chemical emulsion has been absorbed by the soil and the surface is quite dry. Treatment should not be carried out when it is raining or soil is wet with rain or sub soil water. The foregoing applies also in the case of treatment to the filled earth surface within the plinth before laying the sub grade for the floor.

2.2.5 DISTURBANCE

The treated soil barriers shall not be disturbed after they are formed. If by chance, treated soil barriers are disturbed, immediate steps shall be taken to restore the continuity and completeness of the barrier system.

2.2.6 TREATMENT OF COLUMN PITS AND WALL TRENCHES

- 2.2.6.1 The bottom surface and the sides (up to a height of above 300 mm) of the excavation made for column pits and trenches shall be treated with the chemical as specified in IS 6313 Part II of 2001 or the latest edition.
- 2.2.6.2 After the column foundation and the wall foundation come up, the back fill in immediate contact with the foundation structure shall be treated as specified in IS 6313 Part II of 2001 or the latest edition of the vertical surface of the substructure for each side. If water is used for ramming the earth fill, the chemical treatment shall be carried out after the ramming operation is done by prodding the earth at 200 mm centers close to the wall surface and spraying the chemical with the above dose. The earth is usually returned in layers and the treatment shall be carried out in similar stages. The chemical emulsion shall be directed towards the concrete to masonry surface of the columns and walls so that the earth in contact with these surfaces is well treated with the chemical.
- 2.2.6.3 In the case of R.C.C. framed structure with columns and plinth beams and R.C.C. rafts were concrete mix is rich and dense (being 1:2:4 or richer), it is unnecessary to start the treatment from the bottom of excavation for columns and plinth beams. The treatment shall start at the depth of 500 mm below ground level. From this depth the back-fill around the columns, beams and rafts shall be treated as per IS 6313 Part II of 2001 or the latest edition.

2.2.7 TREATMENT OF TOP SURFACE OF PLINTH FILLING

The top surface of the filled earth within plinth wall shall be treated with chemical emulsion at the rate as per IS 6313 Part II 2001 or the latest direction (surface area) before the sand/sub-grade is laid. Holes up to 50 to 70 mm deep at 150 mm centers both ways shall be made with crow bars on the surface to facilitate saturation of the soil with chemical emulsion.

2.2.7.1 TREATMENT OF JUNCTION OF WALL AND FLOOR

To achieve continuity of the vertical chemical barrier on inner wall surface from the ground level, small channel 30 X 30 mm shall be made at all the junctions of wall and columns with the floor (before laying the sub-grade) and rod holes made in the channel up to ground level 150 mm apart and the chemical emulsion poured along the channel as per rate of application, mentioned in IS 6313 Part II (2001) or the latest edition so as to soak the soil right up to bottom. The soil shall be tamped back into place after this operation.

2.2.7.2 TREATMENT OF SOIL ALONG EXTERNAL PERIMETER OF BUILDING

During progress of work, provide hole in the soil with iron rods along the external perimeter of the building at intervals of about 150 mm and depth 300 mm and filling these holes with chemical emulsion at the rate (as per IS 6313 Part II of 2001 or the latest edition) per meter of perimeter of the external wall.

2.2.7.3 TREATMENT OF SOIL SURROUNDING PIPES AND CONDUITS

When pipes and conduits enter the soil inside the area of the foundations, the soil surrounding the points of entry shall be loosened around each such pipe, or conduit for a distance of 150 mm and up to depth of 75 mm before treatment is commenced. When they enter the soil external to the foundations, they shall be similarly treated unless they stand clear of the walls of the building by about 75 mm for distance of over 300 mm from ground level.

2.2.8 SAFETY PRECAUTIONS

All chemicals used for anti-termite treatment are poisonous and hazardous to health. These chemicals can have an adverse effect upon health when absorbed through the skin, inhaled as vapours or spray mists or swallowed.

Person using or handling these chemicals should be warned of these dangers and advised that absorption through the skin is the most likely source of accidental poisoning. They should be cautioned to observe carefully the safety precautions given below.

These chemicals are usually brought to site in the form of emulsifiable concentrates. The containers should be clearly labeled and should be stored carefully so that children and pets cannot get at them. They should be kept securely closed.

Special care should be taken to prevent skin contact with concentrates. Prolonged exposure to dilute emulsions should also be avoided. Workers should wear clean clothing and should wash thoroughly with soap and water, especially before eating or smoking. In the event of severe contamination, clothing should be removed at once and the skin washed with soap and water, if chemicals splash into the eyes they should be flushed with plenty of fresh water and immediate medical attention should be sought.

The concentrates are oil solutions and present a fire hazard owing to the use of petroleum solvents. Flames should not be allowed nearby during the mixing. Care should be taken in the applications and present a fire hazard owing to the use of petroleum solvents. Flames should not be allowed nearby during the mixing.

Care should be taken in the application of chemicals to see that they are not allowed to contaminate wells or springs which serve as source of drinking water.

2.2.9 GUARANTEE

The contractor shall guarantee through a guarantee bond, the anti-termite work for 10 years from the date of completion of the project, and shall indemnify the Engineers representative against any defects that arise therein during the guarantee period as aforesaid. They shall immediately rectify, any defects that may occur therein, and repair all other damage occurring to any part of the structure on account of defect in Anti-termite treatment, during the guarantee period of aforesaid.

2.3 SPECIFICATION FOR CAST – IN – SITU REINFORCED CEMENT CONCRETE

GENERAL

2.3.1 DESCRIPTION

This section covers the requirements for finishing of cement concrete, proportioning, batching, mixing, testing, placing, compacting, finishing, jointing, curing and all other work as required for cast in place reinforced concrete. The contractor shall provide all the materials including cement, steel, labour, equipment, 'form work', scaffolding etc., required for completion of all reinforced concrete works as per drawings and documents. Cement concrete shall be composed of cement, fine aggregate, coarse aggregate, water, with or without admixture as approved, proportioned and mixed as specified herein.

2.3.2 RELATED WORK SPECIFIED ELSEWHERE

1. Steel reinforcement
2. Form work

2.3.3 APPLICABLE CODES AND STANDARDS

The codes and standards generally applicable to the work of this section are listed hereinafter. IS 383 Coarse and fine aggregates from natural sources for concrete

IS 456 Code of practice for plain and reinforced concrete IS 516 Methods of testing for strength of concrete

IS 1199 Methods of sampling and analysis of concrete

IS 1838 Performed fillers for expansion joints in concrete non-extruding and resilient type IS 1946 Code of practice for use of fixing devices in walls, ceiling and floors of solid

Construction

IS 2389 Methods of testing of aggregate for concrete's IS 2505 Concrete vibrators, immersion type

IS 2645 Integral cement water proofing compounds

IS 3414 Code of practice for design and installation of joints in buildings

IS 3558 Code of practice for use for immersion vibrators for consolidating concrete IS 4082 Recommendation on stacking and storage of construction materials at

IS 7861 Code of practice for extreme weather concretizing

IS 7861 Recommended practice for hot weather (part I) concretizing IS 8112 Ordinary Portland Cement grade 43

IS 12269 Ordinary Portland Cement grade 53

IS 1786 :2008 High strength deformed steel bars and wires for Concrete reinforcement.

Note : The list is not exhaustive but shall mean to include all the required codes as provided under relevant CPWD/Maharashtra state PWD SSR specifications (as applicable).

PART— I

The following clauses are intended to amplify the requirements of the reference document listed above and the contractor shall comply with these clauses

2.3.4 SUBMITTALS

2.3.4.1 Material Report

2.3.4.2 Prior to start of delivery of materials required, the following shall be submitted by the contractor to the Consultant / Engineers representative for approval

Suppliers and / or sources of all consumable materials including cement, steel, fine and coarse aggregates, water additives, bricks and timber etc.

Quality Inspection Plan must be submitted by the Contractor to ensure continuing quality control of ingredients by periodic sampling, testing and reporting to the Consultant on the quality of materials being supplied.

2.3.5 PLANT AND EQUIPMENT

The contractor shall submit the following to the Engineer representative and Consultant well in advance, the proposed program, methods and details of plant and Equipment to be used for testing of ingredients and concrete samples.

The proposed programme/methods should provide details of plant & equipment to be used for concrete work. In case outside batching plant is to be used, the same should be got approved from the Engineer/Engineer representative before entering into any commitment with the plant.

2.3.6 REPORTS FOR INSPECTION AND TESTING

During concreting operations, the contractor shall conduct inspection and testing as described under the list of mandatory tests in this volume and all reports thereon shall be submitted in summary form to the Consultant / Engineers representative.

2.3.7 SCHEDULES

Before commencement of the work the contractor shall prepare working schedules of concreting giving dates and rate of pour for each item of work and submit the same to the Consultant / Engineers representative for their approval.

2.3.8 MATERIALS

Before bringing to the site, all materials for cement concrete shall be approved by the Consultant / Project-in-charge. All approved samples shall be deposited in the office of the Consultant / Engineer-in-charge before placing orders for the materials with suppliers. The materials brought on to the work shall conform in every respect to their approved samples.

Fresh samples shall be deposited with the Consultant / Engineers representative whenever type or source of any material changes. The contractor shall check each fresh consignment of materials as it is brought on to the works to ensure that they conform to the specification and / or approved samples.

The Consultant / Engineers representative shall have the option to have any of the materials tested to find whether they are in accordance with specifications at the contractor's expense. All bills, vouchers and test certificates which in the opinion of the Consultant / Engineers representative are necessary to convince him as to the quality of materials or their suitability shall be produced for his inspection when required.

Any materials which have not been found to the specification and not approved by the Consultant / Project-in-charge shall be rejected forthwith and shall be removed from the site by the Contractor's at his own cost within the time stipulated by the Consultant / Engineers representative. The Consultant / Engineers representative shall have the powers to cause

the contractors to purchase and use materials from any particular source, as may in their opinion be necessary for the proper execution of work.

2.3.9 CEMENT

Cement shall be provided by the Contractor. On the following types of cement as specified shall be used:

a. Ordinary Portland Cement 43 grade confirming to BIS 8112-1987

b. Ordinary Portland Cement 53 grade confirming to BIS 12269-1987

Cement at site shall be stored in dry weather proof go-downs (or shed) built by the Contractor at his own costs in stacks which are not higher than 10 bags. The cement go-down shall be constructed as per CPWD specifications. The contractor shall conduct all necessary tests, in the presence of Engineer's representative, as specified in the IS, at his own cost to ascertain himself on quality of the material.

2.3.10 AGGREGATES

- a) Aggregates from natural sources shall be in accordance with IS: 383. The contractor shall submit to the Consultant / Engineers representative certificates of grading and compliance from the suppliers for all consignments of aggregate. In addition at site from time to time, the contractor shall test the aggregates in accordance with IS: 2386 parts I, II, III and IV. The contractor shall allow for and provide all necessary apparatus for carrying out each test and for supplying test records to the Consultant.
- b) For fair faced concrete, the contractor shall ensure that aggregates are free from iron pyrites and impurities which may cause discoloration.
- c) The fine aggregates shall be river sand, stone dust or other approved sand. It shall be free from clay, loam, earth or vegetables matter and from salt or other harmful chemical impurities It shall be dean sharp, strong angular and composed of hard siliceous material.

The grading of sand as determined by the method prescribed in IS: 2386 part I shall be within the limits of grading zone III given in Table 1. When the grading falls outside the percentage limits given for sieves other than 600 micron, 300 micron, and 150 micron (I.S) sieves by not

more 5 percent, it shall be regarded as falling within this zone. The 5 percent can be excess submission on one more sieves.

TABLE 1

FINE AGGREGATE

IS. Sieve - Percentage passing for Grading

IV	ZONEI	ZONEII	ZONEIII	ZONE
10 mm	100	100	100	100
4.75 mm	90-95	90-100	90-100	95-100
2 36 mm	60-95	75-100	85-100	95-100
1.18mm	30-70	55-90	75-100	90-100
600 micron	15-34	35-59	35-60	80-100
300 micron	5-20	8-30	8-30	20-65
150 micron	0-10	0-10	0-10	0-15

The maximum quantity of silt as determined by the method prescribed in IS: 2386 Part II shall not exceed 8%.

Stone dust shall be within the limits of Grading Zone III given in table 1. When the grading falls outside the percentage limits given for the sieves other than 600 micron and 300 micron (IS) sieves by not more than 5 percent and on 150 micron sieves by not more than 20 percent it shall be regarded as falling within this zone. The 5 percent can be excess summation on one or more sieves.

COARSE AGGREGATE

The coarse aggregate shall be crushed stone or broken stone. Coarse aggregate obtained from crushed or broken stone shall be angular, hard, strong, dense, durable clean and free from soft, friable, thin, flat, elongated flaky pieces. The coarse aggregate should be from the approved source/quarry. Coarse aggregate River shingle or pit gravel shall be rounded, sound hard, clean, non porous, suitably graded in size with or without broken fragments and free from flat particle of shale, clay, silt, loam and other impurities.

Except where it can be shown to the satisfaction of the Consultant that a supply of properly graded aggregate of uniform quality can be maintained over the period of the obtaining the coarse aggregate in different sizes & blending them in correct proportions as and when required.

The maximum size of coarse aggregate shall be such that the concrete can be placed without difficulty so as to surround all reinforcement thoroughly and fill the corners of form work.

2.3.11 WATER

Water used in the works shall be potable water and free from deleterious materials. Water used for mixing and curing concrete as well as for cooling and/or washing aggregate shall be fresh and clean, free from injurious amounts of oil, salts, acids, alkali, other chemicals and organic matter.

Water shall be from the source approved by the Consultant / Engineers representative and shall be in accordance with Clause 4.3 of IS: 456.

Before starting any concreting work and whenever the source of water changes, the water shall be tested for its chemical and other impurities to ascertain its suitability for use in concrete for approval of the Consultant. No water shall be used until tested and found satisfactory. Cost of all such tests shall be borne by the contractor.

2.3.12 ADMIXTURES AND ADDITIVES

Chemical admixtures are not to be used until permitted by the Consultant/Engineers representative in case their use is permitted, the type, amount and method of use of any admixture proposed by the contractor shall be submitted to the Consultant for approval.

The contractor shall further provide the following information concerning each admixture to the Consultant/Engineers representative:-

- 2.3.12.1 Normal dosage and detrimental effects, if any, of under dosage and over dosage.
- 2.3.12.2 The chemical names of the main ingredients in the admixture.
- 2.3.12.3 The chloride ion content, if any, expressed as a percentage by weight of admixture.
- 2.3.12.4 Whether or not the admixture leads to the entrainment of air when used in the manufacturer's recommended dosage.
- 2.3.12.5 Where two or more admixtures are proposed to be used in any one mix, the manufacturer's written confirmation of their compatibility.

In reinforced concrete, the chloride ion of any admixture as determined in accordance with IS: 6925 and the total chloride ion in all admixtures used in concrete mix shall not exceed 0.30n percent by weight of cement. The admixtures when used shall conform to IS: 9103. The suitability of all admixtures shall be verified by trial mixes.

The addition of calcium chloride to concrete containing embedded metal will not be permitted under any circumstances.

Regarding admixtures when used shall be based on lingo-sulphonates with due consideration to clause 5.2 and 5.30 of IS: 7861.

Waterproofing admixtures shall comply with IS: 2645.

2.3.13 PLANT

The contractor shall obtain the approval of the Consultant/Engineers representative for all plant items he proposes to use for the manufacture and placing of concrete.

The arrangement shall maintain all items of plant at all times in a clean and efficient working condition.

2.3.14 STORAGE

All goods and products covered by these specifications shall be procured well in advance and stored as specified below.

2.3.15 CEMENT

Cement shall be stored on a raised floor in dry weather **proof & dust free but** well ventilated shed.

Cement bags shall be stacked close together away from external walls and in stacks of not more than ten bags to avoid lumping under pressure.

Cement stored during monsoons or cement expected to be in store for more than eight weeks shall be completely enclosed in 700 micron polyethylene sheet so arranged that the flap closes on the top stack. The contractor shall ensure that protective polyethylene sheet is not damaged at any time during use.

Consignments of cement shall be used in order of delivery. A record shall be kept of the batch numbers of cement deliveries in such a form that the part of the works in which the cement is used can be readily identified. If during delivery or by test, the cement is found to be defective, the same shall be returned back forthwith.

The contractor shall be responsible for the storage of cement at the site and no claim will be entertained in the event of any damage occurring to cement due to faulty storage by the contractors or on account of his negligence.

Cement stored on site for a period longer than eight weeks shall be tested to the satisfaction of the Consultant/Engineers representative before it is used in the works. Cement that has failed the tests conducted shall not be used in the works and shall be removed from the site immediately without fail.

2.3.16 STORING OF AGGREGATE

Aggregates shall be stored on a suitable well drained raft of concrete, timber, metal or other approved material. The storage of aggregates on the ground will not be permitted.

Each size of aggregate shall be stored separately in such a manner as to prevent spillage and mixing of one aggregate with an adjacent aggregate. The dividing walls of any bin shall be of sufficient height and the aggregate shall be so deposited that a distance of 100 mm shall be left between the top of the division wall and any part of the aggregate stack.

When stack piling, the aggregate shall not form pyramids resulting in segregation of different size particles. The stacks shall be regular and of a height not exceeding two meters.

2.3.17 GRADES OF CONCRETE

The grades of concrete shall be in accordance with the following table. The grade of concrete to be used in each section of work will be shown in the drawings or in the Bill of Quantities:

CHARACTERISTIC STRENGTH

Grade of Concrete	Grade of Concrete Characteristic strength i.e. compressive strength of 15 cm. Cubes at 28 days (N/mm ²)	Nominal maximum aggregate size (mm)
10	10	25
15	15	25
20	20	20
25	25	20
30	30	20
35	35	20

Unless otherwise specified in the drawings, the maximum nominal size of coarse aggregates for different grades of concrete shall be as under:

- a) For concreting in very narrow space or in very small thickness 12 mm
- b) For all reinforced concrete work except in massive foundations 20 mm
- c) For all ordinary plain concrete and massive reinforced foundations 10 mm

All mix design grades viz., M10, M15, M20, M25, M30 etc., shall be designed and have a minimum cement content as per IS-456, IS-456-2000 and its revisions till date.

2.3.18 Mix Design

At the commencement of the contract, the Contractor shall make preliminary tests to determine the proportions by weight of cement, fine aggregates, coarse aggregates and water necessary to produce required grades of concrete. The mix proportions shall be selected to ensure that workability of the fresh concrete is suitable for the conditions of handling and placing and when concrete hardens, it shall have the required strength, durability and surface finish. The Contractor shall get approval of the Engineer to such proportions before start of concreting. However, such approval shall not relieve the Contractor of his responsibility to produce concrete having compressive strengths as laid down in the foregoing table.

No departure from the approved proportions will be permitted during the works unless and until the Engineer gives written authorization for any change in proportion. The Engineer shall have authority at any time to check whether the mixing of concrete is being carried out according to the approved proportions.

For the major and important RC works and for all special works, the design of mixes shall be made by the Contractor at his own cost, for each grade of concrete as well as for various workability. The design of mixes shall be made according to relevant I.S. codes or to approved standard methods. In case of change in the raw material quality/grading, the mix design shall be reverified at the cost of the Contractor so as to it confirming to the required grade and other properties of concrete.

The concrete made by designing the mix is termed hereinafter as "Design Mix Concrete".

2.3.19 Water/Cement Ratio

Where a particular water/cement ratio is stipulated in the design or drawing along with the characteristic grade of concrete, the design of mix shall be carried out by adjusting the other variable factors to obtain characteristic strength of concrete with stipulated water/cement ratio.

In the structures where the impermeability and shrinkage of concrete have an important bearing on the durability and serviceability of the structures, such as water retaining structures, exposed structures near sea side etc., the water/cement ratio shall be kept low and preferably not exceeding 0.45.

The water cement ratio as achieved in the mix design or as specified in the drawings shall be adhered to strictly and shall not be varied without the permission of the Engineer.

2.3.20 Workability

The workability of fresh concrete shall be such that the concrete is just suitable for the conditions of handling and placing so that after compaction, it becomes completely consistent and homogeneously surrounds all the reinforcement and completely fills the formwork.

The workability of fresh concrete at the place of batching/mixing shall be measured by compacting factor test and at the place of disposition by means of slump test. During the finalization of trial mixes, the relationship between compacting factor and slump test shall be established for each grade of concrete as well as for various levels for workability.

Normally, in the condition of low water cement ratio as well as for medium/high workability, the workability shall be achieved by increasing the cement content.

In cases where the cement content is to be limited to reduce the heat of hydration, and the water / cement ratio is also to be kept low to reduce the permeability or due to other requirements the desired workability may be achieved with the use of limited doses of plasticizer or air entraining agent. In such cases, the method of mixing and dosage of the plasticiser / air entraining agent shall be according to the manufacturer's specification and with the approval of the Engineer.

Consistency and workability of concrete shall be checked by measuring the slump of a truncated cone of concrete straight from the mixer under normal working conditions. The conical mould shall be of metal, 300 mm high and 100 mm and 200 mm in diameter at top and base respectively.

Moulds shall be prepared by the Contractor. The slump range of concrete shall be as per the tabulation given below, as well as standards.

Slump tests shall be performed as per IS:1881 at intervals established by the Engineer at the Contractor's cost

in such a way as to check that the degree of consistency established by the Engineer for work in progress is maintained. The table below gives the general slump range to be followed for various types of construction unless otherwise shown on drawings or instructed by the Engineer.

Various types of constructionSlump (in mm)...	Max	Min
Reinforced foundation walls and footings		80	35
Plain footings, caissons and structure walls		75	30
Compressor foundations and for constructions heavy mass		50	20
Pumps and other misc. equipment foundations		75	35

2.3.21 Durability

The durability of concrete, depending on the exposure condition, is to be taken into account while designing the mix. For given aggregates, the cement content should be sufficient to make sufficiently low water/cement ratio and Appendix A of IS: 456 shall be taken as guideline for durability considerations.

2.3.22 Trial Mixes

After approval of the mix design by the Consultant / Engineers representative, the Contractor shall make in presence of the Consultant / Engineers representative, the trial mixes for each grade of concrete as well as for required workability.

Before starting the trial mixes, necessary preparatory works like determination of sieve analysis of the aggregates, densities of different ingredients, moisture contents in the aggregates, shall be completed according to the relevant BIS Codes.

Each trial mix shall be handled and compacted by the method which the Contractor proposes to use for that mix in the works and the mixes shall not show tendency of inadequate compaction by the method proposed.

The compacting factor and the slump of each trial mix shall be determined immediately after mixing and the values shall not exceed the maximum value obtained in the mix design.

Five (5) 150 mm test cubes shall be made from each trial mix. These shall be cured and tested in accordance with relevant BIS codes. In order to have the specified characteristic strength in the field, the concrete mix as designed in the design mix shall have higher average compressive strength depending on the degree of quality of control at site.

Before commencement of the concreting works of particular grade of concrete, the Contractor must complete the work of trial mixes and subsequent testing of the test cubes obtained there from and the desire of the approved mix for that particular grade of concrete.

The entire cost of all the trial mixes including all the preparatory works for trial mixes, preparation of test cubes and their testing shall be borne by the Contractor.

2.3.23 Nominal Mix Concrete

Nominal mix concrete may be used for all concrete of grade M-10 and below. If design mix concrete cannot be used for any reason for grade M-15 and M-20, nominal mix concrete may be used with the permission of the Consultant / Engineers representative. Nominal mix concrete shall be in accordance with Table-3 of clause 8.3 of I S 456. The stipulations of clauses 8.3.1 and 8.3.2 of IS: 456 shall also be taken into consideration..

2.3.24 Volumetric Mix Concrete

Where concrete is specified in volumetric proportions such as 1:4:8, 1:3:6, 1:2:4, 1:1.5:3, 1:1:2 etc., in the Bill of Quantities, coarse & fine aggregates shall be measured by volume & cement by weight. The water cement ratio shall be within 0.45 & 0.70 depending upon the workability.

2.3.25 Batching of Concrete

2.3.25.1 Cement

Cement shall always be batched by weight. A separate weighing device shall be provided for weighing cement. Where the weight of cement is determined by accepting the weight per bag, a number of bags shall be weighed separately to determine the average net weight of cement per bag and the same shall be checked regularly.

2.3.25.2 Aggregates:

For both design mix concrete and nominal mix concrete, the aggregates,(coarse and fine) shall be batched by weight.

In particular cases, or where weight-batching is not possible, proportioning by volume batching may be allowed by the aggregates throughout the period of construction. For this purpose, the Contractor shall submit to the Consultant / Engineers representative sufficient data indicating the weight/volume relationship of the aggregates shall be made by the Contractor to the satisfaction of the Consultant / Engineers representative. Where aggregates are moist and volume batching is adopted, allowance shall be bulking in accordance with IS (Part III).

Suitable adjustments shall be made for the variation in the weight of aggregates due to variation in their moisture contents.

2.3.25.3 Water :

Water may be measured either by weight or by volume. When measured by volume, it shall be by well calibrated conical shaped jar or vessel or from a calibrated tank filled to the mixer.

Adjustment of Water Due to Moisture Contents in Coarse and Fine Aggregates It is very important to maintain the water cement ratio constant at its correct value. For the correct determination of the amount of water to be added in the concrete mix, to maintain the water cement ratio constant, the amount of moisture content in both coarse and fine aggregates shall be taken into consideration, be checked as frequently as possible, the frequency for a given job being determined by the Consultant / Engineers representative according to weather condition.

Determination of Moisture Content in the Aggregates

Determination of moisture content in the aggregates shall be according to IS 2386 (Part-III). Where tests are not conducted, the amount of surface water may be estimated from the following table:

Aggregates	Surface water	Carried by Aggregates
	% by weight	l/m3
Very wet sand	7.50	120
Moderately wet sand	5.00	80
Moist San	2.50	40
Moist gravel stone chips*	125.25	20-40

• coarser the aggregate, less the water it will carry

2.3.25.4 Admixtures

Any solid admixture, to be added, shall be measured by weight, but liquid or semi-liquid admixture may be measured by weight or volume.

The Bidder shall indicate the brand name, the Manufacturer and the properties of any admixture to be used for the concrete as per Bill of Quantity items or on his own initiative.

2.3.25.5 Accuracy of Batching

The accuracy of batching shall be within the following tolerance:

1 Cement within + 2% by weight

2 Aggregate
within + 5% by
weight

3 Water within +
0.5% by weight.

2.3.26 Mixing of Concrete

2.3.26.1 Machine Mixing

Concrete shall always be mixed in mechanical mixer. Water shall not, normally, be charged into the drum of the mixer until all other ingredients are already in the drum and mixed for at least one minute. Mixing shall be continued until there is uniform distribution of materials and the mass is uniform in colour and consistency. The mixing time from the time of adding water shall be in accordance with IS 1791, but in no case less than 2 minutes or at least 40 revolutions.

2.3.26.2 Hand Mixing

Hand mixing will not be permitted.

2.3.27 Transportation of Concrete

Concrete shall be transported from the place of mixing to the place of placing concrete as rapidly as practicable by any means, which will prevent the segregation or loss of any of the ingredients and maintain the required workability. No water shall be mixed with the concrete after it has left the mixer.

Where concrete is transported over long distances, the Contractor shall provide suitable means by which different grades of concrete are readily identifiable at the place of final deposit.

2.3.28 Preparatory Works/Surface Preparation

2.3.28.1 For Concrete Directly on Earth Foundation

Earth foundation on which direct placement of concrete is specified shall be rammed and consolidated as directed by the Consultant / Engineers representative such that it does not crumble and get mixed with concrete during or after placement. If the foundation is quite wet, the same shall be kept dry and then sufficiently consolidated, if necessary, a thin top layer of the wet soil shall be removed and replaced by sand or other suitable materials as directed by the Consultant / Engineers representative without extra cost to EMPLOYER, Care shall also

be taken that earth from the sides also does not get mixed with the concrete, during or after placement, before it has sufficiently set and hardened.

The earth foundation, over which concrete is to be placed directly, shall not be kept abandon at the specified level and concrete shall be placed immediately following otherwise suitable measures shall be taken, as directed by the Consultant / Engineers representative **without extra cost** to EMPLOYER.

2.3.28.2 For Construction Joints

Concrete shall be cast, as far as possible, continuously until the parts of structure to be built are finished. Should this not be feasible, the type, number and location of construction joints shall be approved by the Consultant / Engineers representative prior to placing concrete.

All such joints shall have continuous square bond grooves to produce substantial and water-tight-key and the exposed faces of joints shall be monolithic with the main mass of concrete formed and completed under substantially shattered faces. The Contractor shall take all the necessary steps by means of timber edgings etc. to ensure an exact horizontal straight finish to outside edge of any lift of concrete. Subject to the approval of the Consultant / Engineers representative, the Contractor is at liberty to arrange his own construction joints but the following restrictions are to be observed:

1. There shall be no vertical construction joints
2. No longitudinal joints shall be made in the walls and floors of trenches and pits unless otherwise shown in the drawings.
3. Concrete pouring shall be reasonably large, but in no case shall the height of

pouring concrete exceed 1.5 m without the Engineer's firm approval. Such approval of the Engineer shall not in any way relieve the Contractor of his responsibility to ensure that the construction is water tight and that no segregation takes place.

4. Laitance shall be removed from the surface of concrete before it has set hard by washing and wire brushing so as to expose the stones of the top layer without undue erosion of the mortar or damage to the under laying concrete.

All beds and joints in concrete faces, which have become set, are to be picked all over and all loose materials removed before fresh concrete is deposited thereon. The indentations shall be at least 12 mm deep and not less than seventy five percent of the area of the existing concrete face to be covered over.

Immediately before depositing fresh concrete, the exposed surface shall be cleaned of foreign matter by further wire brushing, if necessary. It shall then be thoroughly washed and surplus water removed. The surface, while still moist, shall be covered with layer of 1:1 cement mortar

which must be vigorously stippled into the surface by means of a stiff brush, the depositing of the fresh concrete following on closely. Pockets to form keys shall be left in the surface of the concrete at constructional joints, 75 mm deep and approximately **equal to 20% of the exposed surface**.

All costs in connection with the forming of construction joints shall be to the account of the Contractor and shall be deemed to be included in the rates for concreting and formwork and shall not be separately paid for. In a column, the joint shall be formed 75 mm below the lowest soffits of the beams, including haunches, if any.

Concrete in a beam shall be placed throughout without a joint but if the provision of a joint is unavoidable, then the joint shall be vertical and at the centre of, or within, middle third of the span, unless otherwise shown on the drawings.

2.3.28.3 On Vertical Surfaces of Masonry

When the concrete is placed on the vertical surface of masonry (as in the case of thin concrete fins projected from the vertical masonry surface), a groove of dimension as directed by the Engineer shall be cut in the masonry to ensure a proper bond and the surface shall be cleaned thoroughly. Before the placement of concrete, the surface shall be kept moist by spraying water at least for the period of 2 hours and a thick coat of cement slurry shall be applied immediately before the placement of concrete.

Inside the Form Works (Cleaning, Surface Preparation etc.)

The interior of the form works, where the concrete is to be placed, shall be thoroughly washed by high pressure water jet or air jet to completely clean the entire volume from the dirt, grease/oil foreign and deleterious materials etc. The reinforcements shall be completely cleaned and free from all sorts of dirt, grease/oil, rust, foreign/deleterious materials etc. Before placement of concrete, the form works coming in contact with concrete, shall be coated highly with form oil or raw linseed oily material or provided with any approved material to prevent adhesion of concrete to the form work, but utmost care shall be taken so that such oily material does not come in contact with the reinforcement.

2.3.29 Placing and Compaction of Concrete

Before placing the concrete, the Contractor shall ensure that:

1. All mixing and placing equipment is thoroughly cleaned
2. All concreting space is free from debris and rubbish

3. All forms have been thoroughly wetted or oiled and firmly installed in line and plumb to the Engineer's approval.
4. All reinforcement is cleaned of loose rust, scales and other injurious adherents and is firmly bound and correctly placed and has been so approved by the Consultant / Engineers representative
5. All inserts, sleeves, foundation bolts and embedded parts have been correctly and firmly installed to conform to the drawings Consultant / Engineers representative and have been carefully checked to comply with the drawings. Special care shall be taken to locate and check sleeves or inserts, which may not be symmetrically placed with respect to centre lines.

The Contractor and Consultant / Engineers representative shall separately inspect and check the above mentioned points and record and sign the results in a register which shall be maintained by the Contractor in a approved form. No concrete shall be placed without the Consultant / Engineers representative having inspected and approved in writing. In spite of ensuring the above requirements, the Contractor shall fill pour cards furnishing the necessary details of the job, duly signed by the Engineers representative. This, however, will not absolve the Contractor from his responsibility to correctly execute the work. Pour cards shall contain the following information:

Design Index

- Date
 - Slump
 - Workability
 - Work test specimen
 - Type of finishing and admixtures used (if any)
 - Period of removal of shuttering/props/forms.
-
- a. The concrete pouring method shall be submitted to the Engineers representative for approval and shall always be such as to avoid any possibility of segregation of the components or shifting of the reinforcement.
 - b. Special grout or mix shall be used for difficult and intricate locations as specified by the Engineers representative. During placing, the concrete shall be thoroughly worked around reinforcement, embedded parts and corners of the formwork.
 - c. Greatest possible care shall be taken by the Contractor that reinforcement and embedded parts, particularly foundation bolts and sleeves, are not displaced during placement of concrete. While concreting mats and other such locations where top and bottom reinforcement are adopted, top reinforcement shall be thoroughly cleaned of all slurry and mortar sticking to them at the time of concreting top layers.
 - d. The concrete shall be placed and compacted before setting commences and should not be subsequently disturbed. No water shall be mixed

with the concrete after it has left the mixer. Method of placing should be such as to preclude segregation. Approved mechanical vibrator shall be used for compacting concrete, and concrete shall not be non vibrated or under vibrated. No concrete shall be placed until the place of deposit has been thoroughly inspected and approved by the Engineers representative, all inserts and embedment properly secured in position and checked and forms properly oiled. No concrete shall be placed in the absence of the Engineers representative.

- e. Concrete shall be placed on clean bed having the designed level. The bed shall be cleaned of all debris and other objectionable materials. Seepage water, if any, shall be controlled or diverted.
- f. Concreting shall not be carried on during rains unless all precautions have been taken by the Contractor and necessary permission has been given by the Engineers representative. Suitable measures shall be taken to control the temperature of concrete.
- g. Where plums are permitted in massive concrete, they shall be washed and carefully placed. No stone shall be closer than 30 cm to an exposed face, nor nearer than 15 cm to an adjacent stone.
- h. Concrete shall not be dropped from a height of more than 2 m except through a chute, the design and type of which shall be subjected to approval of the Engineers representative.
- i. The concrete shall be placed, spread and compacted by approved mechanical vibrator. Vibrators shall not be used for pushing concrete to adjoining areas.
- j. For members involving vertical placing of concrete (e.g. columns, walls etc.), each lift shall be deposited in horizontal layer extending for the full width between shuttering and of such depth that each layer can be easily and effectively vibrated and incorporated with the layer below by means of compaction being employed.
- k. For members involving horizontal placing of concrete (e.g., slabs, beams etc.), the concrete shall be placed along the line of starting point in such quantities as will allow members to be cast to their full

depth along the full width between side shuttering and then gradually brought towards the finishing point along its entire front parallel to the starting line. Vibration and surface finish shall follow behind the placement as closely as possible.

- l. Utmost care shall be taken to avoid the displacement of reinforcements/ embedded parts or movement of form work or damage to faces of the form work or transmission of any harmful vibration/shocks to the concrete which has not yet hardened sufficiently.
- m. All members shall be concreted at such a rate that no cold joint is formed and fresh concrete is placed always against green concrete, which is still plastic and workable.
- n. Should any unforeseen occurrence result in a stoppage of concreting for one hour or such other time as might allow the concrete, already placed, to begin to set before the next batches can be placed, the Contractor shall make at his own cost, suitable tongue, and groove construction joint, as approved by the Engineers

representative. Any additional reinforcement required as directed by the Consultant / Engineers representative shall also be provided by the Contractor at his own cost. Before placement of new batches of concrete over that construction joint, the surface preparation according to this specification stipulated earlier, shall be done by the Contractor.

- o. The concrete shall be worked well up against whatever surface it adjoins and compacted to such a degree that it reaches its maximum density as a homogeneous mass, free from air and water holes and penetrates to all corners of moulds and shuttering and completely surrounds the reinforcement. All measures shall be taken to make the shape, size, and location of the finished concrete including its embedment, holes, openings etc, well within the accepted tolerance limit.

2.3.30 TRANSPORTATION OF CONCRETE & PUMPING OF CONCRETE

General

Fresh concrete can be transported to the placement area by a variety of methods. Common among them are:

- Mixer trucks
- Stationary truck bodies with or without agitators.
- Buckets hauled by trucks.
- Conveyor belts.
- Hose or pipe line by pumping.

Each type of transportation has specific advantages and limitations depending on the condition of use, mix, accessibility and location of placing.

2.3.30.1 Transportation by Mixer Trucks

These are essentially revolving drums mounted on truck chassis. Truck mixers used in the job shall be labelled permanently to indicate the manufacturer's specifications for mixing like:-

- Capacity of drum.
- Total number of drum revolutions for complete mixing.
- Mixing speed
- Maximum time limit before completion of discharge and after cement has entered the drum.

- Reduction in time period of discharge due to warm weather or other variables.

All above information shall only form guidelines for the manufacturer/producer of concrete.

2.3.30.1.1 Fulfilment of the stipulated number of revolutions or elapsed time shall not be the acceptable criterion. As long as the mixing water limit is not exceeded and the concrete has satisfactory plastic physical properties and is of satisfactory consistency and homogeneity for satisfactory placement and consolidation and is without initial set, the concrete shall be acceptable.

2.3.30.1.2 When the concrete is totally mixed in transporting trucks volume of concrete being transported shall not exceed 63% of the rated capacity of the drum. In case the concrete is totally mixed in the central batching plant, the transporting truck may be loaded up to 80% of the rated capacity of the drum. In this case the drum shall be rotated at charging speed during loading and reduced to agitating speed after loading is complete.

2.3.30.1.3 When transporting concrete by truck mixers, delivery time shall be restricted to 90 minutes or initial setting time whichever is less from the time cement has entered the mixer to completion of discharge.

2.3.30.2 Transporting by Agitating / Non-agitating Trucks.

Transporting ready mix concrete by this method shall consist of truck chassis mounted with open top bodies. The metal body shall be smooth and streamlined for easy discharge. Discharge may be from the rear when the body is mechanically tilted. Body of the truck shall have a provision of discharge gate. Mechanical vibrators shall be installed at the discharge gate for control of discharge flow.

Agitators, if mounted, also aid in the discharging of concrete from the truck in addition to keeping the concrete alive.

Water shall not be added to concrete in transport through this system.

Bodies of trucks shall be provided with protective covers during period of inclement

Delivery period, when adopting this system of transporting concrete shall be restricted to 30 minutes from the moment all ingredients including cement and water enter in mixer to completion of discharge.

2.3.30.3 Transporting by Buckets

This method of transportation is very common for transportation of centrally mixed concrete. Buckets of suitable capacities may be filled with concrete which is totally mixed in central plant and hauled to the job site. Buckets then may be conveyed to the actual point of placement either with the help of crane/hoist or they may be carted..

As in the case of open truck transportation, extra water shall not be added to concrete transported in buckets. Concrete shall be protected from inclement weather by necessary covering arrangements. Also, maximum delivery period for this system of transportation from the time cement is introduced into the mixer to completion of discharge shall not exceed 30 minutes.

2.3.30.3.1 Cleaning

Before loading concrete in either truck mixer, open bodied trucks or buckets, the containers shall be thoroughly cleaned, washed and dried, so that there is no water or moisture in the container which may affect the designed water content of the concrete.

2.3.31 Other Methods of Transportation

Transportation of concrete either by belt conveyors or by pumping is envisaged in some works.

If, the producer/manufacturer/purchaser/contractor of ready mix concrete desires to use such methods of transportation, they may do so provided their scheme and complete specifications are submitted to the Engineer for his record and approval.

2.3.31.1 Objective

1. Method of transportation used shall ensure:-
2. Efficient delivery of concrete
3. No significant alterations of properties with regard to water cement ratio, slump, air content and homogeneity.
4. All variables in transportation, considering type and accessibility of placement locations, distance, time interval etc., shall be carefully studied before arriving at the method used.

2.3.31.2 Pump able Concrete

General- Pumpable concrete is the concrete which is conveyed by pressure through either rigid pipe or flexible hose and discharged directly into the desired area. It is especially used where space for construction equipment is very limited.

Pumping Rate and Range – Depending on the equipment, pumping rate should be 10 to 70 cum. per hour. Effective pumping range is upto 300m horizontally and 90m vertically.

(i) Proportioning Pump able Concrete

Basic Consideration - More emphasis on quality control is essential to the proportioning and use of a dependable pump mix. Concrete mixes for pumping must be plastic. Particular attention must be given to the mortar and to the amounts and sizes of coarse aggregates.

The maximum size of angular coarse aggregate is limited to one-third of smallest inside diameter of the hose or pipe. Provisions should be made for elimination of oversized particles in the concrete by finish screening or by careful selection of aggregates.

(ii) Pumping Concrete

a) Proper planning of concrete supply, pump locations, line layout, placing sequences and the entire pumping operation will result in saving of cost and time. The pump should be placed as near the placing area as practicable and the entire surrounding area must have adequate bearing strength. Lines from the pump to the placing area should be laid out with a minimum of bends. The pipe line shall be rigidly supported.

b) While pumping downward 15m or more, it is desirable to provide an air release valve at the middle of the top bend to prevent vacuum or air build up. When pumping upward, it is desirable to have a valve near the pump to prevent reverse flow.

2.3.31.2 Construction Joints

Normally, the construction joints including crack inducing joints shall be constructed as per locations and details indicated on the drawings. Where the location of the joint is not specified in the drawings, it shall be in accordance with the following guidelines. In all construction joints, the reinforcements shall pass through as per drawings and the same shall not be disturbed in any way.

a) In Columns

- i)** In case of Projection from Base Slab, 300 mm from the top of base slab or 75 mm from the top of the haunches whichever is higher.
- ii)** In framing the beam at different elevation, 75 mm below the lowest soffit of the beam and in case of projection from beams and slabs 75 mm from the top surface of the beam/slab or at the top surface of beam/slab whichever facilitates formwork.
- iii)** For columns below flat slabs, 75 mm below the lowest soffit of the slab.

b) In Walls (Horizontal Construction Joints)

- i)** For Walls Projecting From Base Slab, 300 mm from top of base slab.
- ii)** For Walls supporting the suspended slab, 75 mm from the lowest soffit of the slab.

Note: In the case of water retaining structures and structures under the influence of ground water, approved water bars of suitable size shall be provided to make the joint completely watertight.

c) In Beams

Beams shall be cast, as a rule, without a joint. But if provision of a joint is unavoidable, the joints from simply supported beam shall be vertical and at the middle of the span; in continuous beam, the same shall be at the point of minimum shear force.

d) In Suspended Slabs

- i) In slab of small span, there shall be reconstruction joints.
- ii) In slabs of large span and continuous slabs, the Construction joint, if allowed by the Engineer, shall be vertical at the middle of span and at right angles to the principal reinforcement.

e) In Walls (Vertical Construction Joint)

As a rule, walls shall be cast monolithically without any vertical construction joint, unless specified in the drawing. However, for a long wall, Engineer may allow vertical construction joint and the same shall be at the place of minimum shear force.

In Slabs Resting on Ground

i) For Plain Concrete

Concreting shall be done in alternate panels not exceeding 10 m² in area. The largest panel dimension shall be 5 m.

- ii) For Nominally Reinforced Slab The area of pour shall not exceed 40 m² and the maximum panel dimension shall not exceed 8m.
- iii) For the Basement Slabs Which Act as Structural Member There shall be no construction joint.
- f) In Ribbed Beams The beams shall be monolithic with the slab in one continuous operation.

2.3.32 Cold Joints :

An advancing face of pour, which could not be covered before expiry of initial setting time for unexpected reasons, is called a cold joint. The Contractor shall remain always vigilant to avoid cold joints. If however, a cold joint is formed due to unavoidable reasons, the procedures shall be adopted as per clause 2.3.37.

2.3.33 Sub-standard concrete

Should the work strength of controlled concrete fall below the specified strength, Engineer shall decide as per clause 2.3.37:

1. To reject the work, in which case the Contractor shall replace the defective work with concrete of required strength and bear all costs for dismantling and replacing including cost of associated form work, reinforcement, embedded parts & all associated works.
2. To accept the work at a reduced rate, in which case the unit rate payable for sub-standard work will be reduced by EMPLOYER, directly in proportion to the work strength as compared to the specified strength. The Engineer may, in addition, require other tests performed on the respective structural member so accepted period to its acceptance with or without necessary corrective measures and in each such case, the Contractor shall bear all costs for all such tests or corrective measures, besides the reduction in the unit rates as specified herein.
3. Concrete of strength below fifteen (15) percent of the specified strength will not be accepted.
4. The test load shall be 125% of the maximum superimposed load for which the structure was designed. Such test load shall not be applied before 56 days after the effective hardening of concrete. During the test, struts strong enough to take the whole load shall be placed in position leaving a gap under the members. The test load shall be maintained for 24 hours before removal.
5. If, within 24 hours of the removal of the load, the structure does not show a recovery of at least 75% of the maximum deflection shown during the 24 hours under load, the test loading shall be repeated after a lapse of atleast 72 hours. The structure shall be considered to have failed to pass the test if the recovery after the second test is not at least 75% of the maximum deflection shown during the second test. If the structure is certified as failed by the Engineer, the cost of the load test shall be borne by the Contractor.

2.3.33 Confirmatory Tests

The Engineer, if he so desires, may order following additional tests to be carried out on cement, sand, coarse aggregate, water in accordance with the relevant Indian Standards.

Tests on cement shall include

1. Test for tensile strength
2. Test for heat of hydration (by experiment and by calculation) in accordance with IS:269.

Tests on sand shall include

1. Decantation test for determining clay and silt content.
2. Specific gravity test.
3. Test for sieve analysis and fineness modulus.

Tests on coarse aggregates shall include

1. Sieve analysis.
2. Specific gravity and unit weight of dry, loose and rodded aggregate.
3. Soundness and alkali aggregate reactivity.
4. Petrographic examination.
5. Deleterious materials and organic impurities.

Any or all these tests would normally be ordered to be carried out, only if, the Engineer feels the materials are not in accordance with the specifications as the test results are on borderline or if the specified concrete strengths are not obtained. These shall be performed by the Contractor at an approved test laboratory, the cost of the confirmatory tests will be borne by the Contractor. If the work cubes do not give the stipulated strengths, the Engineer reserves the right to ask the Contractor to dismantle such portions of the work which, in his opinion, are unacceptable and re-do the work to standards stipulated, at the Contractor's cost.

2.3.34 Concrete for Equipment or steel structures foundations:-

Concrete for equipment foundation, whether principal or auxiliary, shall be poured continuously so that the structure becomes monolithic, particular care being exercised to see that the base slabs, if any, are of compact impervious construction. Tunnels, passages, apertures and so forth shall be provided in accordance with the drawings for the installation of mechanical and electrical equipment, pipes or cables. The top elevation of the equipment foundations or parts shall be accurately cast to 20/50 mm (or more as may be specified on the drawings) above the level required for grouting and it shall be pneumatically chiseled off and well roughened just prior to the erection of the equipment concerned. All embedded anchor bolts or bolt sleeves shall be accurately and firmly set with the aid of approved templates, steel supports and/or other accessories. For holding the embedded bolts or sleeves in the correct position during concreting, template shall have to be of steel of suitable section approved by the Engineers representative. Two sets of templates shall have to be provided, one to hold the bottom and the other the top of the bolts or sleeves. The bottom template shall be securely and rigidly fixed by providing anchorage arrangement and by welding to the lowest part of the steel reinforcement and other structural supports. The top templates shall be securely fixed by tying with guy wires and turn buckle arrangements to firm and rigid adjoining structures and staging. The bottom template that is embedded in concrete will be measured and paid for as embedded steel. Bolt pockets, where required, shall be cast with wooden taper wedges. These shall be withdrawn at an appropriate time when the concrete has set, the pockets cleaned, roughened and then covered or blocked

thoroughly to prevent debris getting into these. The exposed portions of bolts and embedded parts shall be kept well greased and adequately protected from damage throughout construction. Any damages found shall have to be corrected at the Contractor's cost. EMPLOYER, shall have the right to use the foundations, pads, piers, slabs, floors and all concrete work as needed for other works or equipment erected prior to its "Taking Over".

2.3.34.1 Finishes to Exposed Surface of Concrete

The Contractor is to include his quoted rate for concrete, the provision of normal finishes in both formed and unformed surfaces as and where required by the Engineer without any extra cost to EMPLOYER, Some common finishes are indicated below:

2.3.34.2 Surfaces which do not Require Plastering

Surface in contact with casing shall be brought to a fair and even surface by working the concrete smooth against casings with a steel trowel while it is being deposited and also by working over the surface with a trowel immediately after the removal of the casings or centering, removing any irregularities and stopping air holes, etc. Use of mortar plaster is not permissible for correcting levels, removing unevenness etc. However, if in the opinion of the Engineers representative, such plastering is unavoidable, then the thickness of plaster shall in no case exceed 5 mm and the plastering shall be in CM (1:3).

2.3.34.3 Faces of Foundations which will be Back Filled

Neither the smoothness of the surface nor the positions of the joints in the form work are important. Small blemishes caused by entrapped air are permitted. No special surface finish is required.

2.3.34.4 Exposed Surfaces

Surface of beams/columns flush with the block work or other structures where it is intended to plaster, shall be backed adequately as soon as the shuttering is stripped off so that proper bond with the plaster can develop.

2.3.34.5 Surface for Non-integral Finish

Where a non integral finish such as floor finish is specified or required, the surface of the concrete shall be struck off at the specified levels shall be furnished and finished rough.

2.3.35 Curing of Concrete

2.3.35.1 General

The purpose of curing is either to provide sufficient water at optimum temperature or to prevent loss of moisture from the concrete itself so that the cement inside the concrete is

sufficiently hydrated which, of course, is a slow and prolonged process. The exposed concrete surface shall be covered with plastic sheet till the curing is started. As soon as the concrete has hardened sufficiently (generally 10-12 hours), the curing shall be started.

2.3.35.2 Different Methods of Curing

Any one of the following may be used for curing as approved by the Engineer.

2.3.35.3 Curing by Direct Water

This is done either by pounding or spraying water.

2.3.35.4 Ponding

Ponding is widely used for curing slabs and pavement. Earth/lean mortar bands are formed over the slabs and water is pumped or poured into them and the same is replenished at interval to make up for the loss of evaporation. As this type of curing is one of the best methods, 14 days of curing after final setting is sufficient.

2.3.35.5 By Spraying

By Spraying Water Curing is done by spraying water by suitable means at approved time intervals. While spraying, it shall be ensured that the complete area is covered. In order to avoid cracking, cold water shall not be applied to massive members immediately after striking the form work, while the concrete is still warm.

Alternative wetting and over drying shall be avoided.

Curing by spraying water shall be continued at least for 18 days.

- a) Curing of Concrete with Absorbent Material Kept Damp The entire concrete surface is covered either with hessian, burlap, sawdust, sand, canvas or similar material and kept wet continuously for at least 12 days after final settings.
- b) Curing by Covering Concrete Surface with an plastic Sheet. This is achieved by covering the entire concrete surface with water proof plastic sheets specially manufactured for this purpose, while keeping the concrete surface wet . Such type of covering shall be kept at least till final setting, especially during monsoon seasons.

2.3.36 Testing of Concrete

2.3.36.1 General

The Contractor shall carry out, entirely at his own cost, all sampling and testing in accordance with the relevant IS standards and as supplemented herein. The Contractor shall get all tests done in an approved (by Engineer/Engineer's representative) laboratory (NABL accredited) and submit to the Engineers representative, the test result in triplicate within 3 days after completion of the test.

2.3.36.2 Consistency Test (Tests of Fresh Concrete)

At the place of deposition/pouring of the concrete, to control the consistency slump tests and/or compacting factor tests shall be carried out by the Contractor in accordance with IS 1199 as directed by the Engineers representative.

The results of the slump tests/compacting factor tests shall be recorded in a register for reference duly signed by both the Contractor and the Engineers representative. That register shall be considered as the property of EMPLOYER, and shall be kept by the Contractor at site in safe custody.

The results of the slump tests/compacting factor tests shall tally, within accepted variation of 12%, with the results in the respective design mix, in case of mix design concrete and with the values indicated in the table under clause 6.1 of IS:456 in case of nominal mix concrete. For any particular batch of concrete, if the results do not conform to the requirements as specified in IS 456, the Engineers representative has the right to reject that batch and the Contractor shall remove the same immediately from the site, at no cost to EMPLOYER,.

2.3.36.3 Strength Test of Concrete

While placing concrete, the Contractor shall make six (6) 150 mm test cubes from particular batches of concrete as desired by the Engineers representative. The frequency of taking test cubes shall be either according to clause 14.2 of IS:456 or as directed by the Engineers representative.

The cubes shall be prepared, cured and tested according to IS 516. Out of the six (6) test cubes, 3 shall be tested for compressive strength at 7 days after casting and the remaining 3 at 28 days after casting. A register shall be maintained at site by the Contractor with the following details entered and signed by both the Contractor and the Engineers representative. That register shall be considered as the property of EMPLOYER,

- a) Reference to the specific structural member

- b) Mark on cubes
- c) The grade of concrete
- d) The mix of concrete
- e) Date and time
- f) Crushing strength at 7 days
- g) Crushing strength at 28 days
- h) Any other information directed by the Engineer.

2.3.36.4 Acceptance Criteria for Test Cubes

The acceptance criteria of concrete on strength requirement shall be in accordance with the stipulations under clause 15 of IS:456.

2.3.36.5 Non-destructive Tests on Hardened Concrete

If there is doubt about the strength or quality of a particular work or the test results do not comply with the acceptance criteria as stipulated under clause 15 of IS:456, non-destructive tests on hardened concrete like core tests and/or load tests or other type of non destructive tests like ultrasonic impulse test etc. shall be carried out, as may be directed by the Engineers representative.

The core tests and load tests shall comply with the requirements of clause 16.6 of IS: 456.

2.3.36.6 Concrete Below Specified Strength

In case of failure of test cubes to meet the specified requirements, the Engineers representative may take one of the following actions:

1. Reject the work and instruct that section of the works to which the failed cubes relate shall be cut out and replaced at the Contractor's expense.
2. Instruct the Contractor to carry out additional tests and/or works to ensure the soundness of the structure at the Contractor's expense.
3. Accept the work with reduction in the rate in appropriate item.

2.3.36.7 Concrete failed in Non-destruction Tests

In case test results of the core tests or load tests in a particular work do not comply with requirements of respective clause (16.3 for core test and 16.5 for load tests) of IS 456, the whole or part of the work concerned shall be dismantled and replaced by the Contractor as may be directed by the Engineer and as per clause 2.3.37, at no extra cost to EMPLOYER, and to the satisfaction of the Engineer. No payment for the dismantled concrete including relevant form work, reinforcement, embedded fixtures etc. shall be made. In the course of dismantling if any damage occurs to the adjacent structure or embedded item, the same shall be made good, free of charge by the Contractor, to the satisfaction of the Engineer.

2.3.37 Repairing of defects in reinforced cement concrete .

If any defects such as surface offset or undulation, Honey comb, Cracks, Cold joints, cavities, bug holes etc., develop in the reinforced cement concrete, which in the opinion of the Consultant/Engineers representative may be detrimental to the building, proceed to regulate the repair of defects based on principals of Replacement, Internal filling or External surface treatment .The contractor at his own expense shall test the structural elements for strength and stability ,in case of failure, he shall dismantle the construction, cart away the debris, replace the construction after submitting the detailed procedure and method of repair to the Engineer/Engineer's representative, and carry out all consequential work there to at no extra cost.

If the defects are not detrimental to the strength and stability of the construction in the opinion of the Consultant/Engineer, the contractor at his own expense shall repair the defects after submitting the detailed procedure and method of repair to the Engineer/Engineer's representative. Also at his own expense and risk, he shall make good all other building works such as plaster, moulding, surface finish of floors, roofs, ceiling etc. which in the opinion of the Consultant have suffered damage either in appearance, strength, or stability owing to such defects.

The repair work shall be carried out to the satisfaction of the Consultant/Engineers representative. The decision of the Consultant/Engineers representative as to the extent of the liability of the contractor in the above matter shall be final and binding on the contractor.

2.3.38 SUPERVISION

All concreting work shall be done under strict supervision of the qualified and experienced representatives of the Contractor as well as those of the Consultant/Engineer. The contractor's Engineer and supervisor who are in charge of concreting work shall be skilled in this class of work and shall personally supervise all the concreting operations.

Special attention shall be paid to the following:-

- (a) Proportioning, mixing and quality testing of the materials with particular control on the water cement ratio.
- (b) Laying of material in place and thorough compaction of the concrete to ensure solidity and freedom from voids and honey combing.
- (c) Proper curing for the requisite period.
- (d) Reinforcement and inserts/embodiments position are not disturbed during concreting and consolidation by vibration.

2.3.39 QUALITY CONTROL

The Consultant/Engineers representative reserves the right to make changes in the mix proportions including the increased cement content or/and a change in the Contractor's control procedure, should the quality control during progress of the works prove to be inadequate in his opinion. All the concrete work shall be true to level, plumb and square within the acceptable tolerance. The corners, edges and rises in all cases shall be unbroken and finished properly and carefully.

2.3.39.1 TOLERANCES

The acceptable tolerances for formed concrete surfaces shall be given below: -

- a) Variation from plumb for -
 - i. Columns and walls to be rendered 6 mm in 3 meters
 - ii. Exposed columns and walls 3 mm in 3 meters
- b) Variation in cross sectional dimensions of columns and beams and in the thickness of slabs and walls: - 6 mm & + 12 mm

All the works executed beyond the tolerance limits are liable to be rejected and no extra cost shall be paid to the contractor for reconstructing the same as desired by the Consultant/Engineers representative.

2.3.39.2 TESTING ROOM/LAB

A testing room of not less than 10 sqm equipped with the following apparatus and qualified concrete technician, labour and materials required for carrying out tests therein shall be provided by the contractor at his own cost.

1. Sieve Set (For aggregate 20 mm down)
40 mm, 20 mm, 16 mm, 12.5 mm, 10 mm, 4.75 mm, 600 micron, 300 micron, and 75 micron having diameter of 45 cms.

- 2. Weighing
 - a) Physical balance cap. 200 gms with weigh box (accuracy 0.5 gm)
 - b) Counter Scale cap 20 Kg
 - c) Weights
5 kg 1 No 500 gms 1 No.

2kg 2 Nos. 200 gms 1 No.
1 kg 1 No. 100 gms 1 No.

3. Slump Cones 2 Nos
4. 15 cmsx 15 cmsx15 cms moulds -18 no,
5. Vicate apparatus.
6. Electric/Kerosene Heater
7. Pans etc. as directed by the Consultant
8. Measuring Cylinders of 1000 ml., 500 ml and 100ml.
9. Wash bottles of the Capacity of 500 ml., 2 Nos.
10. Sink
11. Work benches, shelves, desks and any other furniture and lighting as required by the Consultant.
12. Spring balance dial type cap. 100 kg
13. Litre measures
 - a) 10 Lit 1 No.
 - b) 5 Lit 1 No.
 - c) 2 Lit 2 Nos
 - d) 1 Lit 1 No.
 - e) 1/2 Lit 1 No.
14. Cube Testing Machine 100 Tons.
15. Oven.
16. Cores/ Apparatus for conducting Proctor Density Tests.

In case the Contractor is not able to establish such lab/testing room, he shall get all the required tests done at a NABL accredited lab nearby, The tests are to be carried out as per the required norms and codal provisions.

For related works, free access to the Consultant and Engineer's representative should be made possible at all times ,during the testing or otherwise at lab/testing room.

CO-ORDINATION OF WORK

The contractor is fully responsible for coordinating with the other agencies for sanitary, electrical work, etc. to ensure execution of their work related to commencement of concreting. Nothing extra shall be payable to the contractor, if the works pertaining to concreting have to be dismantled and redone due to lack of co- ordination on the part of the contractor in ensuring completion of works of such agencies before concreting had been undertaken.

2.4 SPECIFICATIONS FOR STEEL REINFORCEMENT

GENERAL

2.4.1 DESCRIPTION

This section covers the requirements for fabricating, delivering and placing of steel reinforcement in position for casting all types of concrete work

2.4.2 RELATED WORK SPECIFIED ELSEWHERE

Applicable Codes and Standards:

The codes and standards generally applicable to the work in this sections are listed below: -

IS: 280 Mild wire for general engineering purpose

IS: 432 Part I Mild steel and medium tensile steel bars Part II Hard drawn steel wire IS: 456 Code of practice for plain and reinforced concrete

IS: 1139 Hot rolled mild steel, medium tensile steel and high yield strength steel deformed bars for concrete reinforcement

IS: 1566 Hard drawn steel wire fabric for concrete reinforcement

IS: 2502 Code of Practice for bending and fixing of bars for concrete reinforcement

The following clauses are intended to amplify the requirements of the reference documents listed above and the contractor/Engineers representative shall comply with these clauses.

2.4.3 SUBMITALS

2.4.4. BAR BENDING SCHEDULE

The Contractor shall prepare Bar Bending Schedule for reinforcement before fabrication

2.4.5 MATERIALS

2.4.5.1 STEEL REINFORCEMENT

Steel reinforcement to be procured by the Contractor for works shall be either of the following types:-

2.4.5.1.1 Mild steel of Grade 1 tested quality conforming to IS: 432-Part-__

2.4.5.1.2 3370 Code of practice for concrete structures for (Part I to IV) the storage of liquids

2.4.5.1.3 High yield strength cold worked deformed steel bars of tested quality conforming to IS: 1786 or hot rolled high tensile deformed steel bars of tested quality conforming to IS: 1139.

2.4.5.1.4 Hard drawn steel fabric conforming to IS: 1566.

2.4.5.2 All Reinforcement steel (TMT bars) and Structural Steel shall be procured as per specification mentioned in BIS's documents – IS:1786 and IS:2062. Independent tests shall be conducted, wherever required, to ensure that the materials procured conform to the Specifications.

These steel shall be procured only from those firms, which are Established, Reliable, Indigenous & Primary Producers of Steel, having Integrated Steel Plants (ISP), using iron ore as the basic raw material and having in-house iron rolling facilities, followed by production of liquid steel and crude steel, as per Ministry of Steel's (Government of India) guidelines e.g. SAIL, Arcelor Mittal, TISCO, JINDAL etc.

However, only certain isolated sections of structural steel, not being rolled by ISPs, can be procured from the authorized re-rollers of ISPs or authorized licensee of BIS having traceability system and who use billets produced by ISPs with the approval of Engineer.

- 2.4.5.3 The contractor shall have to submit the cash memo and challans along with the lot / batch of steel purchased in token of proof of purchase of steel from reputed dealers. Steel shall be approved by Engineer only after production of necessary certificates before use in works.

The contractor shall produce the manufacturers test certificate for each lot of supply satisfying the requirements of relevant IS specifications and at the specific frequency as laid down.

- 2.4.5.4 The Contractor shall arrange to carryout additional tests on physical properties of steel for every 40 metric tonne (t) of steel and for every change in lot / batch for reinforcement steel and structural steel at his cost. No extra payment will be made for conducting such tests and the agreemental rate is inclusive of above testing charges.

All reinforcement shall be stored horizontally above ground level on supports, skids or other approved supports, clear of any running or standing water. Contact with soil should be avoided. Proper drainage and protection from the elements shall be provided to minimize corrosion.

Before steel reinforcement is placed in position, the surface of the reinforcement shall be cleaned of rust, dust, grease and other objectionable substances. In order to confirm the quality periodical tests as specified as the relevant IS shall be conducted by the contractor at his own cost.

2.4.5.2 BINDING WIRE

Binding wire shall be black annealed steel wire conforming to IS: 280 and of minimum 18 gauge.

2.4.5.3 WELDING ELECTRODES

Electrodes used for welding of steel bars shall be of ordinary mild steel grade electrodes conforming to IS: 814 and shall be of the best quality approved by Consultant/Engineers representative.

2.4.6 STORAGE

Reinforcement steel shall be handled and stored in a manner that bending or distortion of the bars is avoided and contamination of steel is prevented.

All reinforcement shall be stored horizontally above ground level on supports, skids or other approved supports, clear of any running or standing water. Contact with soil should be avoided. Proper drainage and protection from the elements shall be provided to minimize corrosion. Bars of different classifications and diameters shall be stored separately. A record shall be kept of the batch numbers of reinforcement deliveries in such a form that the part of the works in which particular reinforcement is used can be readily identified. Welding electrodes shall be stored in moisture control-led environment in accordance with the manufacturer's recommendations.

2.4.7 FABRICATION

Reinforcement steel shall be carefully and accurately cut, bent or formed to the dimensions and configurations shown on the drawings and as per bar bending schedules approved by the Consultant / Project- in-charge. All reinforcement shall be bent cold using appropriate pin size. Bars may be preheated only on approval of the Consultant. Quenching shall not cool hot bars. Bends shall be in accordance with IS: 2502.

It shall be ensured that the bars are not straightened in any manner that will injure the material. Any bars incorrectly bent shall be used only if means for straightening and rebinding be such as not to affect adversely the material. Reinforcement shall not be re-bent or straightened without prior review by the Consultant. No reinforcement shall be placed in position on the works without approval of the Consultant, whether or not it is partially embedded in hardened concrete.

Reinforcement steel having a reduced section, visible transverse cracks in bends, or otherwise damaged in anyway shall not be used.

Spiral reinforcement shall be accurately fabricated to the diameter and pitch shown on the drawings. One and one half finishing turns shall be provided at both top and bottom unless

shown otherwise. Cut ends of galvanized rods shall be given a protective coat of an approved zinc paint immediately after cutting.

TEST/FREQUENCY OF TEST OF CEMENT POLYMER COMPOSITE COATING FOR REINFORCEMENT.

TEST:

Coated bars are bent at 120 ° around a mandrel. NO peeling or cracking should be observed on outer radius.

FREQUENCY OF TEST:

- a) Coating thickness shall be tested at a frequency of not less than one full length bar every twenty bars for each size.
- b) Continuity of coating shall be determined by testing one full length bar in every twenty bars for each size.
- c) Coating thickness over the whole of the coated bar section shall be determined by sectioning and examining one bar in every twenty tonnes for each size. d) For testing adhesion of coating, samples shall be selected from each size according to the frequency given below: For all types of bar: Minimum 1 for every diameter or as directed by engineers representative.

2.4.8 LAPPING

As far as possible bars of maximum length available shall be used. All bars shall be in one length unless otherwise shown on the drawings or agreed with the Consultant/Engineers representative.

Laps shown on the drawings or otherwise specified by the Consultant shall be based on the used of bars of maximum length by the contractor. In case the Contractor wishes to use shorter bars, laps shall be provided at the Contractor's cost in the manner and locations approved by the Consultant /Engineers representative.

Not more than 1/3 rd of the bars or as specified in the drawings shall be lapped at one section.

Reinforcement bars shall not be welded unless shown on the drawings or instructed by the Consultant / Engineers representative. Mechanical couplers conforming to IS 16172 may be used for bars more than 20mm dia

2.4.9 PLACEMENT

All reinforcement shall be placed accurately and maintained in the position indicated on the drawings. The contractor shall provide approved type of supports for maintaining the bars in position and ensuring required spacing and correct cover of concrete to the reinforcement as

called for in drawings. Pre-cast cement concrete blocks of required shapes and size, MS. chairs and spacers bars shall be used in order to ensure accurate positioning of reinforcement. Pre-cast concrete blocks shall be cast well in advance and shall be at least equal in quality to the class of concrete specified in the work.

In fair faces of concrete, temporary spacers only shall be used and removed or withdrawn as compaction of concrete proceeds. Spacers will not be permitted to be left in fair faces of concrete.

All intersections of the reinforcements shall be securely tied with two strands of binds wire twisted tight to make the skeleton or net work rigid so that the reinforcement is not displaced during placing of concrete.

Tack welding of crossing bars shall not be done except as authorized or directed by the Consultant / Project- in-charge. Nothing extra will be paid for tack welding.

The contractor shall take all responsible precautions to ensure that when handling or erecting reinforcement no damage shall be done to finished concrete . Bars that are partially embedded in concrete shall not be filed bent unless concurrence has been obtained from the Consultant / Engineers representative.

Walkways and borrow runs for placing and compacting the concrete shall be independent of the reinforcement.

Loose binding wire and other extraneous metal shall be removed from inside the form work prior to concrete placing.

Without relieving the Contractor of the responsibilities for the correctness thereof, the reinforcement shall be inspected and approved by the Consultant in writing before any concrete is placed and the contractor shall allow sufficient time for such inspecting and any subsequent remedial action to be carried out No part of the reinforcement shall be used for conducting electrical currents.

2.4.10 COVER TO REINFORCEMENT

Unless shown otherwise on the drawings, minimum cover for all reinforcement (for the type of Exposure condition) shall be provided as per IS: 456, care shall be taken to maintain the correct cover to reinforcement.

For concrete members exposed to weather, earth, action of harmful chemicals, acid vapor, saline atmosphere, sulphurous smoke etc minimum cover for reinforcement shall be increased by 15 mm to 40 mm as directed by the Consultant / Engineers representative.

The maximum cover for reinforcement shall not be greater than that specified above or shown on the drawings plus 10 mm except for bundled bars.

For bundled bars, minimum, concrete cover shall be equal to the equivalent diameter of the bundle but need not be greater than 50 mm.

Exposed reinforcement intended for binding with future extensions shall be protected from corrosion as shown in the drawings.

2.4.11 CLEANING

After placing, the reinforcement shall be maintained in a clean condition until the concrete is placed. On no account the bars shall be oiled or painted or mould oil used on the formwork be allowed to come in contact with the bars.

Before concreting is commenced, the bars shall be thoroughly cleaned with dry gunny bags if they are coated lightly with rust or other impurities.

2.4.12 WORK WILL INCLUDE

- a) All cutting to lengths, labour in bending and cranking, forming hook ends, handling, hoisting and all that is necessary to fix reinforcement in work as per Drawings and specifications This shall also include all that is fairly intended and is necessary for completion of work.
- b) Cost of pre-cast concrete cover blocks to maintain cover and holding reinforcement in position, chairs, spaces, dowels, pins, laps, etc.
- c) For fabricating and fixing reinforcement in any structural member irrespective of its location, dimension and level.
- d) Work at all levels.
- e) All the above mentioned works shall be included in the quoted rates Nothing extra shall be payable to the contractor on this account
- f) Reinforcement Steel procurement shall be done by the Contractor.

2.5 SPECIFICATIONS FOR FORMWORK

2.5.1 GENERAL DESCRIPTION

This section covers the requirements for providing, fabricating and erecting of form work including propping, bracing, shoring, strutting, rising, bolting, wedging and all other temporary and all other temporary supports to the concrete during the process of setting subsequent removal of forms.

2.5.2 APPLICABLE CODES AND STANDARDS

The codes and standards generally applicable to the work of this section are listed hereinafter

IS: 456 Code of practice for plain and reinforced concrete.

IS: 4990 Ply wood for concrete shuttering work.

2.5.3 SUBMITTALS

2.5.3.1 TYPE OF FORM WORK

Prior to start of delivery of material for formwork, the contractor shall prepare samples of different types of formwork for about 10 sqm and obtain approval of the Consultant/Engineers representative.

2.5.3.2 DESIGN OF FORMS

Before fabricating of forms, the contractor shall submit design calculations for proposed form work to Consultant/Engineers representative for his approval. However, the approval of his responsibility for adequately constructing and maintaining the forms so that they will function properly.

2.5.3.3 TIE BOLTS

In case the contractor proposes to use tie bolts running through the concrete, the location and size of such tie bolts shall be submitted to the Consultant/Engineers representative for his Approval.

2.5.4 MATERIALS

2.5.4.1 Formwork shall be timber, plywood, steel or any other material capable of resisting damage to the contact faces under normal conditions of erecting forms, fixing steel and placing concrete. The selection of materials suitable for formwork shall be made by the Contractor based on the maximum quality consistent with the specified finished and safety.

2.5.4.2 TIMBER

Timber used for formwork shall be easily workable with nails without splitting. It shall be stable and into liable to warp when exposed to sun and rain or wetted during concreting.

2.5.4.3 PLYWOOD

Plywood used for formwork shall be 12 mm thick shuttering quality plywood complying with IS: 4990 and of make approved by the Consultant

2.5.4.4 STEEL

Steel form work shall be made of minimum 2 mm thick or more as required black sheets stiffened with angle iron frame made out of M S angles 40 mm X 6mm.

2.5.5 DESIGN CRITERIA

Formwork shall be designed for the loads and lateral pressures due to dead weight of concrete, superimposed live loads of workmen, materials and plants and for other loads as indicated on the drawings. Forms shall be designed to have sufficient strength to carry on the hydrostatic head of concrete as a liquid without deflection tolerances exceeding the acceptable limits.

Where necessary to maintain the tolerances indicated on the drawings. The formwork shall be cambered to compensate for anticipated deflections due to the weight and pressure of the fresh concrete, and also due to any other construction loads. Unless otherwise shown or specified, the camber shall be provided as below:-

Types of member	Compression Steel As % of tensile steel	Camber Co- efficient
Simple span	0%	0.066
Continuous	50%	0.037
Restrained		
span	Cantilever0%	0.032
Cantilever	50%	0.020
	0%	0.086
	50%	0.046

Camber in cms Where $(K \times L \times 2.54)/D$

K = Camber coefficient

L = Length of member in meter

D = Depth of member in meter

2.5.6 ERECTION OF FORMWORK

Forms shall be used wherever necessary to confine the concrete during vibration and to shape it to the required line. The formwork shall conform to shapes, lines, levels and dimensions of the concrete sections shown on the drawings.

Forms shall have sufficient strength to withstand the pressure resulting from placement and vibration of concrete and shall be maintained rigidly in position. Form work shall be adequately supported by adequate number and size of struts, braces, ties and props to ensure rigidity of forms during concreting. Where props rest on natural or filled up ground, to avoid any settlement, the soil shall be thoroughly compacted and bases of props shall be sufficient size so as to restrict the bearing on the ground to 50 t/ sqm. Forms shall be tight enough to prevent loss of mortar from the concrete and to produce dense, homogenous and uniformly coloured concrete completely free from honeycombing or surface roughness. Joints in formwork shall be designed to prevent leakage, not only between individual elements forming the panels but also from the horizontal and vertical junction between the panels themselves.

If form work is held together by bolts or wires, those shall be so fixed that no reinforcement bar is exposed on surface against which concrete is to be laid. The Consultant may at his discretion allow the contractor to use tie bolts running through the concrete at his own cost.

Hole left in the concrete by these tie-bolts shall be filled as specified by him at the Contractor's expense. Formwork shall be constructed so as to facilitate loosening and permit removal without jarring the concrete. Wedges, clamps and bolts shall be used wherever practicable instead of nails. All formwork erected shall be approved by the Consultant/Engineers representative before concreting is started.

2.5.7 CLEANING AND OILING OF FORMS

At the time concrete is placed in the forms, the surface of the forms in contact with the concrete shall be free from encrustations of mortar, grout or other foreign materials. Temporary openings shall be left at the bottom of formwork to enable, sawdust, shavings, wire cuttings and other foreign material to be worked out from the interior of the forms before the concrete is placed.

The surface of the forms to be in contact with the concrete shall be coated with an approved coating (of shuttering oil) that will effectively prevent sticking and will not stain the concrete surfaces. After each use the surfaces of forms in contact with concrete shall be cleaned, well settled and treated with form oil approved by the Consultant Engineers representative. Lubricating (machine) oils shall not be used.

Oiling shall be done before reinforcement has been placed and care shall be taken that no oil comes in contact with the reinforcement while it is being placed in positions.

Immediately before concreting is commenced the formworks shall be carefully examined to see that all dirt, shavings, sawdust and other refuse have been removed and the formwork shall be wetted thoroughly to prevent absorption of water from concrete. The formwork shall be kept wet during concreting and for the whole time that it is left in place.

2.5.8 REMOVAL OF FORM WORK

Form works shall be removed carefully so as to prevent damage to the concrete. Wooden wedge only shall be used between the concrete surface and the form where force is necessary to separate the form from the concrete. Metal wedge, bars or tools shall not be used for this purpose. Any concrete damaged in the process of removing the forms shall be repaired in accordance with the provision of concrete specifications.

Unless otherwise permitted by the Consultant, the forms shall not be stripped in less than the minimum periods specified in IS: 456. However, the Consultant may increase the above period if he considers it necessary for structural stability

All non-supporting forms shall be loosened and removed during regular working hours, and as soon as the concrete has hardened sufficiently to prevent damage from the removal of the forms. All false work and forms supporting concrete beam and slabs, or other members subject to direct bending stress, shall not be removed or released until the concrete has attained sufficient strength to ensure structural stability and to carry both the dead and live loads including any construction loads which may be placed upon it.

No construction loads exceeding the combination of superimposed dead load plus specified live load shall be supported on any unshared portion of the structure under construction, unless analysis indicates adequate strength to support such additional loads. Form work shall be removed in such a manner so as not to impair safety and serviceability of the structure. It shall be removed gradually to prevent sudden application of loads to the concrete. All concrete to be exposed shall have sufficient strength to prevent any damage caused by removal of formwork.

2.5.9 HACKING:

Immediately after removal of forms, the concrete surface intended to be either plastered or finished, shall be roughened with brush hammer or with chisel and hammer as directed by the construction manager to make the surface sufficiently coarse and rough to provide a bonding key for plaster.

No extra payments shall be made to the Contractor for such work on concrete surface after removal of the form work. No payment shall be made for temporary formwork used in concreting, or for form work required for joints or bulk-heads, in floor or elsewhere, whether such joints are to be covered later with concrete or mastic or other materials.

2.5.10 POCKETS AND OPENINGS:

Where boxes, pockets or openings are required (not exceeding 0.1 sqm) to be formed in the concrete. No deduction shall be made for the area of box or pockets in measuring the area of concrete surface shuttered. In other words the area of shuttering shall be reckoned as if box or pocket or openings were not present.

However, on measuring the concrete quantity, the volume of the box or pocket shall be deducted. If the area of box or pocket or openings against the shuttered faces exceeds 0.1 sqm. It shall be paid not as a box or pocket or opening but as formwork at the rates for formwork.

No extra payment shall be made for holes to be made in the form work for inserting electrical conduits hooks for fans etc.

2.5.11 REUSE OF FORMS

Immediately after the forms are removed, they shall be cleaned with jet of water and a soft brush before they are reused.

The contractor shall not be permitted reuse of any forms which in the opinion of the Consultant has worn out and has become unfit for formwork.

The Consultant/Engineers representative may in his absolute discretion, order rejection of any forms he considers unfit for use in the works, and order their removal from the site.

2.6 SPECIFICATIONS FOR AUTOCLAVED AERATED CEMENT BLOCK MASONRY WORK:-

2.6.1 SCOPE:-

The Contractor shall provide all labour, materials, scaffolding operations, equipment and incidentals necessary required for the completion of all AAC Block work called for in the drawings and documents and that which is fairly intended for smooth completion of the work.

2.6.2 AAC BLOCK :-

The AAC Block and shall be of uniform size (625 mmX250 mmX100 -300 mm -),having compressive strength 35 -40 Kg/Cm2.

2.6.3 MORTARS:-

2.6.3.1 All AAC Block works shall be laid with specified mortar (cement mortar 1:4 / polymer modified adhesive) of good workable quality.

2.6.3.2 WETTING OF BLOCKS:-

All blocks required for masonry, in cement or polymer modified adhesive mortars ,shall be dipped in water and lift immediately or water can be applied to blocks with the help of brush.

2.6.4 LAYING:-

- a) Before starting the first course of blocks provide bed of mortar to level and plumb, check the height of masonry to build and distribute the same along joints.
- b) The walls shall be taken up truly plumb. All courses shall be laid truly horizontal and all vertical joints join shall be truly vertical. Maintain a regular bond pattern, based on minimum overlap of 100mm or quarter block, whichever is more.
- c) Horizontal and vertical joints to be filled properly without gaps /cavities to avoid air entrap ,the best way to do this is sliding of block after placing of mortar surface.

2.6.5 BOND BEAMS OR BED JOINT REINFORCEMENT:-

2.6.5.1 As for all masonry materials, The AAC block work is subjected to movements and this may lead to development of cracks. These may be due to shrinkage and non-uniform loading of walls.

2.6.5.2 To minimize the effects of shrinkage, tensile and diagonal cracking and to enhance stability, it is to provide bed joint reinforcement or nominal bond beams.

2.6.5.3 Cross walls shall be bonded to the long walls in alternate courses. For any nonstandard gap, cut the blocks to the required size to fill the same.

2.6.5.4 Provide bed joint reinforcement or RCC bond beam of thickness 80mm with two numbers of 8 mm dia rods and 6 mm stirrups at 200mm c/c as per IS 6041 and IS 1905-1987 .Ensure that reinforcement rods are anchored into columns.

2.6.6 SERVICE LINES:-

- (a) For concealed works of sorts or piping, the block work wall can be chased using electric router. Holes in block work will be made using electric drill.
- (b) The chases shall be refilled with mortar and if necessary, chicken mesh shall be applied on the area to be repaired and cured to make good the surface.

2.6.8 CURING:-

Green Work shall be protected from rain by suitable covering, the AAC Block Masonry with cement mortar shall be kept constantly moist on all mortar joints for a minimum period of 7 days.

2.6.9 SCAFFOLDING:

Double scaffolding having two sets of vertical supports shall be provided. The supports shall be sound and strong, tied together with horizontal pieces over which the scaffolding planks shall be fixed. The Contractor shall be responsible for providing and maintaining sufficiently strong scaffolding so as to withstand all loads likely to come upon it consistency.

2.7 UNPLASTICISED RIGID PVC RAIN WATER PIPES.

Laying Instruction & Jointing Procedure:

- a) Initially the spigot end of the pipe is to be inserted into the socket end of the pipe of fitting to be joined and then mark the insertion depth on the spigot end with the help of a felt pen or a marker.
- b) Withdraw the pipe from the socket end and clean the outside of the pipe's spigot end and inside of the sealing groove of the pipe/fitting thoroughly.
- c) Apply the Rubber Lubricant uniformly to the spigot end, sealing ring and push the spigot and into the socket containing sealing ring until fully home.
- d) Lay the pipes in final position, in such a way that the flow of rainwater will happen to pass the spigot end of the first pipe laid from the building terrace side to ground side pipes socket end .
- e) Test the assembly by closing the lower end of the last pipe near the ground ,and pouring the water from the terrace.

2.8 SPECIFICATION FOR DOORS:

2.8.1 MATERIAL

2.8.1.1 TIMBER

2.8.1.2 TEAK WOOD

Teakwood shall be second class Indian Teakwood conforming to IS: 4021 of good quality, well-seasoned and free from defects such as cracks, dead knots, sapwood etc. No individual and sound knot shall be more than 15 sq.cm in size and the aggregate area of such knots shall not exceed 2% of the areas of the piece. The timber shall be fairly close grained having not less than 2 growth rings per cm. Width in cross – section.

2.8.1.3 Hard Wood:

Hard wood shall be first class conforming to IS 4021 of good quality, well-seasoned and free from defects such as dead knots, cracks, sapwood etc. No individual hard and sound knot shall exceed 6 sq.cm in size with no dimension more than 50 mm and the aggregate area of such knots shall not be more than 1% of the area of the piece. There shall not be less than 5 growth rings per cm. Width in cross-section.

2.8.1.4 Moisture content in timber

The maximum permissible percentage of moisture content for well seasoned timber shall be as per IS 287.

2.8.2 Workmanship of wood work

Workmanship for wood and joinery shall be as per IS 1200 and IS 4021.

2.8.3 Painting / Polishing of wood work

Painting / polishing of wood work shall be in accordance with clause Nos. of specification No.6.9.2 to 6.11.3.

2.8.4 WOODEN DOOR

Wooden door shall be made of specified wood as per item description and shall be in accordance with detailed drawings.

The wooden members of the frame shall be planed smooth and accurate to the full dimensions. Rebats, rounding, moulding etc., shall be done before the members are jointed into frames.

Joints in the frame work shall be perfect with square edges and shall be pinned with hard wood / bamboo pins of 10 to 15 mm dia.

Wood work shall be painted / polished or otherwise treated as specified. All exposed portions shall be coated with wood primer and concealed surface by bituminous paints as per clause No. 6

Before any surface treatment is applied, the wood work shall be got approved by the Engineers representative. The frames shall be fixed only after acceptance by the Engineers representative. The frames shall be fixed to the masonry by 300 mm x 25 mm x 6mm MS hold fasts embedded in M-15 grade concrete block of 350 mm x 100mm x 100 mm in the hole of the masonry. In case of concrete, frames shall be fixed by 96mm long 12 mm dia metallic dash fasteners.

2.8.5 SHUTTERS:

EKO TIMBER SINGLE EXTRUDED WPC/PVC FLUSH DOOR SHUTTER:

2.8.5.1 Materials

2.8.5.1.1 WPC/PVC (wood plastic composite)

Comprising of virgin polymer of K- value 50-60 (suspension grade) ,calcium carbonate and natural fibres and non toxic additives having density of 550/kg cum to 650/kg cum

2.8.5.1.2 Hinges

Hinges shall be of stainless steel and butt type conforming to IS: 12817. Size of hinges shall be in accordance with shutter width and as per IS: 12817.

2.8.5.1.3 Workmanship

The overall composition shall be uniform and specified thickness (30 mm) and shall be properly sized in view of the operation of shutter.All the four edges of the door shutter shall be square. The shutter shall be free from twist or warp in its plane.

The shutter when fitted to the frame shall satisfy all operational aspects of the door like smooth movement, proper closing against the door frame etc

2.8.6 Aluminium Windows / Ventilators

2.8.6.1 General

Aluminium glazed windows / ventilators shall be of specified sectional size, dimension and profile as per drawings complying to IS 1868/1982.

2.8.6.2 Materials

All Aluminium sections shall be extruded sections of Aluminium alloy as per IS:733 and IS:1285. Aluminium sections shall be anodized as per IS: 7088 to min, 25 microns. Glass used for glazing shall be of following type in accordance with item description.

- i. 5.5 mm thick glass conforming to IS 5437.
- ii. 5.5 mm thick transparent sheet glass conforming to IS: 2853 (Wt. 7.2 kg/sq.m).

2.8.6.3 Workmanship

Frames shall be square and flat, the corner of the frame being fabricated to true right angles. Details of construction of frames, shutters etc., and shall be as per drawings.

The window shutters shall be fitted with all fittings and fixtures as specified. The handle cum locking device for windows shall be of aluminum and as per design.

Glazing shall be fixed to the extruded sections by means of extruded aluminium beading. Glass panes shall be provided with rubber lining before fixing.

The aluminium frames shall be fixed to the masonry by means of aluminium lugs fixed to the frame (by counter sunk galvanized machine screws) and grouted with M-15 grade concrete in the hole in the masonry as per drawing. In case of concrete material adjoining, the frames shall be fixed by 96 mm long, 12 mm dia metallic dash fasteners. Any steel material coming in contact with aluminium shall be galvanized. The windows / ventilators shall be checked to ensure smooth operation, perfect level and plumb.

2.8.7 FRAMELESSS GLAZED DOORS

2.8.7.1 General

Glazed door shall be of specified sectional size, dimension and profile as per drawings.

2.8.7.2 Materials

Glass used for glazing shall be of following type in accordance with item description.

- 1 12 mm thick toughened glass conforming to IS codes on toughened (tempered) glass..

2.8.7.3 Workmanship

The glass being cut would be true right angles. Details of construction of frameless toughened glass shutter etc., shall be as per drawings. The glass shutter to be mounted and fixed in position on top and bottom pivot having double action floor spring type fixing arrangement .

2.9 SPECIFICATION FOR FLOORING & PAVING

2.9.1 SCOPE

The Contractor shall furnish all labour, materials, tools, equipment, machinery operations and related items necessary and required for the full performance of the contract under this section, as shown on the drawings or as specified or reasonably implied or incidental to the construction.

2.9.2 GENERAL

The flooring shall be laid to the level except where slopes are called for on the drawings, in which case the slopes shall be uniform and arranged to drain into the indicated outlets. Particular care shall be exercised to ensure that all flooring, skirting etc., is perfectly matched for color and finish. The Contractor shall pave the areas indicated on the plans and schedule of finishes with materials therein called for. All work shall be laid to the best practice known to the trade.

The Contractor shall furnish for approval by the Consultant, samples of each type of floor, paving etc., the samples shall be of sizes and thickness as specified.

2.9.3 POLISHED GRANITE STONE SLABS FOR FLOORING, STEPS, STAIRS, CLADDING ON PANTRY AND WASH BASIN COUNTERS

Providing & fixing granite of approved quality and colour of required size mm double polished M/C cut of 20mm thick over floor surface in proper line. Level in CM 1:4 including finishing the joint with matching colour cement, polishing the top surface etc., complete as per instruction of Consultant/ Engineers representative.

Granite stone shall be of best quality machine polished, Machine Cut and of approved colour, dense and homogenous in texture free from cracks, decay, weathering and flaws. The stone shall be of required size and shall be 20 mm thick. The material shall have to be approved by Consultant before and after procurement. Before laying flooring, the surface shall be paved and thoroughly hacked, cleaned off all mortar scales, loose materials etc., unless and until the surface is approved by Consultant / Engineers representative, the laying shall not be done. The bedding with CM 1:4 proportion as directed by Consultant / Engineers representative with minimum thickness of 20 mm layer (or as specified in the item or CPWD specifications) shall be laid evenly and to the required slope. The granite shall be truly and evenly set in thin paste of next cement apply to the bottom and to the prepared base. The stone then shall be temped down with wooden mallet until they are exactly in true plane and in line with adjacent stone.

The stone shall be closed jointed and filled with matching cement. The entire surface of flooring shall be polished with machine upto to mirror polish achieved including necessary use of approved chemicals etc., as directed by Consultant / Engineers representative.

2.9.4 FINISHING

The finishing of the surface shall follow immediately after the cessation of beating. The surface shall be left for sometime, till moisture gets dried from its joints or top, Excessive trowelling shall be avoided. Use of dry cement or cement and sand mixture sprinkled on the surface to stiffen the concrete or absorb excessive moisture, shall not be permitted.

2.9.5 CURING

The curing shall be done for a minimum period of ten days. Curing shall not be commenced until the top layer has hardened. Covering with empty cement gunnies shall be avoided as the color is likely to be bleached with the ruminants of cement matter from the bags.

2.9.6 CERAMIC TILES GLAZED AND MATT FINISH

Ceramic tiles in toilets and other areas where called for shall be non-slip ceramic tiles of approved make and shade. The tiles shall be laid to the pattern as approved by the Consultant. The tiles shall be of uniform color, true to size and shape and free from cracks, twists, uneven edges, crazing and other defects. The size and thickness of the tiles shall be as specified.

The tiles shall be laid as per the pattern shown in the drawings over a bed of specified thickness of cement mortar leveled to a true surface. The surface of the bedding mortar shall

be left rough to provide bond for the tiles. A floating coat of thick cement slurry shall be laid over the screed to proper levels and the tiles set over the same firmly to correct line and levels.

The joints shall be filled and finished neat with cement paste pigmented to the shade of the tile. The joints shall be finished neat as directed and shall be straight, regular and uniform. On completion, the surface shall be washed with water, rubbed with fine saw dust and left clean.

The finished floor surface shall be true to required levels.

2.9.7 VITRIFIED TILES IN FLOORING AND SKIRTING

2.9.8 VITRIFIED TILES

The tiles shall generally conform to latest IS standards shall be procured by the contractor. They shall be flat, true to shape and free from cracks, crazing spots, chipped edges and corners. The glazing shall be of uniform shade and color shall be as shown in the drawings.

The tiles shall be of specified size and thickness as per drawing. The tolerance on facial dimension value shall be +/- 1.0mm and +/- 0.5 mm in thickness.

The top surface of the tiles shall be glazed. The glazed shall be either glossy or matt as specified. The underside of the tiles shall be completely free glazed in order that the tile may adhere properly to the base. Type edges of the tiles shall be preferably free form glaze, however, and glazed if unavoidable, shall be permissible on any one edge of the tile.

2.9.9 LAYING

The Vitrified tiles shall be laid on 20 mm thick cement mortar 1:4 (1 part cement and 4 parts coarse sand). The RCC slab should be washed clean before the preparation of procedure of laying of floor tiles is commenced. The tiles shall be laid on the mortar, tapped, with a wooden mallet, and brought to required level. The edges of the tile already laid shall be buttered with slurry of cement and pigment to match the shade of slabs. The tile to be laid shall then be placed in position, pressed and properly bedded in level with adjoining tiles with as fine a joint as possible. Other tiles are also laid in similar manner to correct levels with fine joints. The surplus slurry on the surface shall be cleaned off. The tiles shall be soaked in water, washed clean, and a coat of cement slurry applied liberally at the back of tiles and set in the bedding mortar. The tiles shall be tamped and corrected to proper plans and lines.

The tiles shall be set in required pattern and butt jointed. The joints shall be as fine as possible. Where full size tiles cannot be , these shall be cut to the required size and their

edges made smooth. The tiles shall be laid as per the pattern shown on the drawings or as approved by Consultant / Engineers representative.

2.9.10 CURING AND FINISHING

The joints shall be cleaned off of the grey cement grout with soft wire brush or trowel and all dust and loose mortar removed. Joints shall then be flush pointed matching grout to match the color of tiles. The surface shall then be kept wet for 7 days. After curing, the surface shall be washed and finished clean. The finished work shall not sound hollow when tapped with wooden mallet.

2.10 WATER-PROOFING FOR ROOF

The waterproofing shall be integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc. consisting of following operations:

Applying and grouting a slurry coat of neat cement using 2.75 kg/sqm. of cement admixed with proprietary water proofing compound conforming to IS : 2645 over the RCC slab including cleaning the surface before treatment.

- a) Laying cement concrete using broken bricks/brick bats 25mm to 115mm size with 50% of cement mortar 1:5 (1 cement: 5 coarse sand) admixed with proprietary water proofing compound conforming to IS: 2645 over 20mm thick layer of cement mortar of mix 1:5 (1 cement: 5 coarse sand) admixed with proprietary water proofing compound conforming to IS: 2645 to required slope and treating similarly the adjoining walls upto 300mm height including rounding of junctions of walls and slabs.
- b) After two days of proper curing applying a second coat of cement slurry admixed with proprietary water proofing compound conforming to IS: 2645.
- c) Finishing the surface with 20mm thick joint less cement mortar of mix 1:4 (1 cement: 4 coarse sand) admixed with proprietary water proofing compound conforming to IS: 2645 and finally finishing the surface with trowel with neat cement slurry and making of 300 x 300mm square.
- d) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test. All above operations to be done in order and as directed and specified by

the Consultant/Engineers representative.

With average thickness of 120mm & minimum thickness at khurra as 65mm.

2.10.1 GUARANTEE

The treatment shall carry a guarantee for 10 years against leakage of water, dampness, seating and other defects. The treated roof shall be tested by allowing water to stand on the areas to a depth of 150 mm for at least 72 hours. All guarantee shall be furnished in the format approved by the Engineers representative duly signed by the contractor and sub contractor.

SPECIFICATIONS FOR CURING

The finished surface shall be cured for at least 7 days

2.10.2 KHURRAS

The Khurras shall be constructed before the brick masonry work in parapet wall is taken up, and it shall be 5 cm x 45 cm and shall be formed of cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) unless otherwise specified in the drawings.

2.10.3 LAYING

A PVC sheet 1M X 1M X 400 micron shall be laid under the khurras and then cement concrete shall be laid over it to a minimum thickness of 3 cm with its top surface lower than the level of adjoining roof surface as approved.

2.10.4 FINISHING

The khurras and sides of the outlet shall then be rendered with cement plaster of mix and thickness stipulated in the drawings. This shall be done when the concrete is still green and shall be finished with a floating coat of neat cement. The sides of the khurras and sizes of finished outlet opening shall be as directed by the Consultant.

2.11 SPECIFICATION FOR PLASTERING WORK

2.11.1 SCOPE

The Contractor shall furnish all labour, materials scaffolding, equipment, tools, plants and incidentals necessary and required for the completion of all plaster work.

2.11.2 GENERAL

Plaster as herein specified shall be applied to all internal surface where called for all plaster work shall be executed by skilled workmen in a workman like manner and shall be of the best workmanship and in strict accordance with the dimensions on drawings subject to the approval of the Consultant/Engineer- incharge. The primary requirement of plaster work shall be to provide dense, smooth and hard enclosure and devoid of any cracks of the interior and/or exterior.

2.11.3 SCAFFOLDING

Double scaffolding having two seats of vertical supports shall be provided The supports shall be sound and strong, tied together with horizontal pieces over which scaffolding planks shall be fixed. The contractor shall get the scaffolding approved from the Consultant well in advance.

2.11.4 CHASING AND BREAKAGE

Fixing of door and window frame, shall be completed before any plaster work is commenced on a surface. No chasing or cutting of plaster shall be permitted normally. However, if the same is felt unavoidable at places, written permission shall be obtained from the Consultant before cutting any such plaster. Broken corners shall be obtained from the Consultant before cutting any such plaster, Broken corners shall be cut back out less than 150 mm on sides and patched with cement mortar as directed. All corners shall be rounded to a radius of 80 mm or as directed by the Consultant.

2.11.5 PREPARATION

Masonry and concrete surfaces which call for application of plaster shall be clean, free from dust and loose mortar. Efflorescence or water seepage marks, if any, shall be removed by brushing and scrapping. For masonry surfaces the joints shall be raked out properly, while the concrete surfaces shall be roughed by wire brushing and hacking to provide the key, thereby ensuring proper bond to the satisfaction of the Consultant/Engineer representative. The surface shall then be thoroughly cleaned before plastering is commenced.

2.11.6 CHICKEN WIRE MESH

Galvanized chicken mesh (22 gauge, 12 mm size) shall be provided at junctions of block masonry and concrete members, to be plastered and other locations as called for, properly stretched and nailed with galvanized wire nails, ensuring equal thickness of plaster on both sides of the mesh. The width of the mesh shall be as approved by the Consultant / Engineers representative. The chicken mesh wherever. Specified, shall be fixed in place before plastering.

Samples of each type of plaster shall be prepared well in advance of undertaking the work for the approval of the Consultant/Engineers representative.

2.11.7 MORTAR

The mortar of the specified mix shall be used Mortar shall be prepared as specified under "Brick Work". It shall be made in small quantities, as required, and applied within 15 minutes of adding water to the plaster mix

2.11.8 CEMENT:

Cement shall be as per specifications under "Concrete Work"

2.11.9 WATER:

Water shall be as per specifications under "Concrete Work"

2.11.10 SAND

For plaster work normally clean fine river sand shall be used. However, if specified in the drawing or schedule of finishes, coarse sand conforming to the specifications under Concrete work" shall be mixed with fine river sand in proportion specified or directed by the Consultant.

2.11.11 WATER PROOFING COMPOUND

FOSROC, ROFFE Chemicals or approved equivalent as approved by Consultant / Engineers representative wherever specified.

2.11.11 CEILING PLASTER

6mm thick Ceiling plaster shall be completed before commencement of wall plaster.

Plastering shall be started from the top and worked down towards the floor. To ensure even thickness and true surface, plaster about 15 x 15 cm shall be first applied, horizontally and vertically, at not more than 2 meters intervals over the entire surface to the plaster to serve as gauges. The surface of these gauged areas shall be truly in place of the finished plaster surface. The mortar shall be laid between the gauges with a trowel ensuring through filling of joints. The mortar shall be applied in a uniform surface slightly more than the specified thickness and then brought to a true surface, by working a wooden straight edge reaching across the gauge, with small upward and side movements at a time. Finally, the surface shall be finished off true with trowel or wooden float according as a smooth or a sandy granular texture is required. Excessive trawling or over working the float shall be avoided.

All corners, arises angles and junctions shall be truly vertical or horizontal as the case may be and shall be carefully finished. Rounding or chamfering corners, arises, junctions etc. Where required shall be done without any extra payment. Such rounding shall be carried out with proper templates to the sizes required. No portion of the surface shall be left out initially to be patched up late on. Grooves shall be provided at the junction of ceiling and wall plaster without any extra cost.

In suspending work at the end of the day, plaster shall be left, cut clean to line both horizontally and vertically. When recommencing the plastering, the edge of the old work shall be scraped, cleaned and wetted with cement slurry before plaster is applied to the adjacent areas, to enable the two to be properly joined together. Plastering work shall be closed at the end of a day on the body of the surface and not nearer than 15 cm to any corners or arises. It shall not be closed on the body of the features such as pilasters, bands and cornices. Horizontal joints in plaster work shall not also occur on parapet tops and copings, as these invariably lead to leakages.

2.11.12 GROOVES

Wherever directed all joints between concrete and brick masonry besides other locations as called for shall be expressed by a groove cut in plaster at no extra cost

2.11.13 FINISH

The plaster shall be finished to a true and plumb surface and to the proper degree of smoothness as required The work shall be tested frequently as the work proceeds with a true

straight edge not less than 2.5 m long and with plumb bobs All horizontal lines and surfaces shall be tested with a level and all jambs and corners with a plumb bob as the work proceeds.

2.11.14 CURING

Curing shall be started as soon as the plaster has hardened sufficiently not to be damaged when watered. The plaster shall be kept wet for a period of at least 7 days. During this period, it shall be suitably protected from all damages

2.11.15 PRECAUTION

Any cracks which appear in the surface and all portions, which sound hollow when tapped or are found to be soft or otherwise defective shall be cut out in rectangular shape and redone as directed by the Consultant

2.11.16 FLOATING COAT OF NEAT CEMENT

Where finishing with a floating coat of neat cement is specified in the drawings or directed by the Consultant, specification, for this item of work shall be same described above except for the additional floating coat which shall be carried out as below. When the plaster has been brought to a true surface with the wooden straight edge, it shall be uniformly treated over its entire area with a paste of neat cement and rubbed smooth, so that the whole surface is covered with neat cement coating. The quantity of cement applied for floating coat shall 1 kg. per sq. mt. smooth finishing shall be completed with trowel immediately and in no case later than half an hour of adding water to the plaster mix.

2.11.17 BEARING PLASTER

This shall be consist of cement plaster 1:3(1 cement : 3 coarse sand) 20 mm thick finished with a coat neat cement laid on top of walls as bearing for RCC lintels, beams and slabs. When dry, a thick coat of lime wash shall be given.

2.12 SPECIFICATION FOR PAINTING WORK

2.12.1 CEMENT PRIMER AS UNDERCOAT AND FINISH PREMIUM ACRYLIC EMULSION PAINT,.

MATERIALS

Cement primer/Premium Acrylic Emulsion paint of approved brand and manufacture shall be used. The same shall be diluted with water or any other prescribed thinner in a manner

recommended by the manufacturer. Only sufficient quantity required for day's work shall be prepared.

The primer/Premium Acrylic Emulsion paint shall be brought by the contractor in sealed tins in sufficient quantities at a time to suffice for a fortnight's work, and the same shall be kept in the joint custody of the contractor and the Project- in-charge. The empty tins shall not be removed from the site of work, till this item of work has been completed and passed by the Consultant / Engineers representative.

2.12.1.1 PREPARATION OF SURFACE

The surface shall be thoroughly cleaned of dust. Any unevenness shall be made good by applying putty, made of plaster of Paris mixed with water on the entire surface including filling up the undulations and then sand papering the same after it is dry.

Pitting in plaster shall be made good with plaster of Paris mixed with the matching colour to be used. The surface shall then be rubbed down again with a fine grade sand paper and made smooth. The patched surface shall be allowed to dry thoroughly before the regular coats of cement primer is applied.

2.12.1.2 APPLICATION OF THE PREMIUM ACRYLIC EMULSION PAINT

- The paint is applied in usual manner with brush, spray or roller.
- The paint dries by evaporation of water content. As soon as the water is evaporated, the film becomes hard and the next coat can be applied.
- The thinning of emulsion is done with water/thinner as per manufacturer instructions.
- The finishing surface should present a smooth finish.

. Old brushes which are dirty and caked shall not be used on the work.

2.12.1.3 SCAFFOLDING

The specifications in respect of scaffolding, protective measures shall be as described under 2.12.3.2..

2.12.2 TEXTURED EXTERIOR PAINT

2.12.2.1 MATERIAL

Textured exterior paint of required colour and of approved brand and manufacture conforming to relevant IS : codes shall be used. Before application of the paint the shade shall be got approved from the Consultant. The paint shall be mixed with appropriate thinners in stages. In all cases the manufacturer's instructions shall be followed meticulously.

The paint shall be mixed in such quantities as can be used up within a hour of its mixing as otherwise the mixture will set and thicken, affecting flow and finish.

The lids of paint shall be kept tightly closed when not in use, as by exposure to atmosphere the paint rapidly become air set due to its hygroscopic qualities.

2.12.2.2 PREPARATION OF SURFACE

For new work, the surface shall thoroughly be cleaned of all mortar dropping, dirt, dust, algae, grease and other foreign matter by brushing and washing. The surface shall be thoroughly wetted with clean water before the paint is applied.

2.12.2.3 APPLICATION

For new work, the treatment shall consist of a priming coat followed by the application of two or more coats of textured exterior paint till the surface shows on even color. For each coat, the entire surface shall be coated with the mixture, uniformly, with proper paint brushes in horizontal strokes followed immediately by vertical ones which together shall constitute one coat.

The subsequent coats shall be applied only after the previous coat has dried, the finished surface shall be even and uniform and shall show no brush marks.

Enough paint shall be mixed to finish certain earmarked area at a time The application of a coat in each earmarked area shall be finished in one operation and no work shall be started in any other area, which cannot be completed the same day After each day's work, the brushes shall be washed in hot water and hung down to dry Old brushes which are dirty or caked with painting shall not be used.

2.12.2.4 SCAFFOLDING

The specifications in respect to 12.12.2.4 scaffolding protective measures shall be as described in 2.12.3.2.

2.12.3 SPECIFICATIONS FOR BLACK JAPAN PAINTING:

2.12.3.1 Workmanship:

2.12.3.2 Scaffolding:

Wherever scaffolding is necessary, it shall be erected on double supports ties together by horizontal pieces, over which scaffolding planks will be fixed no ballies, bamboos or planks shall rest on or touch the surface which is being painted .Where ladders are used, pieces of old gunny bags shall be tied on their tops to avoid damage or scratches to walls.

2.12.3.3 Preparation of surface:

Preparation of surface shall in general be in accordance with, except that any unevenness shall be made good ,

2.12.3.4 Preparation of paint

The paint mix, shall be continuously stirred while applying for maintaining uniform consistency. Number of coats shall be as per item description. The painting shall be laid evenly and smoothly by means of crossing and laying off. The crossing and laying off consists of covering the area with paint, brushing the surface hard at first, then brushing alternatively in opposite direction 2/3 times and then finally brushing lightly in a direction at right angles to the same. In this process, no brush marks, no hair marks no clogging of paint puddles shall be permitted. The full process of crossing and laying off with constitute one coat.

The paint shall be applied by means of brush.

The surface of finishing shall present a flat finish, even and uniform shade without patches, marks, paint drops etc.

2.12.4 Precautions:

- 2.12.4.1 Brushes shall be quickly washed in thinner immediately after use and kept immersed in thinner during break periods to prevent the paint from hardening on the brush.

2.12.4.2 No oil base puttied shall be used in filling cracks / holes.

2.12.5 Protective measures

The surface affected by moss, fungus, algae efflorescence shall be treated in accordance with IS 2395.

2.13 ULTIMA ALLURA GRANIZA TEXTURED FINISH

2.13.1 Material

It shall be water based with advanced copolymer in aqueous dispersion ,textured wall coating consisting of quartz and silica aggregate, inorganic pigments and other additives to form a crack free, flexible, tough textured finish.

2.13.2 Preparation of Surface

The surface to be coated shall be cleaned and all dirt, dust, grease and loose particles shall be removed,as per manufacturer's instructions.

2.13.3 Application

- 1) Apply single coat of trucare wall putty.
- 2) Apply single coat exterior trucare exterior wall primer.
- 3) Followed by 2 coats of Apex Ultima of matching shade.
- 4) Top finish coat in Ultima Allura Graniza in coats to give the needed granite finish appearance

On wall surface.

2.14 VARNISHING

Varnishing of wood and wood based material shall be in accordance with IS 2338 (Part – II). Surface to be Varnished shall be prepared to produce a smooth, dry and matt surface and all dust and dirt shall be removed from the surface.

The varnish shall be applied liberally with a bush and spread evenly over a portion of the surface with short light strokes to avoid fronting. It shall be allowed to flow out while the next

section is being laid in. Excess, varnish shall be scraped out of the brush and then the first section be crossed, re crossed and laid off lightly. The varnish, once it has begun to set, shall not be retouched. In case of any mistake, the Varnish shall be removed and the work shall be started afresh.

Where two coats of varnish are applied, the first coat shall be hard drying under coating or flatting varnish which shall be allowed to dry hard and then be flatted down before applying the finishing coat.

Sufficient time shall be allowed in between two coats.

When flat varnishing is used for finishing, a preparatory coat of hard drying under coating of flatting varnish shall first be applied and shall be allowed to harden thoroughly. It shall then be lightly rubbed down before the flat varnish is applied.

On larger areas, the flat varnish shall be applied rapidly, and the edges of each patch applied shall not be allowed to set, but shall be followed up whilst in free working conditions.

2.14.1 French polish

French polish shall conform to IS: 348. Suitable pigments shall be added to get the required colour. The surface to be French polished shall be rubbed down to smoothness with sand paper and shall be well dusted. Pores in the surface shall be filled up with fillers. A pad of woolen cloth covered by a fine cloth shall be used to apply the finish. The pad shall be moistened with polish and rubbed hard on the surface in a series of over lapping circles applying the polish sparingly but uniformly over the entire area to give an even surface. A trace of linseed oil may be used on the face of the pad for the purpose. The surface shall be allowed to dry and the remaining coats applied in the same way. To finish off, the pad shall be covered with a fresh piece of clean fine cloth, slightly damped with methylated spirit and rubbed lightly and quickly with circular motions. The finished surface shall have a uniform texture and high gloss.

2.15 PAINTING OF STEEL AND OTHER METAL SURFACES

2.15.1 GENERAL

Reference shall be made to the following Indian Standards: IS 2524, IS 1447.

2.15.2 Preparation of surface

The surface, before painting, shall be cleaned of all rust, scale, dirt and other foreign matter with wire brushes, steel wool, scrappers, sand paper etc. The surface shall then be wiped finally with mineral turpentine which shall then be removed of grease etc. The surface then shall be allowed to dry. In case of GI surface so prepared shall be treated with Mordant solution (5 liters for about 100 sq.m) by rubbing the solution generously with brush. After

about half an hour, the surface if required shall be retouched and washed down thoroughly with clean cold water & allowed to dry.

2.15.3 Application of priming and paints

Approved quality primer and paint in specified no. of coats shall be applied as per manufacturer's recommendations either by brushing or spraying. Each subsequent coat shall be applied only after the preceding coat is dried.

2.15.4 SYNTHETIC ENAMEL PAINT TO WOOD WORK /WALL SURFACES.

- 2.15.4.1 Synthetic enamel paint of approved brand and manufacture and of the required colour shall be used for the top coat and an under coat of shade to match the top coat as recommended by the manufacture shall be used.
- 2.15.4.2 One coat of specified paint of shade suited to the shade of the top coat shall be applied after rubbing with the finest grade of wet abrasive paper to ensure a smooth and even surface, free from brush marks and all loose particles dust off.
- 2.15.4.3 Top coats of specified paint of required shade shall be applied after the first coat is thoroughly dry. Additional finishing coats shall be applied if found necessary to ensure properly uniform glossy surface.

2.15.5 GRIT WASH PLASTER/ EXPOSED AGGREGATE PLASTER

- 1. Exposed Aggregate Plaster will be done on earmarked areas on external wall surface. In order to get a proper inter-coat adhesion, the base coat has to be prepared.
- 2. The base consists of ordinary Portland cement and sand rough plaster in a 1:3 or a 1:4 mix.
- 3. The base plaster should have a thickness of 12 mm to 15 mm
- 4. For proper bonding the plaster should be rough. Marked by combing the surface with wavy lines using a wire brush or nail comb.
- 5. The base should be hard and properly cured for a minimum of 5 to 6 days.
- 6. Take sections of aluminum baton strips as per groove size and cut them according to the panel size. Fix this with appropriate adhesives on the walls as per the design.
- 7. Ensure proper fixing of the sections with appropriate adhesives.
- 8. Size of grooves as per design/drawings.

9. Prepare a dry homogeneous mix by taking 3 parts of White Cement and 1 part of fine marble powder (200 Mesh) preferably calcite powder for permanent whiteness, by weight.

10. Add Marble chips 6 to 7 parts to above mix by volume. Prepare the mortar by adding water to the dry mix and apply in between the panels, from top panel downwards. Level the plaster in between the sections and allow to dry for 2 to 3 hours.

11. After that expose the marble chips by washing the cement off from the top with the help of water and a hard nylon bristle brush. Wash the surface in such a way that chips do not come out from the plastered surface.

12. If the cement becomes very hard and the chips are not fully exposed, then wash with a 2% solution of Hydrochloric acid followed by another wash with clean portable water.

13. Finally after complete washing, remove the sections from the plaster to get grooves.

14. Grooves to be filled with any color for contrast.

15. Synthetic inorganic pigments may be added to the mix, in case of colored Grit Wash.

2.16 SPECIFICATION FOR FALSE CEILING

1. FALSE CEILING GRID SYSTEMS

2.16.1 ALUMINIUM GRID SYSTEM

Aluminium grid system for supporting false ceiling tiles shall be of approved make and shall be perfectly levelled aligned at desired height and in accordance with the false ceiling pattern as per drawings.

2.16.2 MATERIAL

M.S. sheets and galvanized with zinc coating of 120 gms/sqm (both side inclusive) as per IS : 277 .

2.16.3 ERECTION

The grid system shall be assembled by interlocking the Perimeter channel and ceiling sections @ 1200 mm c/c max. on both ways by means of aluminum angle cleats of size 25 mm wide x 1.6 mm thick with flanges of 27 mm and 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I. channels 45x15x0.9 mm running at the spacing of 1200 mm centre to centre, to which the ceiling section 0.5 mm thick bottom wedge of 80 mm with tapered flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I. wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long drywall screws @ 230 mm interval, including fixing. The main runners shall be suspended from the ceiling by means of 3 mm thick MS flat clamp fixed to main runners @ 1200 mm max. and fixed to 6 mm dia MS hook which again is fixed to the ceiling. 3 mm thick MS flat clamp shall be connected to main runner with 25 mm long MS clamp with leveling nut @ 1200 mm.

2.16.4 GI GRID SYSTEM

GI grid system for supporting false ceiling tiles shall be perfectly levelled, aligned at desired height in accordance with false ceiling pattern.

2.16.5 MATERIAL AND WORKMANSHIP

a. Wall Channels (Perimeter channels)

Wall channels shall be made 0.5 mm thick GI of size 27 mm, one flange 20 mm and other 30 mm. Wall channels shall be fixed to peripheral walls by raw plugs / dash fasteners @ 450 mm C/C.

b. Intermediate Channels (main runners) GI intermediate channels shall be 0.9 mm thick, of size 45 mm and with two flanges of 15 mm each. The intermediate channels shall be suspended from the soft @ 1200 mm with 25 mm x 0.5 mm GI hanger bolted to the channel and fixed to the ceiling (by means of bolting to GI cleat fixed to the ceiling with dash fasteners).

c. Ceiling Sections (Cross runners)

GI channel shaped ceiling sections shall be 0.5 mm thick having a bottom wedge 80 mm and two flanges of 26 mm each with lips of 10.5 mm. The ceiling sections shall be fixed to the

intermediate channels in perpendicular direction at 450 mm C/C with the help of connecting clips.

2.16.6 GYPSUM BOARD TILES:

Gypsum board shall conform to IS: 2095

The Gypsum boards used for false ceiling shall have following properties. i Thermal Conductivity – 0.16 W / mk

- ii Thermal Resistance
 - a. For 9.5 mm thick board – 0.06 m² K/W
 - b. For 12.5 mm thick board – 0.08 m² K/W
 - c. For 15 mm thick board – 0.09 m² K/W
- iii Fire Propagation
 - a. Fire Propagation

Index of performance not exceeding 12 and a sub index not exceeding 6 (when each side is tested separately to BS 476 Part – 6).

- b. Surface spread of flame Class 1 (both sides) as / test to BS 476 Part – 7).

Gypsum boards shall be of 12.5 mm thickness, and of specified finish (painted / prelaminated). The Gypsum boards shall be screw fixed to the underside of false ceiling grid system with 12.5 mm dry wall screw @ 230 mm C/C by drilling machine. Joint in the board shall be finished flush with fillers, finisher, and primer as per manufacturer's recommendation to give a seamless finish.

Job also includes, necessary cut-outs for Electrical / AC and other fixtures. that shall be provided with a framing of wall channels.

The finished false ceiling shall be perfectly levelled and aligned, at desired height and as per drawings.

2.17 SPECIFICATION OF PLUMBING AND SANITARY INSTALLATION

2.17.1 GENERAL

1. The works include installation of sanitary ware, internal water supply distribution, cold water supply, rainwater disposal from the terrace, soil and waste disposal from various fixtures.
2. The contractor shall also guarantee the perfect operation of the installation and

accessories supplied and installed by him. All these items shall be compulsorily of first quality and best choice.

3. The contractor shall ensure that all the fixtures are fed with the supply distribution system to deliver adequate pressure and flow taking into consideration the simultaneous demand.
4. The works shall be carried out strictly in accordance with the latest BIS specifications.
5. The mock-up toilets for each design shall be completed, got approved from the Engineers representative / Consultant for all the materials to be used before bulk procurement is done by the contractor.
6. All the materials not approved by the Engineers representative/Consultant and not conforming to the approved brands listed in the schedule are liable to be rejected. The contractor shall have to remove all such rejected materials and substitute it with the approved materials as required by the Project-in-charge/Consultant. No extra payment shall be admissible to the contractor on this account.
7. All the soil and waste shall be connected to the manhole.
8. All the Pipes to be used in the works shall be tested at site before incorporating it in works pertaining to solid and waste lines. Nothing extra shall be payable to the contractor on this account.
9. The work shall be executed according to the drawings and specifications and as per the contract documents. Any missing details in the drawings or specifications but which are fairly intended for successful functioning shall have to be supplemented by the standard BIS code or CPWD specifications.

2.17.2 SCOPE OF WORK

1. The scope of work under this contract shall comprise of providing and installation of all material, equipment and labour as described in detail under various heads of specification and as shown on drawings.
2. The contractor's work shall include all materials, tools and plants, scaffolding and everything necessary for the completion of the work to the satisfaction of Consultant/Engineers representative. All materials and workmanship used in the execution of the work shall be the first quality unless other wise stated. All materials used in the work shall conform to the current CPWD specifications whether or not specific mention is made thereof. The contractor shall be responsible for and shall

replace or make good at this own expense, any materials lost or damaged or of quality not approved.

3. Excavation in all types of soil refilling and carting away surplus materials to contractors own dump or as directed, for manholes, inspection chambers, gully traps water supply
4. Work shall be inclusive of making holes through concrete / masonry, making good the work and redoing and re-plastering the same to match the surroundings.

2.17.3 INTERNAL WATER SUPPLY (CPVC):

1. Scope : Scope of internal water supply will include the following.
 - a) All CPVC pipes fittings and valves of rising main from finished Ground level to over head located tanks as indicated in the drawings.
 - b) All CPVC pipes with fittings and valves from over head located tanks to all taps, wash basins, cisterns, sinks.

CPVC Pipes and Fittings as per IS 15778 and ASTM-D 2846 for Hot and Cold Plumbing System.

1. PREPARATION OF THE PIPE AND FITTINGS.

- 1.1 Remove any burrs or filings, and use a chamfering tool to bevel the end of the pipe. Use a clean, dry rag to remove any dirt or moisture from the joint surfaces.

- 1.2 Check the fit of the pipe and fitting. At this stage, the pipe should make contact with the socket wall 1/3 to 2/3 of the way into the socket. If the pipe goes all the way in at this stage, you should discard the fitting.

2. APPLICATION OF SOLVENT CEMENT.

- 2.1 Apply a heavy, even coat of solvent cement to the outside of the pipe end. Then use the same applicator, without additional cement, to apply a thin coat inside the socket.

- 2.2 Ensure a 360° coverage on the pipe and that the cement does not puddle inside the fitting.

- 2.3 Avoid the risk of a dry-fit leading to leakages.

3. ASSEMBLE THE JOINT.

After applying solvent cement, immediately insert the CPVC pipe into the fitting. While inserting the pipe, rotate it $\frac{1}{4}$ to $\frac{1}{2}$ turn – this will help to ensure the even distribution of cement. Then, align the fitting and hold the assembly for about 10 seconds, allowing the joint to set.

2.17.4 VISIBLE VERIFICATION FOR PROPER INSTALLATION.

Check the joint to make sure that an even bead of cement is seen around the pipe. If the bead is not seen, it could mean that the solvent cement was not properly applied. In that case, cut out the joint and remake it with a new fitting. Verifying the presence of a continuous solvent cement bead at the fitting is a critical step to prevent dry fits and ensure system integrity.

2.17.5 TESTING

After laying and jointing the pipes and fittings, these shall be inspected under working conditions of pressure and flow. Any joint found leaking shall be redone and all leaking pipes removed and replaced without extra cost. The pipe shall be slowly and carefully charged with water so that all air is expelled from the lines. The draw of taps and stop cocks shall then be plugged and hydraulic pressure of 4 PSI shall be applied, gradually. Pressure gauge shall be accurate and recalibrated before the test. The test pump having been stopped, the pressure shall maintain itself without measurable loss for at least half an hour.

2.17.6 CLEANING AND DISINFECTION OF SUPPLY SYSTEM

All water lines shall be thoroughly and efficiently disinfected before being taken into use and also after every major repair. The method of disinfection shall be subject to the approval of the Consultant/Engineers representative.

2.17.7 INTERNAL WORK:

1. The internal work shall include the cost of labour and material involved in all the operations described above. It shall include the cost of cutting holes in walls, floors and making good the same.
2. This shall also include, concealed pipe work in which case cutting of chase and making good the same.

2.17.8 CUTTING CHASES IN MASONRY WALL

The chases up to 7.5 x 7.5 cm shall be made in the walls for housing CPVC pipes etc. These shall be provided in correct position as shown in the drawings or as directed by the Consultant. Chases shall be made by the chiseling out the masonry to proper line and depth. After CPVC pipes etc., are fixed in chases, the chases, shall be filled with cement with cement concrete 1:3:6 (1 cement: 3 coarse sand: 6 graded stone aggregate of 20 mm nominal size) or cement mortar 1:4 (1 cement: 4 coarse sand) as may be specified and made flush with the masonry surface. The concrete surface shall be roughened with wire brush to provide a key for plastering.

2.17.9 CUTTING

For new installations, use ratchet cutters, wheel cutters, close quarters (c-style) cutters, or a fine tooth saw to cut the pipe.

2.17.10 WATER SUPPLY FITTINGS

Unless otherwise specified all brass such as ball valves, non-return valves, full-way valves, stop cocks, bib taps, etc. shall confirm to relevant BIS specifications and shall be of heavy quality.

2.17.11 PAINTING

The damaged portions shall be suitably painted to match the paint and finish of adjoining areas.

2.17.12 SCOPE OF SEWERAGE DISPOSAL AND DRAINAGE

Scope of internal sewerage disposal and drainage system will include all PVC waste pipes connections up to Gully traps and PVC Soil pipe connections up to manholes including vent pipes with vertical stacks manhole including all floor traps, gully traps as shown in the drawings.

11.2 Scope of internal drainage i.e. Rain water system under this contract will include all PVC rain water pipes connecting from terrace/balcony including PVC bends upto storm water drainage line, gully chamber and including storm water Drainage system as shown in the drawings.

2.17.13 SANITARY INSTALLATION GENERAL REQUIREMENTS

- a. All sanitary appliances including sanitary fittings, fixtures, toilet requisites, shall be of size, make and design of first quality as per sample approved by the Consultant / Engineers representatives as shown in the drawings. The rates shall be for center fittings only.
- b. All exposed and visible G.I. pipe and fittings shall be painted with approved quality of two coats of synthetic enamel paint over a coat of primer of approved shade as approved.
- c. All necessary and plumbing work shall be carried out through licensed plumbers.
- d. All sanitary fittings such as water closet pans (pedestal or squatting patterns), flush pipes, brackets, wash basins, baths, sinks, soil and vent pipes etc. and fittings holders for toilet paper, glass shelves and other fittings together with the fixing of the same shall be complete in all respects and fit for proper functioning.
- e. All damage done to floors, walls, R.C.C. work etc. during process of execution, fixing or installation of sanitary fittings, pipes, internal water supply and house drainage etc., shall be restored to its original condition and the cost of the same is included in the rates.

2.17.14 SANITARY WARES

2.17.14.1 EUROPEAN TYPE W.C. PAN WITH LOW LEVEL FLUSHING CISTERN

European type W.C. pan shall be of white vitreous china first quality water closet 'P' or 'S' trap coupled with fittings, brackets, complete in all respects. The W.C. pan shall be free from cracks, crazes, blisters, and shall have smooth surface.

2.17.14.2 FIXING

W.C. pan shall be fixed to floor walls with C P. brass screws or by means of 75 mm long 6.5 mm counter sunk bolts and nuts embedded in floor concrete. The base of the pedestal of the pan shall squarely rest on the finished floor Any gap between the finished floor and the

pedestal shall be filled with white mastic mixed with pigment to match the shade of floor or as directed by the Consultants / Engineers representative.

Following measures shall be adopted for fixing the W.C. pan

- a) The central axis of the pan shall be perpendicular to the finished face of wall.

The outlet of the pan shall be centrally placed in the socket of PVC connector pipe with a uniform space all around for jointing. Jointing shall be done with yarn, linseed oil, white lead, cement and water-proofing compound and shall be made water tight.

- d) The distance between centre line of outlet of W C pan and finished wall face shall be so adjusted as to rest square against the finished wall face.

2.17.14.3 SEAT AND LID

Seat and lid shall be of heavy quality and shall be fitted exactly on the rim of the W.C. pan with CP brass hinges rubber buffers and CP brass nuts. It should be fixed in such a way that it is easily workable.

2.17.14.4 STOPCOCK

Angle Stop cock shall be of CP brass/brass as specified in the drawing.

2.17.14.5 PAINTING

Brackets shall be painted with two coats of white synthetic enamel paint of approved manufacturer over a priming coat.

2.17.14.6 ANGLE VALVE

Angle valve shall be of 15mm dia CP brass with 15mm dia GI supply pipe of required length with nuts and washers.

The connection between angle valve and supply line laid in chase shall be made in a manner so that the flange is flush with finished face of the wall and no threaded portion of the angle valve or supply line is visible.

2.17.15 URINALS

Half stall type / full size urinal shall be conforming to IS:2556 Part VI. Urinals shall be of single piece construction with integral flushing box rim. These shall be mounted on walls. The flushing inlet pipe shall be of CP brass 15mm dia and waste pipe 32 mm dia GI, 750 mm long shall be embedded in wall. Necessary unions and CP bottle trap shall be provided in the waste line. Rawl plugs with CP brass screws shall be used for fixing the urinal. Fixing shall ensure that no liquid is left over in the pan after flushing.

Urinals shall be connected to automatic sensor system as per manufacturer's instructions.

Rate quoted shall include cost of urinals inlet and outlet pipes, automatic sensor flushing cistern, breaking and making good the walls and flooring, making inlet and outlet connections, painting exposed brackets and GI pipes etc.

2.17.16 INDIAN SQUATTING PAN

Indian type squatting pan shall be conforming to IS:2556 Part III. The pan shall be of single piece construction with integral flushing box rim. The flushing rim shall have inlet or supply horn for connecting the flush pipe. The trap provided shall be either P type or a S outlet conforming to IS : 2556 part VII .The flushing inlet pipe with necessary fitting and fixtures shall be embedded in wall .The pan will be fixed in line and plumb and at level with reference to the finished floor level ,as shown in the drawings and details, on commissioning the Squatting pan and on flushing ,no residue is left over in the pan.

2.17.17 H.C.I. NAHANI TRAP (FLOOR TRAP)

Nahani trap shall be of heavy cast iron as per IS : 3989 with 100 mm inlet and 80/100mm outlet with CP pressed steel grating. It shall be of self – cleaning design. (Grating shall be of either hinged or screwed down type).

It shall be fixed in cement mortar 1:2 and as directed by Engineers representative / Consultant.

2.17.18 STONEWARE GULLY TRAP CHAMBER

The square mouth gully trap shall be of 100mm dia, conforming to IS:651 of specified and / or approved quality stoneware, complete with cast iron grating, and shall be got approved by the Engineers representative.

The size of CI frame and cover shall be 300mm x 300mm. It shall be properly fixed as directed by the Engineers representative.

The size of the chamber shall be 300 x 300 x 675mm (internal). It shall be constructed of brick masonry walls 115mm tk. in 1:4 cement mortar and M-15 concrete foundations. Inside and outside faces of the masonry walls shall be plastered with 1:3 cement mortar. The top of the chamber shall be provided with CI cover and frame.

2.17.19 BRICK MASONRY (MANHOLES / INSPECTION CHAMBER & VALVE CHAMBER)

SPECIFICATIONS FOR BRICK MASONRY WORK:-

2.17.19.1 SCOPE:-

The Contractor shall provide all labour, materials, scaffolding operations, equipment and incidentals necessary required for the completion of all brickwork called for in the drawings and documents and that which is fairly intended for smooth completion of the work.

2.17.19.2 BRICKS (CLASS 50):-

The bricks shall be well burnt locally available from good brick earth and shall be of uniform size (9"x 4.5"x3") unless otherwise specified They shall be of uniform deep red, cherry or copper colour, thoroughly well burnt without being verified and regular in shapes.

2.17.19.3 MORTARS:-

All brick work shall laid with specified mortar of good workable consistency.

2.17.19.4 SOAKING OF BRICKS:-

All bricks required for masonry in cement or composite lime mortars shall be thoroughly soaked in clean water for at least one hour in advance of sufficient quantity size for immediate use. The cessation of bubbles when the bricks are immersed in water is an indication of thorough soaking of bricks.

2.17.19.5 LAYING:-

- d) Bricks shall be laid in English bond, unless otherwise specified. Half or cut bricks shall not be used except where necessary to complete the bond. Closers in such cases shall be cut to the required size and used near the ends of the walls.
- e) The walls shall be taken up truly plumb. All courses shall be laid truly horizontal and all vertical joints shall be truly vertical. Vertical joints in alternate courses shall come directly one over the other. The thickness of brick courses shall be kept uniform and for this purpose straight edge with graduations showing the thickness of each brick course including joint shall be used. Bricks shall be laid with frogs upwards.
- f) The walls of a structure shall be carried up regularly and nearly at one level and no portion of the work shall be left more than 3 ft. below the rest of the work. Where this is not possible the work shall be raked back according to bond (and not left toothed) at an angle not exceeding 45°.
- g) All iron fixtures pipes, outlets of water, holdfasts of doors and windows, etc., which are required to be built in walls, shall be embedded in cement mortar or in cement concrete as specified, in their correct positions as the work proceeds. Nothing extra shall be paid for such extra cement mortar or of the nature stated above.

2.17.19.6 JOINTS:-

Bricks shall be so laid that all joints are quite full of mortar. The thickness of the bed joints shall in no case exceed 3/8", unless otherwise specified. The face of joints shall be raked to a minimum depth of 0.5" by raking tool daily during the progress of work when the mortar is still green, so as to provide proper key for the plaster or pointing to be done. Where plastering or pointing is not required to be done, the joints shall be struck flush and finished at the time of laying. The face of brick work shall be cleaned daily and all mortar droppings removed.

2.17.19.7 BRICK-IN-EDGE COPING

The top course of all plinths, parapets, steps and tops of walls below R.C.C. slabs or beams shall be laid with brick on edge, unless otherwise specified. Proper care shall be taken that the bricks forming the top corners and ends of walls shall be properly radiate and keyed in to position.

2.17.19.8 CURING:-

Green Work shall be protected from rain by suitable covering. Brick Masonry with cement or composite mortar shall be kept constantly moist on all faces for a minimum period of 7 (Seven) days. In case of fat lime mortar, curing shall commence two days after the laying of masonry and shall continue for 7 (seven) days

2.17.19.9 SCAFFOLDING:

Double scaffolding having two sets of vertical supports shall be provided. The supports shall be sound and strong. Tied together with horizontal pieces over which the scaffolding planks shall be fixed. In building up to two stories, single scaffolding shall be allowed. In this case, the inner end of the horizontal scaffolding pole shall rest in a hole provided in the header course only. Only one header or each pole shall be left out. The holes left in masonry work for supporting the scaffoldings shall be filled and made good, before plastering. The Contractor shall be responsible for providing and maintaining sufficiently strong scaffolding so as to withstand all loads likely to come upon it.

2.17.20 HALF BRICK AND THREE INCH THICK MASONRY:-

2.17.20.1 The work shall be done exactly similar to the specification 'BRICK WORK' except that all courses shall be laid with stretchers.

2.17.20.2 Cement Mortar 1:4 (1 cement: 4 sand) shall be used unless otherwise specified in the description of the item.

2.17.20.3 The description of the item shall mention whether or not, reinforcement is to be provided, when the brick work is to be reinforced, hoop iron band 1" x 1/16" (2.5 c.m. x 1.6. mm) shall be embedded in the cement mortar at every fourth course or as described in the description of the item. The hoop iron shall be hooked (given a double lap) with minimum of 9" hooks at all angles and junctions. At either end of the wall, 2" (5 c.m.) lengths of the hoops shall be bent up or down so as to take a firm grip of the brick work.

When hoop iron is not available. The Consultant may allow equivalent reinforcement in the form of mild steel.

2.17.20.4 The size of the manholes and valve chambers shall be as specified in the drawings. It shall be constructed of brick masonry (class 50 bricks) walls 230mm thick in CM 1:4 (1 cement : 4 sand) resting on M-15 concrete foundations. The inside and outside face of the masonry wall shall be plastered with 13mm thick plaster of cement mortar 1:3 (1 cement : 3 sand).

The top of the chamber shall be provided with reinforced concrete M-20 grade slab as per drawing and directions of the Engineers representative.

MS rungs made out of 16 mm dia MS bars shall be fixed inside the manhole as shown in the drawing and directions of the Engineers representative.

Valve chambers shall be provided and fixed with a light duty CI cover and frame.

The top of chambers shall be provided with reinforced cement concrete M-15 grade as per drawings and direction of Engineers representative.

The CI manhole covers and frames shall conform to IS: 726. The type, size and grade shall be as per drawing and directions of the Engineers representative.

The frame shall be fixed in position during concreting of top slab, inside faces of frame and cover shall be given tow coats of approved anti-corrosive, paint.

The specification for brick masonry, plastering, concreting, excavation and backfilling etc., as given under relevant clauses shall be applicable for this work also.

2.17.21 WASHBASIN

Wash basins shall be 450 mm X 300 mm white vitreous china flat back ,as shown in drawing of 1st quality with single tap hole as given in Scope of Work. These shall be free from cracks, crazes, blisters and shall have smooth surfaces.

2.17.21.1 FIXING

The basins shall be supported on a pair of CI brackets cantilevering from wall face as directed by the Consultants There shall be no gap between top edge of the basin and finished face of wall

2.17.21.2 PILLAR TAP

Pillar tap shall be 15mm dia CP brass AOS make .

2.17.21.3 ANGLE VALVE

Angle valve shall be 15mm dia brass with 15mm dia brass inlet tube of required length with union and CP brass cap for each of the two pillar taps.

The connection between angle valve and supply line laid in chase shall be made in a manner so that the union is flush with finished face of the wall and so threaded that portion of the angle valve of supply is visible

2.17.21.4 WASTE

Waste shall be 32mm dia CP brass heavy type with solid rubber plug and bail chain.

2.17.21,5 BOTTLE TRAP

Bottle trap 32mm of approved quality.

2.17.22 SINK

Sink shall be SS sink with drain bolt and granite platform in sides built in 20mm thk. Polished granite of color as specified/ platform of size specified in schedule with integral over flow and shall have 40mm Dia outlet and shall be connected to 40 mm Dia. GI waste pipe.

2.17.22.1 FIXING

These shall be fixed in stone counter. The joint between the sink & stone shall be filled with Araldite filler to make it absolutely watertight

2.17.22.2 C.P.BRASS FITTINGS

C.P. Brass fittings shall be CP brass comprising of long body BIB cocks of 15mm, CP brass angle valves with CP inlet tube and CP brass cap.

2.17.23 TOILET REQUISITES

2.17.23.1 MIRROR

Mirror shall be of approved make and of best quality. These shall be free from bubbles, ripples or

any other defects. The glass shall be uniform silver plated at the back. Size shall be 450 x 600 mm or as specified in drawing. These shall have plastic frame all around with keyhole to wall with screw for hanging as directed by the Consultants / Engineers representative.

2.17.23.1.1 FIXING

The mirror shall be fixed on wall face with wooden cleats, with CP brass screws and washers, above the lavatory basins at the height, as directed by the Consultants / Engineers representative.

2.17.23.2 TOWEL RAIL

Towel rail shall be of CP brass 600 mm long, 20 mm dia with 2 CP brass brackets or size specified in drawing

2.17.23.2.1 FIXING

Brackets shall be fixed to wall by means of CP brass screws to wooden plugs or raw plugs, embedded in the wall or as directed by the Consultants

2.17.23.3 BIB COCK – TWO IN ONE HEALTH FAUCIT

Bib cock of two in one shall be of 15mm CP brass with 1 long PVC pipe with health faucet.

2.18 SOIL, WASTE, VENT AND ANTI-SIPHONAGE PIPES & FITTINGS:

LYING AND JOINTING PVC. PIPES (INTERAL WORK)

2.18.1 Jointing

2.18.1.1 Solvent welded joints : Non heat application Method :

In this method instead of forming a socket on one pipe and an injection molded socket fitting couplers is used with a provision to take in the pipes at both ends, the surface to be jointed and the joint is made at ambient temperature Injection molded fitting only shall be used in preference to fabricated fittings only, solvent recommended by the manufacturers of the pipes shall be used and full load on the joints applied only after 24 hours. The pipe shall be cut perpendicular to the axis of the pipe length with a metal cutting saw or an ordinary hand saw with small teeth . Pipe ends have to be beveled slightly with a beveling tool (Reamer) at an angle of about 30 degree. The total length of insertion socket (injection molded socket or coupler) shall be marked on the pipe end could be inserted into fitting socket. Attempt shall be made to push the pipe to the marked distance if not possible it shall at least be pushed for 2/3 of this distance.

Dust ,oil, water grease etc. shall be wiped cut with a dry cloth from the surface .Further the grease should be removed thoroughly removed with a suitable solvent , such as ethylene chloride or as an alternative the outside surface of there pipe and the inside of the fitting may be roughed with emery paper .

Generous coating of solvent cement shall be evenly applied on the inside of the fitting all-round the circumference for the full length of insertion and on the outside of the pipe end up to the marked line with non synthetic brush of suitable dimension .The pipe shall be pushed into the fitting socket and held for 1 or 2 minutes as otherwise the pipe may come out of the fitting due to the slippery quality of cement and the tapering inside bore of the fitting. The surplus cement on the pipe surface shall be wiped out. If the solvent cement has dried up too much or the tapering of the socket is too steep, jointing will not be proper and pipe will come out of the fitting.

In summer months joints shall be made preferable early in the morning or in the evening when it is cooler .This will prevent joint from pulling apart when the pipe cools off at night. Heat application method for jointing shall not be allowed.

2.18.1.2 Flanged Joints

For jointing PVC pipes particularly of larger sizes to valves and vessels and larger size metal pipe where the tensile strength is required the joint is made by the compression of a gasket or ring seal set in the face of C I flange .Flanges solvent welded to the P.V.C. pipes shall be supplied by the manufacturer.

2.18.1.3 Rubber Ring Joints:

Rubber ring joints can provide a water tight seal but do not resist pull. As such these may be used only as repairs collar and for jointing pipes larger than 110 mm. Such joints may be provided on pipes which are buried in the ground and supported through out on a bedding so that they are not subjected to movement and longitudinal pull .The material of rubber ring shall conform to IS:5382 where aggressive soil are met with , synthetic rubbers perform better for jointing The ring shall be housed in a groove formed in plastic or metallic housing .The ring shape and the method of compressing the ring vary considerably in different types of joints . Most joints often require the application of lubricating paste which shall be procured from the manufacturers of P.V.C .pipes

.Rubber rings shall be supplied by the manufacturer's .The rubber ring joints can be either of. With spigot and socket , or With separate collar pieces having two rubber rings one at either end

2.18.2 Crossing Road or drain

Where the pipe line crosses a road or a drain, it shall be through RCC pipe.

2.18.3 Supports for Valve and Hydrant:-

Valve and hydrant tees shall be so that the torque applied in operating a valve is not transmitted to the pipe line.

2.18.4 Inspection and Testing

Solvent welded pipe shall not be pressure tested until; at least 24 hours after the last solvent cemented joint has been done.

All control valves shall be positioned open for the duration of the test and open end closed with water tight fitting .The testing pressure on completion of the work shall not be less than one and half time the working pressure of the pipes.

Pressure shall be applied either by hand pump or power driven pump .Pressure gauges shall be correctly positioned and closely observed to ensure that at no time are the test pressure exceeded . The system shall be slowly and carefully filled with water to avoid surge pressure or water hammer. Air vents shall be open at all high points so that air may be expelled from the system during filling.

When the system has been fully charged with water and air displaced from the line air vent shall be closed and the line initially inspected for seepage at joints and firmness of supporters under load. Pressure may then be applied until the required test pressure is reached.

2.18.5 Clamping

The pipe shall be laid and clamped to wooden plugs fixed above the surface of the wall as shown Alternatively plastic clamps of suitable design wherever manufactured , shall be preferred .Provision shall be made for the effect of thermal movement by not gripping or distracting the pipe at supports between the anchors for suspended pipes . The supports shall allow the repeated longitudinal temperature movement to take place with out abrasion Line or point contact with the pipe shall be avoided .Heavy components such as metal valves shall be individually supported .

2.18.6 Supports:

PV.C . pipes require supports at the close interval. Recommended supports spacing for un plasticised P.V.C. pipes are given in table .This spacing may be increased by 50% for vertical runs supports.

TABLE	
Pipe Dia .	Support spacing
mm	mm
20	700
25	750
32	825
40	975
50	975

It is essential that P.V.C. pipes shall be aligned properly before fixing them on the wooden plugs with clamps .Even if the wooden plugs are fixed using a plumb line , PVC pipe shall also be checked for its alignments before clamping .The pipe line will be wavy if the clamps are not fixed keeping the pipe plumb.

2.18.7 Connection to a water tap

Connection to a water tap shall be made by means of a G.I. adopter as shown . G.I. adopter shall preferably be supplied by the same manufacturer as that of P.V.C. pipe . In any threaded coupling between P.V.C. and GI it is preferable that P.V.C. is fitted inside the G.I. fitting . If however greater projection is desired, same shall be achieved by joining a short piece of a GI pipe (Nipple) .

1. Inspection chambers, gully traps, etc within the building i.e. for diversion of pipes at upper flows or on service floor shall be cast iron chambers with bolts, nuts to close the cover, all to be fabricated as per actual requirement
2. Supports, pedestal and base for inspection chambers, gully traps and pipes when provided as per above shall be in 1:2:4 cement concrete mix.
3. All drainage work shall be done in accordance with the local municipal bye laws.
4. The contractor shall take necessary permissions from the local traffic police, and civic and other competent local authorities for cutting the main/municipal roads, closing and road/street to vehicular traffic for laying his services. The contractor shall not be liable for any extra payment on this account.
5. Location of all manholes, catch basins etc., shall be got confirmed from the Consultant / Engineer- in charge before the actual execution of work at site.
6. All works shall be executed as per approved drawings, working drawings or as directed by the Consultant / Engineers representative.

2.18.8 ALIGNMENT AND GRADIENT.

The sewer drainage pipes shall be laid to alignment and gradient shown on the drawings but subject to such modifications as shall be ordered by the Consultant / Engineers representative from time to time to meet the requirements of the works. No deviation from the lines, depth of cutting or gradients of sewers shown on the plans and sections shall be permitted except by the express direction in writing of the Consultant/Engineers representative.

2.18.9 EXCAVATION

The excavation for sewer works shall be open cutting unless the permission of the Consultant / Engineers representative for the ground to be tunneled is obtained in writing Where sewers have to be constructed along arrow passages, the Consultant / Engineers representative may order the excavation to be made partly in tunnel and in such cases the excavated soil shall be brought back later on for refilling the trenches or tunnel

2.18.10 OBSTRUCTION OF ROADS

The contractor shall not occupy or obstruct by his operation more than one half of the width of any road or street and sufficient space shall be then left (or public and private transit, and he shall remove the materials excavated and bring them back again when the trench is required to be refilled. The contractor shall obtain the consent of the Consultant/Engineers representative in writing before closing any road to vehicular traffic and the foot walks must be clear at all times.

2.18.11 EXCAVATION TO BE TAKEN TO PROPER DEPTH

The trenches shall be excavated to such a depth that the sewer shall rest on concrete as described in the several clauses relating thereto and so that the inverts may be at the levels given in the sections In bad ground, the Consultant/Engineers representative may order the contractor to excavate to a greater depth than that shown on the drawings and to fill up excavation to the level of the sewers with the concrete, broken stone gravel or other materials

2.18.12 REFILLING

After the sewer or other works has been laid and proved to be water tight, the trench or other excavation shall be refilled Utmost care shall be taken in doing this, so that no damage shall be caused to the sewer and other permanent work. The filling in the haunches and up to 75 cms. above the crown of the sewer shall consist of the finest selected materials placed carefully in 15 cms. Layers and consolidated. After this has been laid, the trench and other excavation shall be refilled in 15 cms. Layers with materials taken -from the excavation, each layer being watered to assist in the consolidation, unless the Consultant / Engineers representative shall otherwise direct.

2.18.13 CONTRACTOR TO RESTORE SETTLEMENT AND DAMAGES

The contractor shall at his own costs and charges make good promptly during the whole period for the works in hand any settlement that any occur in the surfaces of roads, berms, footpaths, open spaces etc. whether public or private caused by his trenches or by his other excavations and he shall be liable for any accident caused thereby. He shall also, at his own expense and charges, repair and

make good any damage done to building and other property. If in the opinion of the Consultant/Engineers representative, he fails to make good such works with all practicable dispatch, the Consultant/Engineers representative shall be at his liberty to get the work done by other means and the expenses thereof shall be paid by the contractor or deducted from any money that may be or become due to him or recovered from in any other manner according to the law of land.

2.18.14 DISPOSAL OF SURPLUS SOIL

The contractor shall at his own cost shall provide places inclusive of transportation for disposal of all surplus materials not required to be used in the works. As each trench is refilled the surplus soil shall be immediately removed and the surface properly restored the roadways and sides shall be left clear.

2.18.15 TIMBERING OF SEWERS AND TRENCHES

- a) The contractor shall at all times support efficiently and effectively the sides of the sewer trenches and other excavations by suitable timbering, piling and sheeting and they shall be closed, timbered in loose or sandy strata and below the surface of the sub soil water level.
- b) All timbering sheeting and piling with their wallings and supports shall be of adequate dimension and strength and fully braced and strutted so that no risk of collapse or subsidence of the wall of the trench shall take place.
- c) The contractor shall he held responsible and will be accountable for the insufficiency of all timbering sheeting and piling used as also for all damage to persons and property resulting form improper quality, strength, maintaining or removing of the same

2.18.16 SHORING OF BUILDINGS

The contractor shall shore up all buildings, walls and other structures, the stability of which is liable to be endangered by the work and shall be fully responsible for all damages to persons or property resulting from any accidents

2.18.17 REMOVAL OF WATER FROM SEWERS AND TRENCHES

- a) The contractor shall at all times during the progress of the work keep the trenches and excavations free from water which shall be disposed of by him in the manner as will neither cause injury to the public health nor to the public or private property nor the work completed or in progress nor to the surface of any roads or streets,

nor cause any interference with the use of the same by the public.

- b) If any excavation is carried out at any point or points to a greater width than specified cross section of the sewer with its envelope, the full width of the trench shall be filled with concrete by the contractor at his own expense and charges to the requirements of the Consultant

2.18.18 WIDTH OF TRENCHES

The Consultant shall have power by giving an order in writing to the contractor to increase the maximum width in respect of which payment will be allowed for excavation in trenches for various classes of sewer, manholes and other works in certain lengths to be specifically laid down by him where on account of bad ground or other unusual conditions, he considers that such increased widths are necessary in view of the site conditions.

2.18.19 RECOMMENDED WIDTH OF TRENCHES at the bottom of the trench are as follows:-

100 mm dia pipe	55 cms
150 mm dia pipe	55 cms
225 - 250 mm dia pipe	60 cms
300 mm dia pipe	75 cms

Maximum width of the bed concrete shall also be as above. No additional payment is admissible for widths greater than specified.

2.18.20 SALT GLAZED STONEWARE PIPES

Stoneware pipes shall be of first class quality salt glazed and free from rough texture inside and outside and straight. All pipes shall have the manufacturers names marked on it and shall comply to IS : 651 -1971.

I) LAYING AND JOINTING OF STONEWARE SALT GLAZED PIPES

- a) Pipes are liable to be damaged in transit and not with standing tests that may have been made before dispatching pipe shall be

examined carefully on arrival at site. Each pipe shall be rung with a wooden hammer or mallet and those that did not ring true and clear shall be rejected. Sound pipes shall be carefully stacked to prevent damage.

- b) The pipes shall be laid down with sockets leading uphill and should rest on solid and even foundations for the full length of the barrel. Socket holes shall be formed in the foundation sufficiently deep to allow the pipe jointer room to work right round the pipe and as short as practicable to admit the socket and allow the joints to be made.
- c) Where pipes are not bedded in concrete the trench bottom shall be left slightly high and carefully bottomed up as pipe laying process, so that the pipe barrels rest on firm ground. If excavation has been carried too low it shall be made up with cement concrete at the contractor's cost and charges.
- d) If the bottom of the trench consists of rock or very hard ground that cannot be easily excavated to a smooth surface the pipes shall be laid on cement concrete bed to ensure even bearing.

II) JOINTING OF PIPES

- a) Tarred gaskin shall first be wrapped round the spigot of each pipe and the spigot shall then be placed into the socket of the pipe previously laid, the pipe shall then be adjusted and fixed in its correct positions and the gaskin caulked tightly home so as to fill not more than one quarter of the total length of the socket.
- b) The remainder of the socket shall be filled with stiff mix of cement mortar (1 cement: 1 clear sharp washed sand). When the socket is filled, a fillet should be formed round the joint with a trowel forming an angle of 45 degrees with the barrel of the pipe. The mortar shall be mixed as needed for immediate use and no mortar shall be beaten up and used after it has begun to set.
- c) After the joint has been made, any extraneous material shall be removed from inside of the joint with a suitable scraper. The newly made joints shall be protected until set from the sun, drying winds, rains or dust. Sacking or other material which can keep damp shall be used. The joints shall be exposed and space left all round the pipes for inspection by the Consultant / Engineers representative. The inside of the sewer must be left absolutely clear.

in bore and free from cement mortar or other obstructions throughout its entire length, and shall efficiently drain and discharge.

III) TESTING

- a) All lengths of the sewer drain shall be fully tested for water tightness by means of water pressure maintained for not less than 30 minutes. Testing shall be carried out from manhole to manhole. All pipes shall be subjected to a test pressure of at least 1.5 M head of water. The test pressure shall, however, not exceed 6 M head at any point. The pipes shall be plugged preferably with standard design plugs with rubber plugs on both sides. The upper end shall, however, be connected to a pipe for filling with water and getting the required head poured at one time.

- b) Sewer lines shall be tested for a straightness by :-

- i) Inserting a smooth ball 12 mm less than the internal diameter of the pipe.

In the absence of obstruction such as yarn or mortar projecting at the joints the ball should roll down the invert of the pipe and emerge at the lower end.

- i) Means of a mirror at one end and a lamp at the other end. If the pipe line is straight the full circle of light will be seen otherwise obstructions or deviations will be apparent.

- ii) The contractor shall give a smoke test to the drain and sewer at his own expense and charges, if directed by the Consultant / Engineers representative.

- iii) A test register shall be maintained which shall be signed and dated by the Contractor, Consultant/ Engineers representative.

2.18.21 MASONRY WORK

Masonry work for manhole, chambers, specific tanks and such other works as required shall be constructed from local best quality bricks in cement mortar 1:5 mix (1 cement: 5 coarse sand) or as specified in the schedule of quantities. All joints shall be properly raked to receive plaster.

2.18.22 TESTING

All pipes shall be tested to a hydraulic test of 1.5 M head for atleast 30 minutes at the highest point in the section under test. Test shall be carried out similar to those for stoneware pipes given above. The smoke test shall be carried out by the contractor, if directed by the Consultant, at the expense and charges of the contractor. A test register shall be maintained which shall be signed and dated by the contractor. The works failing during the test have to be redone by the contractor and nothing extra shall be payable to him on this account.

2.18.23 S.W. GULLY TRAP

Gully traps shall conform to IS 65-1965. These shall be sound, free from visible defects such as fine cracks or hair cracks. The glaze of the traps shall be free from graze. They shall give a sharp clear note when struck with light hammer. There shall be no broken blisters. The size of the gully trap shall be specified along with dimension and shall be installed in a chamber as described hereafter Each gully trap shall have a C.I. grating of square size corresponding to the dimensions of inlet of gully trap. It will also have a watertight C.I. cover weighing not less than 2.72 kg. The grating cover & frame shall be sound & good casting and shall have truly square machined seating faces.

The excavation for gully traps shall be done true to dimensions and levels as indicated on plans or as directed by the Engineers representative

2.18.24 FIXING

The gully trap shall be fixed on cement concrete foundation 600 x 600 cm square and not less than 10cm. thick. The mix for the concrete will be 1:5:10 (1 cement: 5 fine sand: 10 graded stone aggregate 40mm nominal size) The jointing of gully outlet to the branch drain shall be done similar to jointing of S W pipe as directed in 213.

2.18.25 BRICK MASONRY CHAMBER

After fixing and testing gully and branch drain, a brick masonry chamber 300 x 200 (inside) (with class 50 brick in cement mortar 1:5 (1 cement: 5 fine sand) shall be built with a 115mm thick brick work round the gully trap from the top of the bed concrete upto ground level. The space between the chamber walls and the trap shall be filled in with cement concrete 1:5:10 (1 cement: 5 coarse sand: 10 graded stone aggregate). The upper portion of the chamber i.e. above the top level of the trap shall be plastered inside with cement mortar 1:3 (1 cement: 3 coarse sand) finished with a floating coat of neat cement, the corners and bottom to the chamber shall be rounded off as to slope towards the grating and form a hopper. C.I. cover with frame 300 x 200 mm (inside) shall then be fixed on the top of the brick masonry with

cement concrete 1:2:4 (1 cement 2 coarse: 4 graded stone aggregate 20mm normal size) and rendered smooth The finished top of cover shall be left about 4 cm. above the adjoining ground level so as exclude the surface water from entering the gully trap.

2.18.26 EXTERNAL WATER SUPPLY

2.18.26.1 SCOPE OF WORK

The work shall consist of furnishing all materials Labour equipment and appliances necessary and required to completely install the water supply system as required by the Drawings.

Without restricting to the generality of the foregoing the water supply system shall include the following:

- a) Water supply mains and sub mains
- b) Control valves
- c) Masonry chambers and other appurtenances
- d) Excavation and refilling pipe trenches
- e) Concrete anchor blocks
- f) Ferrules, Ferrule chambers CPVC. pipe below ground from ferrule to outer face of the building up to finished ground level
- g) CPVC Pipes and Fittings as per IS 15778 and ASTM-D 2846 for Hot and Cold Plumbing System.

2.18.26.2 CONTRACTOR TO RESTORE SETTLEMENT AND DAMAGES

The contractor shall, at his own cost, make good during the whole period the works are in hand and during defect liability period thereafter, any settlement that may occur on the surfaces of roads, beams, footpaths, gardens, open spaces etc., whether public or private caused by trenches or by other excavations and shall be liable for any accidents caused thereby He shall also, at his own expense and charges, repair and make good any damage done to buildings and other property. If in the opinion of the Consultant/Engineer-incharge, he fails to make such works with all practicable dispatch, the Consultant/Engineers representative shall be at liberty to get the work done by other means and the expenses thereof shall be paid by the contractor or deducted from any money that may be or become due to him or recovered from him in any other manner according to the law of the land.

2.18.26.3 DISPOSAL OF SURPLUS SOIL

The contractor shall at his own cost shall provide places inclusive of transportation for disposal of all surplus materials not required to be used in the works. As each trench is refilled the surplus soil shall be immediately removed and the surface properly restored the roadways and sides shall be left clear.

2.18.26.4 Trenches: The width and depth of trenches for different

Dia. Of GI pipe width of trench depth of trench

- | | | | |
|----|--------------|-------|------|
| a) | 15 to 50 mm | 39 cm | 60cm |
| b) | up to 100 mm | 50cm | 90cm |
| c) | Over 100 mm | 60cm | 90cm |

At joints the width of trench shall be widened where necessary

2.18.27 CUTTING

For new installations, use ratchet cutters, wheel cutters, close quarters (c-style) cutters, or a fine tooth saw to cut the pipe.

2.18.28 PREPARE THE PIPE AND FITTINGS.

- 1 Remove any burrs or filings, and use a chamfering tool to bevel the end of the pipe. Use a clean, dry rag to remove any dirt or moisture from the joint surfaces.
- 2 Check the fit of the pipe and fitting. At this stage, the pipe should make contact with the socket wall 1/3 to 2/3 of the way into the socket. If the pipe goes all the way in at this stage, you should discard the fitting.

2.18.29 APPLICATION OF SOLVENT CEMENT.

- 1 Apply a heavy, even coat of solvent cement to the outside of the pipe end. Then use the same applicator, without additional cement, to apply a thin coat inside the socket.
- 2 Ensure a 360° coverage on the pipe and that the cement does not puddle inside the fitting.
- 3 Avoid the risk of a dry-fit leading to leakages.

2.18.30. ASSEMBLE THE JOINT.

After applying solvent cement, immediately insert the CPVC pipe into the fitting. While inserting the pipe, rotate it ¼ to ½ turn – this will help to ensure the even distribution of cement. Then, align the fitting and hold the assembly for about 10 seconds, allowing the joint to set.

2.18.31 VISIBLE VERIFICATION FOR PROPER INSTALLATION.

Check the joint to make sure that an even bead of cement is seen around the pipe. If the bead is not seen, it could mean that the solvent cement was not properly applied. In that

case, cut out the joint and remake it with a new fitting. Verifying the presence of a continuous solvent cement bead at the fitting is a critical step to prevent dry fits and ensure system integrity.

2.18.32 CLEANING AND DISINFECTION OF SUPPLY SYSTEM

All water lines shall be thoroughly and efficiently disinfected before being taken into use and also after every major repair. The method of disinfection shall be subject to the approval of the Consultant/Engineers representative.

2.18.33 FERRULE CONNECTION

Ferrule connection shall be inclusive of necessary excavation, boring a hole in MAIN SUPPLY PIPES, tapping it providing necessary saddles, and bailing out of water.

2.18.33 TESTING

On completion the pipe line laying shall be tested to a Hydraulic pressure of 4 PSI, Pressure shall be maintained for a period of two hours without drop. The pipe shall be slowly and carefully charged with water so that all air is expelled from the lines. Any joint found leaking shall be redone and all leaking pipes removed and replaced. The test pump having been stopped, the pressure shall maintain itself without measurable loss for at least half an hour. Testing shall be done before the trenches are refilled. The contractor shall arrange all the equipment required for testing and the rate quoted shall be deemed to be inclusive of this cost. Pressure gauge shall be accurate and recalibrated before the test..

- a) Contractor shall maintain a test register and tests shall be recorded in it. The entries shall be signed and dated by Consultant, Engineers representative and Contractor. This register shall be handed over to the Engineers representative on completion of work.
- b) CPVC pipes shall be measured per linear meter (to be nearest centimeter) and shall be inclusive of all fittings, earth work, pipe protection and other items as specified.

2.18.34 VALVE CHAMBERS

Contractor shall provide suitable brick masonry chambers in cement mortar 1:5 (1 cement: 5 coarse sand) on cement concrete foundations 150 mm thick 1:5:10 (1 cement: 5 coarse sand: 10 graded stone aggregate 40 mm nominal size) 15 mm thick cement plaster inside and outside finished with a floating coat of neat cement inside with cast iron surface box including excavation, back filling complete

Valve chambers shall be of following sizes :-

For depths 90 cms. 60 x 60 cms For depths up to 100 cms. and beyond
120 x 120 cms

2.18.35 PRE-COMMISSIONING

- a) Ensure that all pipes are free from debris and obstructions
- b) Check all valves and for effective opening and closing action
Defects should be rectified or valves replaced
- c) Ensure that all connection to branches have been made
- d) Ensure that mains have been connected to the respective pumps,
underground and overhead tanks
- e) Water supply should be available at main underground tank
- f) All main line valves should be closed

2.18.36 COMMISSIONING RESPONSIBILITY:

Responsibility for various activities in pre-commissioning and commissioning procedures will rest with the contractor.

2.18.37 STORM DRAINS

2.18.38 GENERAL REQUIREMENTS

- a) All materials shall be new and of the best quality conforming to specification and subject to the approval of the Consultant/Engineers representative.
- b) Drainage lines shall be laid to the required gradients and profiles.
- c) All drainage work shall be done in accordance with the local municipal by laws.

- d) Contractor shall obtain necessary approval and permission for the drainage system from the municipal or any other competent authority.
- e) Location of all manholes, catch basins etc., shall be got confirmed by the Consultants before the actual execution of work at site.
- f) All works shall be executed as directed by Consultants.

2.18.39 RUBBLE MASONRY

As specified under item No. 6.3 of civil works for rubble masonry with black granite stones.

2.18.19 REINFORCED CEMENT CONCRETE PIPES

Underground storm water drainage NP2 pipes shall be centrifugally spun RCC pipes of specified size. Pipes shall be true and straight with uniform bore throughout. Cracked, warped pipes shall not be used on the work. All pipes shall be tested by manufacturer and the contractor shall produce, when directed a certificate to the effect from the manufacturer.

2.18.20 TESTING

All pipes shall be tested to a hydraulic test of 1.5 M head for at least 30 minutes at the highest point in the section under test. Test shall be carried out similar to those for stoneware pipes given above. The smoke test shall be carried out by the contractor, if directed by the Consultant, at the expense and charges of the contractor. A test register shall be carried out similar to those for stoneware pipes given above. The smoke test shall be carried out by the contractor, if directed by the Consultant, at the expense and charges of the contractor. A test register shall be maintained which shall be signed and dated by the Contractor/Consultant.

2.18.21 PRE CAST SLABS

Pre cast layer slabs shall be casted in RCC 1:2:4 (1 cement: 2 sand: 4 coarse aggregate of 20 mm aggregate) and shall be placed over RR masonry drain as per drawing.

2.19 APPROVAL FOR MAKES/AGENCY OF MATERIALS

(For Sanitary work)

The following guidelines are to be noted with regard to use of materials in the work.

5. The CONTRACTOR shall be required to use material of the specification asked for in the Bill of Quantities .

The CONTRACTOR shall use items of ISI make, subject to approval and written confirmation being obtained from the CONSULTANT/Engineer's representative.

2. Wherever, material bearing Standard Mark (ISI) are used in the work, the Contractor should furnish necessary documents and proof of payments made for the procurement of materials bearing Standard Mark (ISI).
3. In case it is established beyond doubt ,that Standard material (bearing ISI mark) are not available in the market, then approved equivalent materials may be used in the work subject to approval from the consultant and Engineers representative.
4. For materials bearing "Standard Mark (ISI)" ordinarily no testing is to be done. However, in case of doubt or with a view to check the quality of materials, Engineers representative may send samples for random testing.
5. For use of materials other than materials bearing "Standard Mark (ISI)" Mandatory tests shall be conducted at the frequency specified in the contract. In case frequency of testing is not stipulated in the contract then standard specification (CPWD, ISI etc.) may be considered for frequency at which materials are to be tested.
6. Before bulk purchase of quantities of materials, it is the responsibility of the Contractor to get the samples of materials approved from consultant/Engineers representative in writing.

2.20 APPROVAL FOR MAKES/AGENCY OF MATERIALS

(For Civil Works)

The following guidelines are to be noted with regard to use of materials in the work.

1. The CONTRACTOR shall be required to use material of the specification asked for in the Bill of Quantities .

The CONTRACTOR shall use items of ISI make, subject to approval and written confirmation being obtained from the CONSULTANT/Engineers representative.

2. Wherever, material bearing Standard Mark (ISI) are used in the work, the Contractor should furnish necessary documents and proof of payments made for the procurement of materials bearing Standard Mark (ISI).
3. In case it is established beyond doubt ,that Standard material (bearing ISI mark) are not available in the market, then approved equivalent materials may be used in the work subject to approval from the consultant and Engineers representative.
4. For materials bearing "Standard Mark (ISI)" ordinarily no testing is to be done. However, in case of doubt or with a view to check the quality of materials, Engineers representative may send samples for random testing.
5. For use of materials other than materials bearing "Standard Mark (ISI)" Mandatory tests shall be conducted at the frequency specified in the contract. In case frequency of testing is not stipulated in the contract then standard specification (CPWD, ISI etc.) may be considered for frequency at which materials are to be tested.
6. Before bulk purchase of quantities of materials, it is the responsibility of the Contractor to get the samples of materials approved from consultant/Engineers representative in writing.

2.21 MANDATORY TESTS

1. The mandatory tests shall be carried out when the quantity of materials to incorporate in the work exceeds the minimum quantity specified.
2. Optional tests specified or any other tests, shall be carried out in case of specialized works or important structures as per direction of the Engineers Representative.
3. Testing charges, including incidental charges and cost of sample for testing shall be borne by the contractor for all mandatory tests.
4. Testing charges for optional tests shall be reimbursed by the Employer. However, the incidental charges and cost of sample for testing shall be borne by the contractor.
5. In case of non-IS materials, it shall be the responsibility of the contractor to establish the conformity of material with relevant IS specification by carrying out necessary tests. Testing charges including incidental charge and cost of sample for testing shall be borne by the contractor for such tests.

THE MANDATORY TESTS SHALL BE AS FOLLOWS:

Material	Test	Field / laboratory test	Test procedure	Minimum quantity of material / Work for carrying out the test	Frequency of testing
Reinforced cement concrete work					
Water for construction purposes	Ph value Limits of Acidity Limits of Alkalinity Percentage of solids Chlorides Suspended matter Sulphates Inorganic solids Organic solids	Lab	IS 3025	Water from each source	Before commencement of work & thereafter: Mandatory - Once in one year from each source; Optional: once in 3 months from each source; Municipal supply - optional.
Reinforced cement concrete	b) slump test	Field	IS: 1199	a) 20 cu.m. for slabs, beams and connected columns . b) 5 Cu.m in case of columns	a) 20 cu.m. Part there of or more frequently as required by the EIC/Consultant b) Every 5 Cu.m.
	c) cube test	Lab	IS : 516	Up to 5 cu.m 6 to 15 cu.m 16 to 30 cu.m 30 to 50 Thereafter per 50 cum	One set of sample Two set of samples Three set of samples Four set of samples One set of sample .
Ready	Cube test	Lab	IS-516 and as per para 6.3.2 of IS-4926-2003	Up to 20 cum 21-50 Cum 50+cum	One set of sample Two sets of sample One set of sample per 50cum excluding for first 50cum

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mixed cement concrete (IS-4926)					
Note : for all other small items and where RCC done in a day is less than 5 cum, test may be carried out as required by EIC/Consultant					
Material	Test	Field / laboratory test	Test procedure	Minimum quantity of material / Work for carrying out the test	Frequency of testing
Mortars: Lime	Chemical & physical properties of lime	Laboratory	IS; 6932 (part 1 to x)	5 M.T.	10 M.T. or part there of as decided by the EIC/Consultant
Sand	Bulking of Sand	Field		20 CU.M.	Every 20 cu.m or part there of or more frequently as decided by EIC/Consultant
	Silt content	Field	IS:383	20 CU.M.	Every 20 cu.m or part there of or more frequently as decided by EIC/Consultant
	Particle size and distribution	Field or Laboratory as decided by the EIC/Consultant	IS:383	40 CU.M.	Every 40 cu.m of aggregate/sand required in RCC Work Only
	Organic Impurities	Field	..DO..	20 CU.M.	Every 20 cu.m. or part thereof or more frequently as decided by the EIC/Consultant
	Chloride & sulphate content tests		Optional		Once in three months.
Cement	Test requirement	Fineness (m2/kg)	IS 4031 (Part-II)	Each fresh lot	Every 50 MT or part thereof
		Normal consistency	IS 4031 (Part-IV)		

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		Setting time (minute) a) Initial b) Final	IS 4031 (Part-V)		
		Soundness a) Le-Chat expansion (mm) b) Auto clave (%)	IS III) 4031 (Part-		
		Compressive strength(Mp) a) 72+/-1 hr b)168+/-2hr	IS 4031 (Part-VI)		
Material	Test	Field / laboratory test	Test procedure	Minimum quantity of material / Work for carrying out the test	Frequency of testing
Stone Aggregate	a) Percentage of soft or deleterious materials	General visual inspection/ Lab test where required by the EIC/Consultant	IS 2386 Part II	One test for each source	One test for each source
	Particle size distribution	Field / Lab	-	10 cu.m	Every 40 cum. Or part thereof and
	Once in three months for each source for coarse and fine aggregates required in RCC works, for a minimum quantity - 10 cum for coarse aggregate and 40 cum for fine aggregate.				
	a) Estimation of Organic impurities	Field / Lab	IS 2386 Part II	10 Cum	-do-
	b) Specific Gravity	Field / Lab	IS 2386	10 Cum	-do-
	a) Bulk Density	Field / Lab	IS 2386	10 Cum	-do-
	b) Aggregate crushing strength	Field / Lab	IS 2386	10 Cum	-do-
	c) Aggregate impact value	Field / Lab	IS 2386	10 Cum	-do-

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Timber	Moisture	Field (by moisture meter) Laboratory test as required by EIC/Consultant		1 Cu. M.	Every one Cum or part thereof
Aluminium door or window fittings	Thickness of anaodic coating	Laboratory	IS: 5523	If the cost of fittings exceed Rs. 20,000/-	Rs.20,000/- or part there of as required by the EIC/Consultant.
Bricks	Testing of bricks /brick tiles for dimensions Compressive strength Water absorption Efflorescence	Laboratory	IS 3495 Part I to IV	No of bricks to be selected & bricks lot 20 : 2001 to 10000 32 : 10001 to 35000. 50 : 35001 to 50000 20 : for every addl. 50000 or part thereof If < 2000, As per decision of the EIC/Consultant	Permissible defective bricks in the sample 1 2 3

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Material	Test	Field / laboratory test	Test procedure	Minimum quantity of material / Work for carrying out the test	Frequency of testing
Steel RCC	Physical tests a) Tensile strength b) Retest c) Re-bound test d) Nominal mass e) Bend test f) Elongation test g) Proof stress	Lab / field	IS 1608 IS 1786 IS 1786 IS 1786 IS 1599 IS 1786 IS 1786 IS 1786	Each lot from each source from each diameter of bar	Below 100 Tons Dia < 10 mm one sample for each 25 tonnes or part thereof If dia is >10 mm but less than 16 mm: One sample each 35 tonnes or part thereof. If dia >16 mm one sample for each 45 tonnes
	Chemical Tests: 1. Carbon Constituent 2. Sulphur 3. Phosphorus 4. Phosphorus & Sulphur				For every fresh lot of one truck or less as directed by the Engineer-in Charge/Consultant
Soil core test	OMC Proctor density		As per IS 12175	Two for every 50 sqm	As per notes 1 & 2 below
Earthwork			<ul style="list-style-type: none"> - Sand Content [IS: 2720 (Part-4)] - Plasticity Test [IS:2720 (Part-5)] - Density Test [IS:2720 (Part-8)] - Moisture Content Test [IS :2720 (Part-2)] CBR Test 	2 tests per 3000 cubic metres of soil 2 tests per 3000 cub. metres of soil. 2 tests per 3000 cubic metres of soil. One test for every 250 cubic metres of soil. One CBR test for every 3000 cum. at least or closer as and when required by the Engineer.	
Mosaic tiles			As per IS 13801 Para 14.6	5000 tiles and more for each manufacturer & thereafter for every 10000 tiles or part thereof.	

Ceramic tiles			As per IS 13630	3000 tiles and more for each manufacturer and thereafter for every 3000 tiles or part thereof.
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2.21.1 OTHER MANDATORY TESTS: .

- (a) Testing structural steel - Unit weight, Thickness, Chemical and physical Properties.
- (b) Dimensional, mass, Hydrostatic tests for : - GI Sanitary fittings and fixtures, RCC Hume pipes, Stoneware pipes .

2.21.2 OPTIONAL TESTS: Non-destructive Test of Concrete like Non-Destructive Testing(NDT), Ultra Sonic Pulse Velocity (UPV or USPV) by Rebound Hammer (Schmidt Hammer with impact energy of the hammer is about 2.2Nm and with Ultrasonic Pulse Velocity Tester.

2.21.3 TESTING, TOLERANCE, ACCEPTANCE AND MODE OF PAYMENT:

The material should pass all tests and tolerance in dimensional, chemical, physical properties should be within the limit as stipulated in relevant IS for acceptance. Such materials shall be accepted as standard. Bidder to make payments for getting the materials tested and reports to be submitted for records.

Notes:

1. BACK FILLING IN SIDES OF FOUNDATIONS, PLINTH, UNDER FLOOR ETC.:

The back filling shall be done after the concrete or masonry has fully set and shall be done in such a way as not to cause under-thrust on any part of the structure. Where suitable excavated material is to be used for back filling, it shall be brought from the place where it was temporarily deposited and shall be used in backfilling.

All timber shoring and form work left in the trenches, pits, floors etc. shall be removed after their necessity ceases and trash of any sort shall be cleared out from the excavation. All the space between foundation masonry or concrete and the sides of excavation shall be back filled to the levels as shown in drawings, with approved materials in layers not exceeding 200 mm. in thickness, watered and well consolidated by means of rammers to at least 90% of the consolidation o b t

ainable at optimum moisture content (Proctor density). Flooding with water for consolidation will not be allowed. Areas inaccessible to mechanical equipment such as areas adjacent to walls and columns etc. shall be tamped by hand rammer or by hand held power rammers to the required density. The backfill shall be uniform in character and free from large lumps, stones, shingle or boulder not larger than 75 mm. in any direction, salt, clods, organic or other foreign materials which might rot. The backfilling in plinth and under floors shall be done in similar way in layers not exceeding 200 mm. thick and shall be well consolidated by means of mechanical or hand operated rammers as specified to achieve the required density.

Test to establish proper consolidation as required will be carried out by the Contractor cost. Two tests per 50 sqm. will be taken to ascertain the proper consolidation.

1. FILLING IN PLINTH AND UNDER FLOORS:

After the available suitable excavated materials are exhausted as backfilling, the contractor shall notify the Engineer-in-Charge, of the fact and levels taken jointly with Engineers Representative / Consultant, The earth, murrum, sand, gravel etc. or such materials suitable for filling proposed to be filled under floors and so mentioned in the item of schedule of quantities shall then be brought to site from approved locations and sources.

i) **Earth Filling** : The earth, soft murrum etc. so brought shall be filled up in layers of 20 cm depth, each layer being well watered and consolidated by approved hand or mechanical tampers or other suitable means to achieve the required density.

ii) **Gravel or Sand Filling** : Gravel if required to be filled under floors, shall be single washed gravel of approved quality and of size varying from 12 mm. to 20 mm. it shall be uniformly blinded with approved type of soil and/or sand to obtain full compaction. Gravel shall be filled in ,not exceeding 20 cm thickness and shall be well watered and rammed entirely to the satisfaction of the Engineers Representative / Consultant.

If sand is required to be filled under floors, it shall be clean, medium grained and free from impurities. The filled in sand shall be kept flooded with water for 24 hrs. to ensure maximum consolidation. Any temporary work required to maintain sand under flooded condition shall be done by the contractor at his own cost. The surface shall then be well dressed and got approved from Site Engineer / Consultant before any other work is taken over the fill.

2.22 LIST OF DOCUMENTS/REGISTERS TO BE MAINTAINED AT SITE FOR ENSURING PROPER QUALITY CONTROL OF WORK IN PROGRESS

1. A complete set of Contract Documents.
2. A complete set of drawings (Tender drawings and Good for Execution Drawings).
3. A complete set of change in specification or scope if any.
4. Material Test Register (Master Register) indicating details of various other Test Registers.
5. Cement Test Register.
6. Aggregates Test Register
 - i) Fine aggregate-sand
 - ii) Coarse aggregate
7. Cube Test Register
8. Register for anti-termite material used in the work.
9. Register for bricks testing. .
10. Bar bending schedule Register/Pour Cards.
11. Concrete Pouring Register.
12. Paint Test Register.
13. Register for approval of samples for various materials.
14. Site Order Book.

15. Register showing use of non specified materials and reasons thereof.
16. Hindrance Register
17. Cement & steel consumption register.
18. Levels-Record registers (for excavation, stone columns termination level, earth filling, roadwork and other site related works).
19. Daily records pertaining to labour deployment and their medical records.
20. Records for all the deviations during the execution of work to be maintained.
21. Paint consumption register.
22. Water proofing compound consumption register.
23. Measurement Book

For all pipes, work shall be inclusive of all fittings and specials such as coupling, bends, unions, cleaning eyes, tees, plugs, reducer etc., and making joints and connection to valves, tanks, pumps and existing pipe lines etc as required.

- 2.6 Cutting chase for concealing pipes in walls and floors and making good with cement plaster 1:3.
- 2.7 Work quoted shall include for hoisting to and work at all levels and list of materials shall not form any criterion for any extra claims.

E. SAMPLES

Before commencement of the work the contractor shall furnish the samples of material of workmanship at the first opportunity that may be called for by the Consultant/Engineers representative for their approval and any further samples in case of rejection until such samples are approved. Nothing extra shall be paid to the contractor for the same. Work shall be executed in accordance with the approved samples.

F. MATERIAL

All the materials to be used in the work shall be of approved make/brand as given in the statement or as directed by the Consultant/Engineers representative.

G. DRAWINGS

All water supply, sanitary and drainage drawings are to be used as guide lines and to be followed as close as possible.

The contractor shall submit to the Consultant/Engineers representative the shop drawings to suit the water supply sanitary and drainage layouts.

No dimensions to be measured on drawings and only written dimensions are to be followed.

Contractor shall refer for further details, dimensions to the Constructional and structural detailed drawings.

Discrepancies, variations changes in drawings should be brought to the notice of the Consultant Engineers representative and written approval should be obtained by the contractor before starting the work.

H. AS BUILT DRAWINGS

Contractor shall submit as built drawings on completion of work, one complete set of original reproducible tracings and three prints to the Consultant/Engineers representative for-

A run of all open/concealed piping, with diameters from terrace to tapping points with various controls for water supply, clean outs, access panels, soils waste, vent, rain water piping at all levels.

Drainage water supply layout, location of inspection chambers, diameter of drainage pipes, from WC to chamber, from Gully trap to chamber, and between two chambers with ground levels of drainage pipes in chambers

2.23 ADDITIONAL SPECIAL CONDITIONS:

2.23.1 Land:

DFCCIL will at its discretion, and, if available, arrange land free for use for contractor's office at sites, field workshop, stores, assembly and erection yard. Land required by the contractor for labour or staff colony or other purpose will have to be arranged by him at his own cost.

2.23.2 Further Drawing and Instructions:

CGM/South/DFCCIL shall have full power to make and issue further drawings or instructions or direction from time to time as may appear necessary and proper to the contractor for efficient construction, completion and maintenance of the works. The contractor shall be bound by the same as fully as be if they had been mentioned or referred to in the contract, and the contractor shall not be entitled to any extra payment in respect of any work or materials shown or directed to be done supplied by such further drawings or instructions required for completion of unless the CGM/South/DFCCIL have given an extra order for the same in writing.

The work shall have to be done in such a manner that the normal working of the Railway within the railway yard does not get disturbed. No material/temporary structures should be kept adjacent to the running track which may infringe rail traffic. The contractor shall take necessary precaution to prevent/cause damage to the Railway property & staff during the execution of the work.

2.23.3 Commencement of the Work at site:

The contractor shall commence the work when and as soon as, but not until, he receives instructions from Engineer to do so. On such order being given, possession of site/authority shall be given to the contractor of such portion or portions of the site as the Engineer may determine.

2.23.4 Contractor to Study Drawing & Specification etc. and His Liability:

The contractor shall be responsible for close scrutiny of the approved drawings supplied by the DFCCIL, For any discrepancies, error or omission in the drawings or other particulars indicated therein, the contractor shall approach the DFCCIL immediately for rectification of indicated therein, the contractor shall approach the DFCCIL immediately for rectification of such discrepancies, errors and omission. If any dimension/figure/features etc. on approved drawings or plans differ from those drawings or plans issued to the contractors at the time of calling the tender, the dimensions as figured upon the approved drawings or plans shall be taken as correct.

2.23.5 Contractor to Submit His Time Table:

The contractor shall submit a monthly progress of work done during the month by the 4th day of the following month. He will also give the programme of coming month by 25th of each month. The programme will be subject to alteration at the discretion of the DFCCIL officials.

2.23.6 Any Doubted Points to be referred to the CGM/South/DFCCIL

Should there be any doubt or obscurity as to anything to be done or not to be done by the contractor or as to these instructions or as to any matter or thing, the contractor must set forth such doubt or obscurity in writing and submit the same to CGM/South/DFCCIL. Only such reply

as the said CGM/South/DFCCIL may be in writing given shall be taken as the authoritative interpretation of the point in doubt or obscurity.

2.23.7 Contractor'(s) Liability:

Any fitting, accessory or apparatus which may not have been mentioned in this specification or the drawings, but which are usual or necessary in the execution of such work, are to be provided by the Contractor without extra payment. The whole work must be completed in all details, whether mentioned in this specification or not, with the exception of such work as has been specified in the schedule of items to be separately provided for in the Contract.

Notwithstanding the specifications and conditions stated in the contract, the contractor shall keep the Engineer/ Employer authority fully indemnified and free from all liabilities and risks consequential to any lapse on his part in respect of material quality, standard of workmanship, accuracy of fabrication and the like. He shall provide all labour and material required for execution of the work as per all standards and specifications.

2.5. 30.8 DFCCIL desires that successful contractor should establish (at his own cost) the fabrication workshop near the site only for close monitoring of all the quality aspects of this contract work. Contractor's request for establishing workshop/using workshop proposed/located away from the site shall require prior approval.

2.5. 30.9 Contractor shall establish fully equipped laboratory for all the tests required on materials/processes/products as per provisions of the contract, Specifications and the direction/approval of the Engineer. Costs of these are deemed to be included in the quoted rates. Prior approval of the engineer shall be obtained for non-installation of such testing equipment's which cannot be installed in normal course due to any reason. However, engineer's decision (for installation and non-installation) in this regard shall be final binding and conclusive.

2.23.8 Site Facilities by the Contractor:

Contractor shall provide office / site facilities at the site / other locations for ensuring smooth and efficient communication and work execution. Cost of these facilities deemed to be included in the quoted rates and nothing extra shall be paid for this item.

Contractor shall supply round the clock electricity in site offices of DFCCIL located at the site during the entire contract work. Contractor shall also maintain the electric fittings/wirings/plants of both the offices in the good condition.

To provide proper communication the contractor shall (at his own cost) establish inter office communication system between DFCCIL office and contractor's offices at site. Adequate number of intercom / telephone/ mobile sets or are similar suitable equipment's as decided/approved by Engineer fully communicable shall be established in each of the above site of work. The entire expenditure incidental to running and maintenance of above shall be borne by the contractor within quoted rates.

Contractor shall (at his own cost) depute / nominate safety officers(s) for supervising safety aspects of all works/process including enabling arrangements for execution and inspection of the work.

2.23.9 METHOD OF MEASUREMENT FOR PAYMENT

2.23.9.1 Measurements for settlement of payment to comply with IS :1200.

As follows:

IS 1200 - Part 1, IS 1200 - Part 2 , IS 1200 - Part 3.

IS 1200 - Part 5, IS 1200 - Part 7 , IS 1200 - Part 8.

IS 1200 - Part 9, IS 1200 - Part 11 , IS 1200 - Part 12.

IS 1200 - Part 13, IS 1200 - Part 14 , IS 1200 - Part 15.

IS 1200 - Part 16, IS 1200 - Part 19 , IS 1200 - Part 21.

IS 1200 - Part 22, IS 1200 - Part 27 .

PART- II

CHAPTER I

MILESTONES AND TIME SCHEDULE

PART-II

CHAPTER - I

MILESTONES AND TIME SCHEDULE

4.1.1 Time Schedule:

4.1.1.1 Time of start and completion:

The time allowed for execution of the works is 18 (Eighteen months) from the date of issue of letter of acceptance from DFCCIL.

The contractor shall be expected to mobilize to the site of works and commence execution of the works within 10(days) from issue of Acceptance Letter by DFCCIL.

The contractor shall be expected to complete the whole work ordered on the contractor within 18 (Eighteen months) from the date of issue of Acceptance Letter by DFCCIL.

If the contractor commits defaults in commencing execution of the works as afore stated, DFCCIL shall without prejudice to any other right to remedy, be at liberty to forfeit fully the Earnest Money Deposit and performance guarantee of the contractor.

4.1.1.2 Progress of works:

The contractor shall submit a programme of work in the form of a Bar Chart of all the activities in consistence with milestone target envisaged below. In case this bar chart requires to be modified, the Engineer and the contractor shall agree upon a time and progress chart. The chart shall be prepared in direct relation to the time stated as 18 months for the completion of the works as the milestone targets specified below of these special conditions. It shall indicate the forecast of the dates of commencement and completion of various activities of the work and may be amended as necessary by agreements between the Engineer and the contractor within the limitation of 18 months as overall completion period.

4.1.2 Achievement of milestone progress:

In order to ensure progress during the execution of the work the contractor will be expected to achieve the following milestone targets ahead of dates mentioned against each. Failure to achieve accomplished milestone targets within allocated timeframe, save for reason accepted as laid by the Engineer, shall create and constitute the ground for failure on the part of contractor for maintaining progress of the work as per agreed programme. In case of such breach, the Contractor is required to submit a recovery program, within seven days of such breach, for achieving the missed milestone together with the planning for completion of balance work so that the subsequent milestone and the completion of the work is achieved within the stipulated time. On failure of the same, the Engineer will be entitled to take action under Clause 62(1) of the GCC for termination of Contract on the default of the Contractor. These milestones are applicable for both the running room buildings individually. Hence the Contractor is required to

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take up the work at both the running rooms simultaneously so as to achieve the milestones for each of the Running room building at JNPT & New Kharbao.

	Milestone Targets	Time allocated within which to achieve completion in total 18 (Eighteen months)
1	Completion of ground work, foundations/raft up to plinth level with antitermite treatments all complete.	3 months
2	Completion of Superstructure framework.	5 months
3	Completion of AAC Blockwork, fitting of frames, concrete jalli in position, water supply, drainage & sanitary lines, waterproofing works.	3 months
4	Flooring, dado, skirting, marble, kota stone, granite works. And plastering.	3 months
5	Sanitary fittings and fixtures in position, SS kitchen sinks, Aluminium widows installations, grills, collapsible steel shutters, false ceiling , SS railing works, painting except the final coat .	3 months
5	Completion of site development works & bulk services and handing over of the building including obtaining the requisite approvals and issue of completion certificate.	1 month

PART- II

CHAPTER II

TENDER FORMS (INCLUDING SCHEDULE OF PRICES)

PART- II
CHAPTER II

TENDER FORMS

FORMNo.	SUBJECT
Form No. 1	Format of Covering letter of Tender
Form No. 2	Tenderer's Credentials
Form No. 2A	Technical Eligibility Criteria Details
Form No. 2B	Financial Eligibility Criteria Details
Form No. 2C	Applicant's Party Information Form
Form No. 3	Summary of Prices
Form No. 4	Schedule of Prices and Total Prices
Form No. 5	Contract Agreement
Form No. 6	Performance Guarantee Bond
Form No. 7	Standing indemnity bond for on account payment.
Form No. 8	ECS / NEFT / RTGS
Form No. 9	Draft MOU for Joint Venture Participation
Form No.10	Draft Agreement for JV
Form No.11	Proforma of Participation from each partner of JV
Form No.12	Power of Attorney for authorized signatory of JV Partners
Form No.13	Power of Attorney to lead partner of JV
Form No.14	Proforma for Time Extension
Form No.15	Certificate of Fitness
Form No.16	Proforma of 7 days' Notice
Form No.17	Proforma of 48 Hours' Notice
Form No.18	Proforma of Termination Notice
Form No.19	Format of Bank Guarantee for Mobilisation Advance
Form No. 20	Format for Certificate to be submitted/uploaded along with tender documents

FORM No. 1

**Format for Covering letter of Tender
(On letter Head of Firm/Company)**

To,
The Chief General Manager
Mumbai(S)
DFCCIL

Sub: Construction of Running Rooms at JNPT & New Kharbao stations of DFCCIL in the state of Maharashtra

Ref.: Tender No.....

1. I/We Have read the various terms and conditions of tender attached hereto and hereby agree to adhere by the said terms and conditions. I/We also agree to keep this tender open for acceptance for a period of 120 days from the date fixed for opening the same and if I/We default thereof, I/We will be liable for forfeiture of my/our "Earnest Money". I/We offer to do the work as set out in the Tender Document. I/We also agree to abide by the Terms and Conditions of the Contract and to carry out the work according to the Scope of the Work and Terms and Conditions as laid down by the DFCCIL Administration for the execution of present Contract.
2. A sum of Rs. Is being deposited as Earnest Money online through payment gateway on www.ireps.gov.in. The Value of the earnest money shall stand forfeited without prejudice to any other rights or remedies if:
 - (i) I/We do not execute the Contract Agreement within 30 (thirty) days from the date of issue of Letter of Acceptance; or
 - (ii) I/We do not submit a Performance Security in the form of Bank Guarantee equal to the requisite value (equal to 5% of Contract Value) as per Annexure-I of Tender Document, within 15 days of issue of letter of Acceptance; or
 - (iii) I/We do not commence the work within 7 days after receipt of Letter of Acceptance or from the date as specified in the Letter of Acceptance; or
 - (iv) I/We withdraw the offer during the period of validity/extended validity; or
 - (v) When any of the information furnished by the tenderer not found true.

Until a formal agreement is prepared and executed, acceptance of this tender shall constitute a binding contract between us subject to the modifications, as mutually agreed to, between us and indicated in the Letter of Acceptance or my/our accepted offer for the work.

(Signature of Bidder)

Name

.....

.....

.....

In the capacity

of.....

.....

Duly authorized to sign the Bid for
and on behalf of

.....

.....
(Signature of Witness)

.....

.....

.....

(Name & Address of Witness)

FORM No. 2

TENDERER'S CREDENTIALS

S. No	Description
1.	For technical experience/competence, attach details of similar completed Works during the last three financial years (i.e.current Financial year and three previous Financial Years) – in the “ELIGIBILITY” Tab of the tender in ireps portal
2.	For financial capacity and organizational resources, give details of Contractual payments received for the last three financial years (i.e current Financial year and three previous financial years) as per audited balance sheet certified by Chartered Accountant in the “ELIGIBILITY” Tab of the tender on ireps portal.
3.	Give constitution of your firm. Attach certified copies of legal documents in support thereof.

FORM No. 2A

TECHNICAL ELIGIBILITY CRITERIA DETAILS
Details of the similar works completed (as per Para1.3.13 (i) of
Preamble and General Instructions to Tenderers)

Similar Contract No.		
Contract Identification		
Award date		
Completion date		
Role in Contract	Prime Contractor <input type="checkbox"/>	Member in JV <input type="checkbox"/>
Total Contract Amount (Rs.)		
If member in a JV, specify participation in total Contract amount	<i>[insert a percentage amount]</i>	<i>Total contract amount in Rs.</i>
Employer's Name: Address: Telephone/faxnumber E-mail:		
Description of the similarity in accordance with Criteria 1.3.13(i)(A)		

The bidder shall attach Certified completion certificates issued by the client duly attested by Notary as per Eligibility Criteria of the tender documents.

Signature of the
Tenderer with Seal

FORM No. 2B
FINANCIAL ELIGIBILITY CRITERIA DETAILS

Each Bidder or each member of JV must fill in this form separately.

Name of Bidder/JV Partner

Details of contractual payments (Construction only) received during the last three financial years and current financial year

Contractual payments received (Construction only)	
Year	Value of payment received in Rs. (Contract Receipts)
Current Year (2020-21)	
2019 - 2020	
2018- 2019	
2017 - 2018	
Total Contractual Payment	

Note: The details should be extracted from the audited balance sheet Certified by the Chartered Accountant or form 16-A issued by the Employer as per clause 1.3.13 of Preamble and General Instructions to Tenderers.

The bidder shall attach necessary documents in support of the above.

Signature of the
Tenderer with Seal

FORM No.2 C

APPLICANT'S PARTY INFORMATION FORM

Applicant name:
[insert full name]
Applicant's Party name:
[insert full name of Applicant's Party]
Applicant's Party country of registration:
[indicate country of registration]
Applicant Party's year of constitution:
[indicate year of constitution]
Applicant Party's legal address in country of constitution:
[insert street/number/town or city/country]
Applicant Party's authorized representative information
Name: [insert full name]
Address: [insert street/number/ town or city/country]
Telephone/Faxnumbers: [insert telephone/fax numbers, including country and city codes]
1. Attached are copies of original documents of
<input type="checkbox"/> Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above.
<input type="checkbox"/> In case of a Government-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and absence of dependent status.
2. Included are the organizational chart, a list of Board of Directors, and the beneficial

Signature of the
Tenderer with Seal

FORM No. 3

SUMMARY OF PRICES

(Summary of Prices has been separately attached in “FIN TAB” of Financial Packet "B")

FORM No. 4

**SCHEDULE -1
SCHEDULE OF PRICES & TOTAL PRICES**

**(Schedule of Prices & Total Prices have been separately provided in “FIN TAB” as part
of
Financial Packet "B").**

SAMPLE

AGREEMENT

CONTRACT AGREEMENT

THIS AGREEMENT ("Agreement") is made at Mumbai on the ____ day of
BETWEEN

(1) Dedicated Freight Corridor Corporation of India Limited, incorporated under the laws of India and having its principal place of business at, 7th floor, Central Railway's New Admin Building, D. N. Road, CSMT, Mumbai-1 (herein after called '**the Employer**'), and -----
-----, a company / corporation / JV incorporated under the laws of -----
having its principal place of business at----- (herein after called '**the Contractor**').

WHEREAS in reference to a call for Tender for "Construction of Running rooms at JNPT and New Kharbao in the state of Maharashtra". As per Tender paper
_____ at Annexure "A" here to, the Contractor has submitted a Tender here to and whereas the said Tender of the contractor has been accepted for the "Construction of Running rooms at JNPT and New Kharbao in the state of Maharashtra". As per copy of the Letter of Acceptance of Tender No----- dated ----complete with enclosure at the accepted rates and at an estimated contract value of Rs._____ (Rupees_only). Now the agreement with witness seth to that in consideration of the premises and the payment to be made by the Employer to the Contractor provided for herein below the Contractor shall supply all equipment's and materials and execute and perform all works for which the said Tender of the Contractor has been accepted, strictly according to the various provisions in Annexure 'A' and 'B' here to and upon such supply, execution and performance to the satisfaction of the Purchaser, the Purchaser shall pay to the contractor at the several rates accepted as per the said Annexure 'B' and in terms of the provisions there in.

IN WITNESS WHERE OF the parties here to have caused their respective Common Seals to be here unto affixed /(or have here unto set the irrespective hands and seals) the day and year first above written.

MUM-S-Running Room-568-I Dated 14.05.2020

For and on behalf of the Contractor

For and on behalf of the Employer

Signature of the authorized official
Name of the official

Signature of the authorized official
Name of the official

Stamp/seal of the Contractor

Stamp/Seal of the Employer

SIGNED, SEALED AND DELIVERED

By the said

By the said

_____ Name

_____ Name

On behalf of the Contractor in the
presence of: _____

On behalf of the Employer in the
presence of: _____

Witness _____

Witness _____

Name _____

Name _____

Address _____

Address _____

Enclosures:-

1. Annexure 'A' - Tender Papers
2. Annexure 'B' - Letter of Acceptance of Tender No. _____ Dated _____
Along with Summary of Prices

SAMPLE

Name of the Bank _____

Managing Director / DFCCIL Bank Guarantee Bond No. _____

Acting through _____ (Designation Dated and address of contract signing authority)

PERFORMANCE GUARANTEE BOND

In consideration of the Managing Director / DFCCIL acting through _____ (Designation & Address of Contract Signing Authority), Dedicated Freight Corridor Corporation of India Limited, New Delhi herein after called "DFCCIL") having agreed under the terms and conditions of agreement / Contract Acceptance letter No. _____ dated _____ made between _____ (Designation & address of contract signing Authority) and _____ (herein after called "the said contractor(s)" for the work _____ (herein after called "the said agreement") having agreed for submission of a irrevocable Bank Guarantee Bond for Rs. _____ (Rs. _____ only) as a performance security Guarantee Bond from the contractor(s) for compliance of his obligations in accordance with the terms & conditions in the said agreement.

1. We ____ (indicate the name of the Bank) herein after referred to as the Bank, undertake to pay to the Government an amount not exceeding Rs. ____ (Rs. ____ only) on demand by the Government.
2. We _____ (indicate the name of the bank, further agree that (and promise) to pay the amounts due and payable under this guarantee without any demur merely on a demand from the Government through the Dy. Chief Project Manager / FINANCE Dedicated Freight Corridor Corporation of India Limited, Mumbai (South) or _____ (Designation & Address of contract signing authority) DFCCIL, stating that the amount claimed is due by way of loss or damage caused to or would be caused or suffered by the Government by reason of any breach by the said contractor of any of the terms or conditions contained in the said agreement or by reason of the contractor failure to perform the said agreement. 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. _____ (Rs. _____ only)
- 3(a) We, _____ (indicate the name of Bank) further undertake to pay to the Government any money so demanded notwithstanding any dispute or dispute raised by the contractor (s) in any suit or proceeding pending before any court or Tribunal relating to liability under this present being absolute and unequivocal.
- (b) The payment so made by us under this bond shall be valid discharge of our liability for payment there under and the contractor(s) shall have no claim against us for

making such payment.

4. We, _____ (indicate the name of bank) to 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 under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged by _____ (Designation & Address of contract signing authority) on behalf of the Government, certify 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. (a) Notwithstanding any thing to the contrary contained herein the liability of the bank under this guarantee will remain in force and effect until such time as this guarantee is discharged in writing by the Government or until (date of validity/extended validity) whichever is earlier and no claim shall be valid under this guarantee unless notice in writing there of is given by the Government with invalidity/extended period of validity of guarantee from the date afore said.

(b) Provided always that we _____ (indicate the name of the Bank) unconditionally undertakes to renew this guarantee to extend the period of guarantee from year to year before the expiry of the period or the extended period of the guarantee, as the case may be on being called upon to do so by the Government. If the guarantee is not renewed or the period extended on demand, we _____ (indicate the name of the Bank) shall pay the Government the full amount guarantee on demand and without demur.
6. We, _____ (indicate the name of Bank) further agree with the Government that the Government shall have the fullest liberty without our consent and without effecting in any manner out of obligations here under to vary any of the terms and conditions of the said contract from time to time or to postpone for any time or from time to time any to the powers exercisable by the Government against the said contractor(s) and to for be or enforce any of the terms and conditions of 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 bearing 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 for the said reservation would relieve us from the liability.
7. This guarantee will not be discharged by any change in the constitution of the Bank or the Contractor(s).
8. We, _____ (indicate the name of the Bank) lastly undertake not to revoke

this guarantee except with the previous consent of the Government in writing.

9. This guarantee shall be valid upto _____(Date of completion plus 60 days beyond that). Unless extended on demand by Government, notwithstanding anything to the contrary contained herein before, our liability under this guarantee is restricted to Rs. _____ (Rs. _____ only) unless a demand under this guarantee is made on us in writing on or before _____ we, shall be discharged from our liabilities under this guarantee thereafter.

Dated _____ The day of _____ for
_____(indicate the name of bank)

Signature of Bank Authorize official
(Name):
Designation: Full
Address.

Witness:

1. _____

2. _____

FORM No. 7

SAMPLE
STANDING INDEMNITY BOND FOR "ON ACCOUNT" PAYMENTS
(On paper of requisite stamp value)

We, M/s _____ here by undertake that we hold at our stores Depot/s at _____ for and on behalf of the Managing Director/ DFCCIL acting in the premises through the Chief General Manager /South/Mumbai/ DFCCIL or his successor (herein after referred to as "The Employer") all materials for which "On Account" payments have been made to us against the Contract for (_____) on the section _____ DFCCIL also referred to as Group/s _____ vide letter of Acceptance of Tender _____ dated _____ and material handed over to us by the employer for the purpose of execution of the said contract, until such time the materials are duly erected or otherwise handed over to him.

We shall be entirely responsible for the safe custody and protection of the said materials against all risk till they are duly delivered as erected equipment to the employer or as he may direct otherwise and shall indemnify the employer against any loss /damage or deterioration whatsoever in respect of the said material while in our possession and against disposal of surplus materials. The said materials shall at all times be open to inspection by any officer authorized by the Chief General Manager / South / Mumbai / DFCCIL in charge of Dedicated Freight Corridor Corporation of India Limited (Whose address will be intimated in due course).

Should any loss, damage or deterioration of materials occur or surplus material disposed off and refund becomes due, the Employer shall be entitled to recover from us the 85% of supply portion of Part IV, Chapter-II (Form - 4) to the Contract (as applicable) and also compensation for such loss or damage if any along with the amount to be refunded without prejudice to any other remedies available to him by deduction from any sum due or any sum which at any time here after becomes due to us under the said or any other Contract.

Dated this day ____ day of _____ 2016
for and on behalf of
M/s _____ (Contractor)
Signature of witness
Name of witness in Block letter.

Address. _____

FORM No. 8

**ECS / NEFT / RTGS
MANDATE FORM**

Date :-

To,
DyCPM/F
DFCCIL, Mumbai(S).

Sub : ECS / NEFT / RTGS payments

We refer to the ECS / NEFT / RTGS set up by DFCCIL for remittance of our payments using RBI's NEFT / RTGS scheme, our payments may be made through the above scheme to our under noted account.

Name of Bank	
Name of City	
Bank Code No	
Name of Bank Branch	
Branch Code No	
Address of Bank Branch	
Telephone Number of Bank Branch	
Fax No of Bank Branch	
Name of customer / Tenderer as per account	
Account Number of Tenderer appearing on cheque book	
Type of Account (S. B. / Current / Cash credit)	
IFSC code for NEFT	
IFSC code for RTGS	
9-Digit-code number of the bank and branch appearing on the MICR cheque issued by the bank.	
Details of Cancelled Cheque leaf	
Telephone no of tenderer	
Cell Phone Number of the tenderer to whom details with regard to the status of bill submitted to Accounts Office i.e Co6 & Co7 & Cheque Purchase Orders particulars can be intimated through SMS	
Tenderer's E - mail ID	

Confirmed by Bank signature of tenderer with stamp and address
Enclose a copy of crossed cheque

**DRAFT MEMORANDUM OF UNDERSTANDING (MOU) For
JOINT VENTURE PARTICIPATION
BETWEEN**

M/s.....having its registered office at.....(herein after referred to as) acting as the Lead Partner of the first part, **and**

M/s.....having its registered office at.....(herein after referred to as') in the capacity of a Joint Partner of the other part. **and**

M/s.....having its registered office at.....(herein after Referred to as') in the capacity of a Joint Partner of the other part.

The expressions of.....and.....shall wherever the context admits, mean and include their respective legal representatives, successors-in-interest and assigns and shall collectively be referred to as "the Parties" and individually as "the Party"

WHEREAS:

Dedicated Freight Corridor Corporation of India Limited (DFCCIL) [herein after referred to as "Client"] has invited bids for ... "[Insert name of work]....."

NOW, THEREFORE, THE PARTIES AGREE AS FOLLOWS:

1. The following documents shall be deemed to form and be read and construed as an integral part of this MOU.
 - (i) Notice for Bid, and
 - (ii) Bidding document
 - (iii) Any Addendum/Corrigendum issued by Dedicated Freight Corridor Corporation of India Limited
 - (iv) The bid submitted on our behalf jointly by the Lead Partner.
2. The 'Parties' have studied the documents and have agreed to participate in submitting a 'bid' jointly.
3. M/s.....shall be the lead member of the JV for all intents and purpose and shall represent the Joint Venture in its dealing with the Client. For the purpose of submission of bid proposals, the parties agree to nominate.....as the leader duly authorized to sign and submit all documents and subsequent clarifications, if any, to the Client. However, M/s.....shall not submit any such proposals, clarifications or commitments before securing the written clearance of the other partner which shall be expeditiously given by M/s.....to M/s.....
4. The 'Parties' have resolved that the distribution of responsibilities and their proportionate share in the Joint Venture is as under:
 - (a) Lead Partner.
 - (i)
 - (ii)
 - (iii)

(b) Joint Venture Partner

(i)

(ii).....

(iii)

[Similar details to be given for each partner]

5. JOINT AND SEVERAL RESPONSIBILITY

The Parties undertake that they shall be jointly and severally liable to the Client in the discharge of all the obligations and liabilities as per the contract with the Client and for the performance of contract awarded to their JV.

6. ASSIGNMENT AND THIRD PARTIES

The parties shall co-operate through out the entire period of this MOU on the basis of exclusivity and neither of the Parties shall make arrangement or enter into agreement either directly or indirectly with any other party or group of parties on matters relating to the Project except with prior written consent of the other party.

7. EXECUTIVE AUTHORITY

The said Joint Venture through its authorized representative shall receive instructions, payments from the Client. The management structure for the project shall be prepared by mutual consultations to enable completion of project to quality requirements within permitted cost and time.

8. BID SECURITIES

Till the award of the work, JV firm/Lead Partner of JV firm shall furnish Bid Security to the Client on behalf of the joint venture which shall be legally binding on all the members of the Joint Venture.

9. BID SUBMISSION

Each Party shall be a rits own cost and expenses for preparation and submission of the bid and all costs until conclusion of a contract with the Client for the Project. Common expenses shall be shared by all the parties in the ratio of their actual participation.

10.INDEMNITY

Each party here to agrees to indemnify the other party against its respective parts in case of breach/default of the respective party of the contract works of any liabilities sustained by the Joint Venture.

11.Forthe execution of the respective portions of works, the parties shall make their own arrangements to bring the required finance, plants and equipment, materials, manpower and other resources.

12. DOCUMENTS & CONFIDENTIALITY

Each Party shall maintain in confidence and not use for any purpose related to the Project all commercial and technical information received or generated in the course of preparation and submission of the bid.

13. ARBITRATION

Any dispute, controversy or claim arising out of or relating to this agreement shall be settled in the first instance amicably between the parties. If an amicable settlement cannot be reached as above, it will be settled by arbitration in accordance with the Indian

Arbitration and Conciliation Act 1996 or any amendments thereof. The venue of the arbitration shall be Delhi.

14. VALIDITY

This Agreement shall remain in force till the occurrence of the earliest to occur of the following, unless by mutual consent, the Parties agree in writing to extend the validity for a further period.

- a. The bid submitted by the Joint Venture is declared unsuccessful, or
- b. Cancellation/shelving of the Project by the client for any reasons prior to award of work.
- c. Execution of detailed JV agreement by the parties, setting out detailed terms after award of work by the Client.

15. This MOU is drawn in.....number of copies with equal legal strength and status. One copy is held by M/s.....and the other by M/s..... &M/s.....and a copy submitted with the proposal.

16. This MOU shall be construed under the laws of India.

17. NOTICES

Notices shall be given in writing by fax confirmed by registered mail or commercial courier to the following fax numbers and addresses:

Lead Partner

Other Partner(s)

.....

.....

(Name & Address)

(Name & Address)

IN WITNESS WHERE OF THE PARTIES, have executed this MOU the day, month and year first before written.

M/s.....

M/s.....

.....

.....

(Seal)

(Seal)

Witness

1..... (Name& Address)

2..... (Name& Address)

Notes: (1) In case of existing joint venture, the certified copy of JV Agreement may be furnished.

DRAFT FORMAT OF JOINT VENTURE AGREEMENT

To be executed on non-judicial stamp paper of appropriate value in accordance with relevant Stamp Act and to be registered with appropriate authority under Registration Act.

The JV agreement shall be structured generally as per contents list given below:

A.CONDITIONS AND TERMS OF JV AGREEMENT

1. Definitions and Interpretation
2. Joint Venture—Include Equity of members, transferability of shareholding of equity of a partner leaving during the subsistence of the contract.
3. Proposal Submission
4. Performance— To indicate scope of responsibility of each member
5. Language and Law
6. Exclusively
7. Executive Authority
8. Documents
9. Personnel
10. Assignment and Third Parties
11. Severability
12. Member in Default
13. Duration of the Agreement
14. Liability and sharing of risks
15. Insurance
16. Sharing of Promotion and Project Costs, Profits, Losses and Remuneration
17. Financial Administration and Accounting
18. Guarantees and Bonds
19. Arbitration
20. Notices
21. Sole Agreement and Variation

B. SCHEDULES

1. Project and Agreement Particulars
2. Financial Administration Services
3. Allocation of the obligations
4. Financial Policy and Remuneration

FORM No. 11

PRO-FORMA LETTER OF PARTICIPATION FROM EACH PARTNER OF JOINT VENTURE (JV)

(To be executed on non-judicial stamp paper of appropriate value in accordance with relevant Stamp Act and to be registered with appropriate authority under Registration Act.)

No....

Dated

From:

.....
.....

To,
The Chief General Manager(S),
Dedicated Freight Corridor Corporation of India Limited
7th floor CR's New Admin Building,
CSMT, Mumbai

Gentlemen,

Re: ..."[Insert name of work].....".

Ref: Your notice for Invitation for Bid No. _____
Dated.....

1. We wish to confirm that our company/firm has formed a Joint Venture with (i)..... & ii)..... For the purposes associated with IFB referred to above.

(Members who are not the lead partner of the JV should add the following paragraph).*

2. 'The JV is led by...whom we here by authorise to act on our behalf for the purposes of submission of Bid for.....and authorise to incur liabilities and receive instructions for and on behalf of any and all the partners or constituents of the Joint Venture.'

OR

*(Member(s) being the lead member of the group should add the following paragraph)**

2. 'In this group we act as leader and, for the purposes of applying for Bid, represent the

Joint Venture:

3. In the event of our JV being awarded the contract, we agree to be jointly with (i) & (ii)..... (Names of other members of our JV) and severally liable to the Dedicated Freight Corridor Corporation of India Limited, its successors and assigns for all obligations, duties and responsibilities arising from or imposed by the contract subsequently entered into between Dedicated Freight Corridor Corporation of India Limited and our JV.
4. ***I/We, further agree that entire execution of the contract shall be carried out exclusively through the lead partner.**

Yours faithfully,

(Signature)

(Name of Signatory).....

(Capacity of Signatory).....

Company Seal * Delete as applicable

Note: In case of existing joint venture, the certified copy of JV Agreement may be furnished.

FORMAT FOR POWER OF ATTORNEY FOR AUTHORISED SIGNATORY OF JOINT VENTURE (JV) PARTNERS

POWEROFATTORNEY*

(To be executed on non-judicial stamp paper of the appropriate value in accordance with relevant stamp Act. The stamp paper to be in the name of the company who is issuing the power of Attorney)

Know all men by these presents, we ... do hereby constitute, appoint and authorise Mr/Ms.....who is presently employed with us and holding the position ofas our attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to our bid for the work of ... Including signing and submission of all documents and providing information / responses to Dedicated Freight Corridor Corporation of India Limited, representing us in all matters, dealing with Dedicated Freight Corridor Corporation of India Limited in all matters in connection with our bid for the said project.

We here by agree to ratify all acts, deeds and things lawfully done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our afore said attorney shall and shall always be deemed to have been done by us.

Dated this the.....day of.....2017.

(Signature of authorised Signatory)

Signature of Lead Partner

Signature of JV Partner(s)

.....
(Signature and Name in Block letters of Signatory)
Seal of Company

Witness

Witness1:
Name:

Witness2:
Name:

Address:
Occupation:

Address:
Occupation:

***Notes:**

- i) To be executed by all the partners jointly, in case of a Joint Venture.

**FORMAT FOR POWER OF ATTORNEY TO LEAD
PARTNER OF JOINT VENTURE (JV)**

***(To be executed on non-judicial stamp paper of the appropriate value in
accordance with relevant stamp Act. The stamp paper to be in the name of the
company who is issuing the power of Attorney)***

POWER OF ATTORNEY*

Whereas Dedicated Freight Corridor Corporation of India Limited has invited Bids for the work of "Construction of Running rooms at JNPT and New Kharbao in the state of Maharashtra".

Whereas, the members of the Joint Venture comprising of M/s....., M/s....., M/s....., and M/s..... are interested in submission of bid for the work of... *[Insert name of work]*...in accordance with the terms and conditions contained in the bidding documents.

Whereas, it is necessary for the members of the Joint Venture to designate one of the as the Lead Partner, with all necessary power and authority to do, for and on behalf of the Joint Venture, all acts, deeds and things as may be necessary in connection with the Joint Venture's bid for the project, as may be necessary in connection the Joint Venture's bid for the project.

NOW THIS POWER OF ATTORNEY WITNESSETH THAT:

We, M/s....., here by designate M/s....., being one of the partners of the Joint Venture, as the lead partner of the Joint Venture, to do on behalf of the Joint Venture, all or any of the acts, deed sort things necessary or incident alto the Joint Venture's bid for the contract, including submission of bid, participating in conferences, responding to queries, submission of information/documents and generally to represent the Joint Venture in all its dealings with the DFCCIL or any other Government Agency or any person, in connection with the Bid/contract for the said work until culmination of the process of bidding till the contract agreement if successful, is entered into with the Dedicated Freight Corridor Corporation of India Limited and there after till the expiry of the contract agreement.

*To be executed by all the members of the JV except the lead member.

The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and

when it is so required the same should be under common seal affixed in accordance with the required procedure.

We hereby agree to ratify all acts, deeds and things lawfully done by lead member, our said attorney, pursuant to this power of attorney and that all acts deeds and things done by our afore said attorney shall and shall always be deemed to have been done by us/Joint Venture.

Dated this the..... Day of.....2017

.....
(Signature)

..... (Name in
Block letters of Executants) Seal of Company

Witness 1	
Name:	
Address:	
Occupation:	
Witness 2	
Name:	
Address:	
Occupation:	

FORM No. 14

Registered Acknowledgement Due
PROFORMA FOR TIME EXTENSION

No. _____ Dated: _____

Sub: (i) _____ (name of work).

(ii) Acceptance letter no. _____

(iii) Understanding/Agreement no. _____

Ref: _____ (Quote specific application of Contractor for extension to the date received) _____

Dear Sir,

1. The stipulated date for completion of the work mentioned above is _____. From the progress made so far and the present rate of progress, it is unlikely that the work will be completed by the above date (or 'However, the work was not completed on this date').
2. Expecting that you may be able to complete the work, if some more time is given, the competent authority, although not bound to do so, hereby extends the time for completion from _____ to _____.
3. Please note that an amount equal to the liquidated damages for delay in the completion of the work after the expiry of _____ (*give here the stipulated date for completion with/without any penalty fixed earlier*) will be recovered from you as mentioned in Clause, 17-B of the Standard General Conditions of Contract for the extended period, notwithstanding the grant of this extension. You may proceed with the work accordingly.
4. The above extension of the completion date will also be subject to the further condition that no increase in rates on any account will be payable to you.
5. Please intimate within a week of the receipt of this letter your acceptance of the extension of the conditions stated above.
6. Please note that in the event of your declining to accept the extension on the above said conditions or in the event of your failure after accepting or acting up to this extension to complete the work by _____ (here mention the extended date), further action will be taken in terms of Clause 62 of the Standard General Conditions of Contract.

Yours faithfully

For and on behalf of the Employer
Name of the Official:-

Stamp/Seal of the Employer

CERTIFICATE OF FITNESS

1. (a) Serial Number _____
(b) Date _____
2. Name of person examined _____
I certify that I have personally examined (*name*) _____
3. Father's Name: son/daughter of _____,
residing at _____
4. Sex _____
5. Residence: _____
6. Date of birth, if available, and/or certified age _____
7. Physical fitness _____
8. Identification marks _____
9. Reasons for:

(a) refusal to grant certificate, or _____

(b) Revoking the Certificate _____

Who is desirous of being employed in a factory or on a work requiring manual labour and that his / her age as nearly as can be ascertained from my examination, is _____ years and that he/she is fit for employment in a factory or on a work requiring manual labour as an adult/child.

Signature or Left Hand
Thumb Impression of the person Examined

Signature of Certifying Surgeon

Note: In case of physical disability, the exact details of the cause of the physical disability should be clearly stated

FORM No. 16

Registered Acknowledgement Due

PROFORMA OF 7 DAYS NOTICE
DFCCIL
(Without Prejudice)

To

M/s _____

Dear Sir,

Contract Agreement No. _____
In connection with _____

1. In spite of repeated instructions to you by the subordinate offices as well as by this office in various letters of even no. _____, dated _____; you have failed to start work/show adequate progress and/or submit detailed programme for completing the work.
2. Your attention is invited to this office/Chief General Manager's, DFCCIL office letter no. _____, dated _____ in reference to your representation, dated _____.
3. As you have failed to abide by the instructions issued to commence the work/to show adequate progress of work you are hereby given 7 days' notice in accordance with Clause 62 of Standard General Conditions of Contract to commence works / to make good the progress, failing which further action as provided in Clause 62 of the Standard General Conditions of Contract viz. to terminate your Contract and complete the balance work without your participation will be taken.

Yours faithfully

Kindly acknowledge receipt.

For and on behalf of the Employer
Name of the Official:-
Stamp/Seal of the Employer

FORM No. 17
Registered Acknowledgement Due

PROFORMA OF 48 HRS. NOTICE
DFCCIL
(Without Prejudice)

To

M/s _____

Dear Sir,

Contract Agreement No. _____
In connection with _____

1. Seven days' notice under Clause 62 of Standard General Conditions of Contract was given to you under this office letter of even no., dated _____; but you have taken no action to commence the work/show adequate progress of the work.
2. You are hereby given 48 hours' notice in terms of Clause 62 of Standard General Conditions of Contract to commence works / to make good the progress of works, failing which and on expiry of this period your above contract will stand rescinded and the work under this contract will be carried out independently without your participation and your Security Deposit shall be forfeited and Performance Guarantee shall also be encashed and consequences which may please be noted.

Kindly acknowledge receipt.

Yours faithfully

For and on behalf of the Employer
Name of the Official:-
Stamp/Seal of the Employer

FORM No. 18
Registered Acknowledgement Due

PROFORMA OF TERMINATION NOTICE
DFCCIL
(Without Prejudice)

No. _____ Dated _____

To
M/s _____

Dear Sir,

Contract Agreement No. _____
In connection with _____

Forty eight hours (48 hrs.) notice was given to you under this office letter of even no. , dated _____; but you have taken no action to commence the work/show adequate progress of the work.

Since the period of 48 hours' notice has already expired, the above contract stands rescinded in terms of Clause 62 of Standard General Conditions of Contract and the balance work under this contract will be carried out independently without your participation. Your participation as well as participation of every member/partner in any manner as an individual or a partnership firm/JV is hereby debarred from participation in the tender for executing the balance work and your Security Deposit shall be forfeited and Performance Guarantee shall also be encashed.

Kindly acknowledge receipt.

Yours faithfully

For and on behalf of the Employer
Name of the Official:-
Stamp/Seal of the Employer

**SAMPLE
FORMAT OF BANK GUARANTEE FOR MOBILISATION ADVANCE**

(Clause 1.5.20, Part - I, Chapter - V)

Bank guarantee made on this Between (Here in after called "**the Bank**") of the One Part and Dedicated Freight Corridor Corporation of India Limited. (Here in after called "**the Employer**") of the other Part.

WHEREAS Dedicated Freight Corridor Corporation of India Limited has awarded the Contract no..... for "....." (Here in after called "**the Contractor**"), having its registered office at

AND WHEREAS vide Clause 1.5.20 of Part - I, Chapter V , Special Conditions of Contract, Mobilization Advance up to ____% (____ percent) of the original contract value of Rs..... Is payable to the contractor against Bank Guarantees, the contractor hereby applies for Mobilization Advance of ____% (____ percent) amounting to Rs...../- (Rupees.....) of the Contract Price,

Now, we the undersigned, Bank of, being fully authorized to sign and to incur obligations for and on behalf of and in the name of Bank ofhereby declare that the said Bank will guarantee the Employer the full amount of Rs.-/- (Rupees.....) as stated above.

We, Bank of, do hereby unconditionally, irrevocably and without demur guarantee and undertake to pay the Employer immediately on demand any or all money payable by the contractor to the extent of Rs.-/- (Rupees.....) without any demur, reservation, context, recourse or protest and/or without any reference to the contractor. Any such demand made by the Employer on the Bank shall be conclusive and binding notwithstanding any difference between the Employer and the contractor on any dispute pending before any court, Tribunal, Arbitrator or any other authority. We agree that the guarantee herein contained shall be irrevocable and shall continue to be enforceable till the Employer discharges this guarantee.

This guarantee is valid till

At any time during the period in which this guarantee still valid of the contractor fails to fulfil its obligation under the Contract, it is understood that the Bank will extend this guarantee under the same condition for the required time on demand by the Employer at the cost of the contractor.

The Guarantee hereinbefore contained shall not be affected by any change in the constitution of the Bank or of the contractor.

The neglect or forbearance of the Employer in enforcement of payment of any money, the payment whereof is intended to be hereby secured or the giving of time by the Employer for the payment hereof shall in no way relieve the Bank of their liability under this Deed. The expressions "the Employer", "the Bank" and "the contractor" here in before used shall include their respective successors and assigns. Notwithstanding anything contained herein:

Our liability under this Bank Guarantee shall not exceed Rs...../-
(Rupees.....)

This bank Guarantee shall be valid up to.....
We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only and only if you serve upon us a written claim or demand on or before(date of expiry of Guarantee).

In witness whereof we of the Bank have signed and sealed this Guarantee on theday ofbeing herewith duly authorized.
For and on behalf of the Bank of.....

Signature of Authorized Bank Official

Name
Designation
Stamp/Seal of the bank
Signed, sealed and delivered for and on
Behalf of the bank by the above named

.....in the presence of

Witness 1
Signature
Name
Address
Witness 2
Signature
Name
Address

FORM No. 20

**FORMAT FOR CERTIFICATE TO BE SUBMITTED / UPLOADED BY
TENDERER ALONGWITH THE TENDER DOCUMENTS**

I..... (Name and designation)** appointed as the attorney/authorized signatory of the tenderer (including its constituents),

M/s..... (hereinafter called the tenderer) for the purpose of the Tender documents for the work of as per the tender No. of (Railway), do hereby solemnly affirm and state on the behalf of the tenderer including its constituents as under:

1. I/we the tenderer (s) am/are signing this document after carefully reading the contents.
2. I/We the tenderer(s) also accept all the conditions of the tender and have signed all the pages in confirmation thereof.
3. I/we hereby declare that I/we have downloaded the tender documents from Indian Railway website www.ireps.gov.in . I/we have verified the content of the document from the website and there is no addition, no deletion or no alteration to the content of the tender document. In case of any discrepancy noticed at any stage i.e. evaluation of tenders, execution of work or final payment of the contract, the master copy available with the railway Administration shall be final and binding upon me/us.
4. I/we declare and certify that I/we have not made any misleading or false representation in the forms, statements and attachments in proof of the qualification requirements.
5. **I/We also understand that my/our offer will be evaluated based on the documents/credentials submitted alongwith the offer and same shall be binding upon me/us.**
6. **I/We declare that the information and documents submitted along with the tender by me/us are correct and I/we are fully responsible for the correctness of the information and documents, submitted by us.**
7. I/we understand that if the certificates regarding eligibility criteria submitted by us are found to be forged/false or incorrect at any time during process for evaluation of tenders, it shall lead to forfeiture of the tender EMD besides banning of business for a period of upto five year. Further, I/we (insert name of the tenderer) ** and all my/our constituents understand that my/our offer shall be summarily rejected.
8. I/we also understand that if the certificates submitted by us are found to be false/forged or incorrect at any time after the award of the contract, it will lead to termination of the contract, alongwith forfeiture of EMD/SD and Performance guarantee besides any other action provided in the contract including banning of business for a period of upto five year.

PART III

DRAWINGS

5.1 General Arrangement Drawings with Key Plan:

The following drawings of the Running rooms at JNPT & Kharbao are attached with this document-

24. JNPT Master Plan
25. Kharbao-Master Plan
26. DFCCIL-RR-JNPT-ARCH-FRONT ELEVATION
27. DFCCIL-RR-JNPT-ARCH-LEFT & RIGHT HAND SIDE ELEVATION
28. DFCCIL-RR-JNPT-ARCH-REAR ELEVATION
29. DFCCIL-RR-JNPT-ARCH-SECTION AT AA'
30. DFCCIL-RR-JNPT-ARCH-SECTION AT BB'
31. DFCCIL-RR-JNPT-ARCH-SECTION AT CC', DD', FF'
32. DFCCIL-RR-JNPT-ARCH-GROUND & FIRST FLOOR ARCHITECTURAL LAYOUT
33. DFCCIL-RR-JNPT-ARCH-SECOND & THIRD FLOOR ARCHITECTURAL LAYOUT
34. DFCCIL-RR-JNPT-ARCH-TERRACE AND TOP FLOOR ARCHITECTURAL LAYOUT
35. JNPT-RAFT_LEVEL_PLAN
36. JNPT-FIRST_LEVEL_PLAN
37. JNPT-COLUMN_SCHEDULE
38. KHARBAO-FOOTING_LEVEL_PLAN_1
39. KHARBAO-COLUMN_SCHEDULE

END OF TENDER DOCUMENT