Request For Proposal

For

Engineering, Manufacturing / Procurement, Installation, Testing and Commissioning of Lifts & Travelators from Lakkar Bazar Bus stand to Ridge in Shimla under Smart City Area Based Development including comprehensive Operation & Maintenance for 5 years

On

Engineering, Procurement & Construction

(EPC) Mode

Ropeways and Rapid Transport System Development Corporation Limited (RTDC), on behalf of Shimla Smart City Limited (SSCL), Shimla

April 2020

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SECTION-1

NOTICE INVITING TENDER

Ropeways and Rapid Transport System Development Corporation Limited (RTDC)

NOTICE INVITING TENDER (NIT)

RTDC invites lump sum price tender as per schedule as under:

Tendering Document No.	:	**RTDC/TENDER NO -**
Name of the Work	:	**Engineering, Manufacturing / Procurement, Installation, Testing and Commissioning of Lifts & Travelators from Lakkar Bazar Bus stand to Ridge in Shimla under Smart City Area Based Development including comprehensive Operation & Maintenance for 5 years on Engineering, Procurement & Construction (EPC) Basis.**
Brief Scope of Work	:	**Engineering, Manufacturing / Procurement, Installation, Testing and Commissioning of Lifts & Travelators from Lakkar Bazar Bus stand to Ridge in Shimla under Smart City Project.**
Estimated Cost including O & M Cost	:	**Rs. 10.37 Crores (Rupees Ten Crore Thirty Seven Lacs only)**
Period of Completion	:	**01 (one) year including raining season for Construction and 60 Months for O&M after commissioning of Project.**
Earnest Money Deposit	:	Rs. 21,00,000/- (Twenty one Lacs only), in the form of Bank Guarantee/ FDR duly pledged in the name of GM, RTDC, valid for 240 days from the Proposal submission date.
Non-refundable cost of Tender Document fee	:	Rs. 10,000/- (Ten Thousand Rupees only) +Applicable GST
Document Download / Sale Start Date	:	**09.04.2020; 17:30 Hrs**
Bid Submission Start Date	:	**09.04.2020; 17:30 Hrs**
Bid Submission Closing Date	:	**13.05.2020 12:00 Hrs**
Bid Opening Date*	:	**13.05.2020 15:00 Hrs**
Date & Time of Opening of Financial Tender	:	**Will be intimated later to successful Bidder**
Validity of offer		**120 days from the date of Submission of price Bid**
Pre-Tender Meeting & Venue		**28.04.2020 at 15.00 Hrs. At RTDC office, U S C l u b Shimla**

The tender document can be downloaded from ***www.himachal.nic.in/transport*** (website) "Corrigendum if any would appear only on the ***www.himachal.nic.in/transport*** (website) and not to be published in any News Paper".

The Bidder if required may submit queries in writing on E-mail Id cgmrtdchp@gmail.com before up to 24.04.2020 13:00Hrs.

INSTRUCTIONS TO BIDDERS:

The invitation for bids is open to all eligible bidders who may be individual, proprietary firms, partnership firms or companies registered under the Companies Act, 1956/ 2013 and meeting the following criteria;

1. Joint Venture is not allowed.

2. Equipment Capabilities:

   The Bidder(s) shall have minimum equipment in full working order, and must demonstrate that based on known commitments, they will be available for timely use in the proposed contract. The bidder should, undertake their own studies and furnish with their bid, a detailed construction planning and methodology supported with assessment study of requirements of equipment/plants & machineries to allow the Owner/Client to review their proposal. The bidder will ensure his commitment to make the arrangements of the required equipment on the day of commencement or with respect to the progress of the work in phases, as per the instructions of Engineer-in-charge on an undertaking of Rs. 100 stamp paper or of value as approved by Client to be submitted along with the Bid.

3. Personnel Capability

   Contractor must produce documentary evidence having the following Key personnel on their establishment at least six months prior to submission of bid and during the duration of contract and should submit undertaking stating that Key personnel or equivalent will be deployed on site after award of contract as per necessity and instruction of Engineer in Charge. Key personnel should have experience in similar type of work i.e. in Lift, Escalators & Travelators.

S. No.	Position	Nos.	Experience In Similar Works [years]
1	Project Manager –Multidisciplinary (Graduate Engineer)	1	15-20
2	Design Manager (Graduate Engineer)	1	15-20
3	Mechanical Engineer (Graduate Mechanical Engineer)	1	10
4	Electrical Engineer (Graduate Electrical Engineer)	1	10-15
5	Safety Engineer (Graduate Engineer)	1	10

4. Eligible Plant, Equipment and services

ELIGIBILITY CRITERIA FOR BIDDERS:

To qualify for award of the contract, Bidders are advised to note the minimum qualification criteria specified below;.

1. **Company Registration:** The bidder shall be proprietary firms, partnership firms or companies registered under the Companies Act 1956/ 2013 in India and should have established office in India since past 10 years.
2. **Similar nature of Work:** The Bidder in its own name should have satisfactorily executed the work of similar nature of Govt. / Semi Govt. & Public Sector undertaking in India, during last 5 years ending last day of month previous to the one in which bids are invited as a prime Contractor. The Bidder should meet any of the following conditions:

i) As a proof of technical experience/competence, the Bidder should have successfully completed the following in the last five years);
   - at least one work of similar nature in individual capacity for a minimum value of 80% of advertised tender value of this work

     or
   - at least two work of similar nature in individual capacity for a minimum value of 50% of advertised tender value of this work

     or
   - at least three work of similar nature in individual capacity for a minimum value of 40% of advertised tender value of this work

ii) The intending Bidders should possess a valid Class "A" electrical contractor license at the time of opening of tender, issued by any state government & same should be submitted along with tender documents by all bidders including working contractors of this unit otherwise offer shall be summarily rejected. The successful bidder shall have to obtain a valid Class "A" electrical contractor license issued by Himachal Pradesh State Government within 45 days of the issue of award letter.

iii) For judging the technical eligibility and financial capability, only those works which had been executed for the Govt. or Semi Govt. and Public Sector Undertakings in India shall be considered and the Bidder will submit the certificate to this effect from the officer concerned duly signed under the official seal and same should be submitted along with tender documents by all bidders.

iv) Similar nature of work means Civil work of commercial complexes/ offices/ buildings along with Supply, installation, testing and commissioning of lifts with Comprehensive AMC.

Note:

i. The requisite credential certificates/documents should clearly be submitted by the Bidder along with his/their offer to clearly fulfill all the eligibility criteria as mentioned above, failing which the offer shall be summarily rejected.

ii. The Bidder shall have to submit his/their offer in corrigendum documents, if any issued, failing which the offer shall be summarily rejected.

iii. For verification of documents Bidder has to submit the details of issuing authority and organization like- Postal address, Name, Designation, Office Phone number, Mobile no. and email ID of concerned person along with the soft copies of concerned RFP documents.

iv. Bidder other then Original Equipment Manufacturer (OEM), require to submit a copy of it's MOU with any of the below mentioned OEMs for the supply of lifts and travelators for the Project. Only OEMs from the below mentioned list will be given preference.

Preferred List of Manufacturers:

1) Schindler
2) Kone
3) Thyssenkrupp
4) Otis
5) Equivalent

v. Original Equipment Manufacturer participating in the capacity of Bidder, cannot enter in to a MOU with other Bidders for the supply of lifts and travelators.

vi. OEM should have service center in Shimla/ Himachal Pradesh/ Chandigarh or they should give undertaking that they will establish service center in Shimla/ Himachal Pradesh/ Chandigarh minimum 45 days before start of operation & maintenance period. Certificate/Undertaking of the same should be attached in Technical Bid.

vii. Bidder needs to present to the Client it's approach and methodology demonstrating its understanding for the Project, Project Plan and Maintenance Plan through a Power Point Presentation (PPT) for technical evaluation.

3. Pre-qualification criteria

With regard to the prequalification Requirements, the following criteria and marking scheme will be applicable:

S. No	Criteria	Basis for evaluation	Max. Marks	Supporting Documents
1	Technical Experience	Projects undertaken in last five years: **1.** For value >=INR 4.15 Crore each of 03 projects / 5.20 Crore each of 02 projects / 8.30 Crore of 01 projects - **5 Marks.** 2. Additional project value >= INR 4.15 Crore (4 Marks per Project)- **Additional Marks Max up to 20**	25	Certificate from client/ Statutory Auditor (SA), wherein all the requisite information can be derived.
2	Average Annual Turnover in last 3 Financial years	**1.** = INR 5.0 Crores: **5 marks** **2.** > INR 5.0 Crores to 7.0 Crore: **6 marks** **3.** > INR 7.0 Crores to 8.0 Crore: **8 marks** **4.** > INR 8.0 Crores to 10.0 Crore: **10 marks**	10	Certificate from Statutory Auditor (SA) along with financial statements (Audited Balance Sheets).
3	Key Personnel	1. 01 No. of Project Manager - Multidisciplinary, Graduate in civil/ mechanical Engineering with 15-20 years of experience in similar works: **8 Marks**	30	Detailed CVs duly signed by Key Personnel along with copies of degrees.

		Masters Degree shall fetch additional: **2 Marks** 2. 01 No. of Design Manager - Graduate in civil/ mechanical Engineering with 15-20 years of experience in similar works: **4 Marks** Masters Degree shall fetch additional: **1 Mark** 3. 01 No. of Mechanical Engineer - Graduate in mechanical Engineering with 10 - 15 years of experience in similar works: **4 Marks** Masters Degree shall fetch additional: **1 Mark** 4. 01 No. of Safety Engineer - Graduate in civil/ mechanical Engineering with 10 years of experience in similar works: **4 Marks** Masters Degree shall fetch additional: **1 Mark** 5. 01 No. of Electrical Engineer - Graduate in Electrical Engineering with 10 years of experience in similar		

		works: **4 Marks** Masters Degree shall fetch additional: **1 Mark**		
4	Presentation on Approach and Methodology	Qualitative assessment based on Demonstration of understanding of the Department's requirements covering: • Technology to be used and Solution proposed and its components. • Scale of implementation. • Challenges likely to be encountered and mitigation proposed. • Approach and Methodology to perform the work in this assignment. • Qualitative assessment based on: ✓ Understanding the objectives of the assignment. ✓ Implementer's approach and work plan, responding to the objectives indicated in the Scope of Work. • Project Plan ✓ Qualitative assessment based on timelines, resource assignment and milestones • Maintenance Plan	35	Bidder, to submit the presentation along with its bid and would require to present the same along with all the Key personnel, on the date, time and venue intimated by the client.

Note: All bids that fail to achieve the minimum overall qualifying score of 70 on pre-qualification requirements will not be considered for opening of Financial Bids.

4. Turnover: The average annual financial turnover during the last 3 years ending 2019- 20 should not be less than Rs. 5 Cr. To ascertain this, Bidder(s) shall furnish the financial statement (Audited balance sheet) duly certified by the Statutory Auditor/ Chartered Accountant. Turnover, for financial 2019-2020 shall be considered subject to submission of provisional/audited certificate from Statutory Auditor/chartered accountant by the Bidder. If the certificate for financial year 2019-20 is not available, then turnover for previous 3 years ending 2018-19 should be considered.

5. Net worth: The Bidder(s) net worth should be positive in the last year (2019-20) which should be certified by Statutory Auditor/Chartered Accountant
6. Bidder shall submit GST registration Certificate, EPF Registration Certificate & PAN Card.
7. The Bidder should not have got black listed by any government undertaking (Central/ State/ PSU). Bidder should submit affidavit signed by the Authorised Signatory of the Contractor to this effect

Note to eligibility criteria:-

I. The Bidder should necessarily submit completion certificate of the Qualifying works from the client/user/ duly signed by an officer not below the rank of Executive Engineer or equivalent of the concerned organization.

II. The Bidder shall submit the audited balance sheets / CA certified turnover for last 3 years (2017-18, 2018-19, and 2019-20).

III. For the purpose of determination of turnover of the bidder, only turnover from construction projects shall be considered. This shall be backed by a certificate from the Statutory Auditors of the Bidder/Chartered Accountant as per Proforma-II given in Appendix 'N'.

IV. For the purpose of determining the relationship of the Bidder with their group companies, only the following documents such as the Annual Report, Balance Sheet or the Auditor Certificate, shall be considered.

V. Net worth shall be calculated as the sum of share capital and free reserves and surplus. Accumulated losses if not adjusted in reserves and surplus and shown separate in the

balance sheet shall be deducted from the sum of share capital and free reserves and surplus. Reserves on account of revaluation of fixed assets shall be excluded.

VI. RTDC shall have the authority to make enquiries with the Bidder's bankers and auditors.

VII. The Bidders shall indicate information regarding any litigation or arbitration resulting from contracts executed by the Bidder in the last five years. The information shall include the name of the parties concerned, disputed amount, cause of litigation & matter in dispute.

DOCUMENTS COMRISING THE BID:

The Bidders should additionally submit the following details in their Bid along with documents mentioned in 'Instructions to Bidders' and 'Eligibility Criteria for Bidders' but not limited to the same:

1. An Organization Chart of administration and execution of the contract showing the deployment of key personnel at Site with individual tasks.
2. Copies of original documents defining the constitution or legal status, place of registration and principal place of business; written Power of Attorney authorizing the signatory of the bid to commit and bind the Bidder, details of arbitrations and litigations.
3. A letter of authority to seek references from the Bidder's bankers and previous/ existing Employer(s).
4. Proposed general programme (Proposed Schedule and cash flow estimate in percentage form only)/method statements/Quality Plan/Site Management Plan in sufficient detail to demonstrate the adequacy of the Bidder's proposals to meet the technical specifications and the completion time referred to in bid document.
5. All the documents in support for meeting the Qualification Criteria
6. Signed copy of Pre-Bid Meeting held, if any.
7. Copies of all schedules, Technical Specifications and Deviations, if any, drawings, literature, brochures.
8. Proposed Safety plan and procedures that shall be followed during the execution of the Works
9. List of equipments / plant and machineries proposed to be deployed for executing the Contract in line with proposed general program/method statement. Availability (either owned or leased or by procurement) of key and critical equipments for the Works. List of equipment to be enclosed with the bid.
10. Experience in handling Similar Projects to be supported by WO/PO Copies, Project

Completion certificate, Project Status Report (duly certified by respective authority) and Performance Certificates from clients.

Even though the Bidders meet the above qualifying criteria, they are liable to be disqualified if they have;

a. Made misleading or false representations in the forms, statements and attachments submitted by them which comes to the knowledge of Client/Owner; and/ or;

b. Record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, financial failures, etc.

Evaluation Criteria:

The lowest quoted price including O&M for five years will be considered at the time of evaluation.

Annexure-I

MEMORANDUM

S No.	Description	Cl. No. of NIT/ITT/Clauses of Contract (CC)	Values/Description to be Applicable for Relevant Clause (S)
1)	Name of Work		**Engineering, Manufacturing / Procurement, Installation, Testing and Commissioning of Lifts & Travelators from Lakkar Bazar Bus stand to Ridge in Shimla under Smart City Area Based Development including comprehensive Operation & Maintenance for 5 years on Engineering, Procurement &**
2)	Client/Owner		Shimla Smart City Limited/ Ropeways and Rapid Transport System Development Corporation HP limited
3)	Type of Tender		Engineering, Procurement & Construction (EPC) Basis
4)	Earnest Money Deposit		Rs. 21,00,000/- (Twenty one Lacs only), In the form of Bank Guarantee/ FDR duly pledged in the name of GM, RTDC, valid for 240 days from the Proposal submission date.
5)	Estimated Cost		**Rs. 10.37 Crores (Rupees Ten Crore Thirty Seven Lacs only)**
6)	Time allowed for Completion of Work		1 (one) year for construction and 60 Months for O&M After commissioning of project
7)	Mobilization Advance		**10%** of contract value
8)	Interest Rate of Mobilization Advance		Simple Interest Rate of 10 % Percent only) (Per Annum)
10)	Validity of Tender		120 days from the date of Submission of price bid
11)	Performance Guarantee		5.00 % (Five Percent Only) of contract value within 30 days from the issue of Letter of Intent
12)	Security Deposit/Retention Money		5.00% (Five Percent Only) of the gross value of each running bill.

13)	Time allowed for starting the work		The date of start of contract shall be reckoned from 10 days after the date of work order.
14)	Escalation		Price quoted by contractor shall be firm and fixed for entire contract period as well as extended period for completion of the works **No escalation shall be applicable on this contract.**
15)	Operation and Maintenance Period		**Five (5) years after successful commissioning of the project**
16)	Defects Liability Period		**Two (2) years after successful commissioning of Phase wise projects on pro-rata basis. However Bidder's scope of work is comprehensive maintenance of the project for 5 years.**

The intending bidder must read the terms and conditions of RTDC carefully. He should only submit his tender if he considers himself eligible and he is in possession of all the documents required.

Information and Instructions for Tenders posted on Website(s) shall form part of tender Document.

The Tender Document as uploaded can be viewed and downloaded free of cost by anyone including intending Bidder.

The Bidder shall submit the Technical BID & Financial Bid in physical form at RTDC's office on or before Bid submission date and time, comprising of the following documents along with supporting documents as appropriate:

Checklist for Submission: Envelope (A, B and C)

a) **Envelope-A will contain:**

1. Demand Draft towards cost of tender document / Acknowledgement towards cost of tender fee submission.
2. FDR or Bank Guarantee of any Nationalized or Commercial Scheduled Bank against EMD/ FDR in favor GM, RTDC shall be as per this Notice Inviting Tender.

b) **Envelope-B will contain:**

1. All approved/authenticated "Eligibility Criteria for Bidder" Documents as per this RFP.
2. Letter of Acceptance of tender condition unconditional as per format enclosed
3. Certificate of Financial Turnover duly certified by CA as indicated above.
4. GST registration number, EPF registration, PAN No.
5. All pages of the entire Corrigendum (if any) duly signed by the authorized person.
6. Affidavit as per "Appendix-O" of tender document.
7. Acceptance letter and Affidavit/Undertaking for Blacklisting/ Debar.
8. Should submit the list of tools, plant and machinery.

9. Any other documents as asked in RFP document.

c) **Envelope-C will contain:**

The Financial Bid, strictly in the prescribed format.

If any condition or conditional rebate is offered by the Bidder, their tender shall summarily be rejected.

The Bidders are required to quote strictly as per terms and conditions, specifications, standards given in the tender documents and not to stipulate any deviations.

After submission of the tender, Bidder can re-submit revised ender any number of times but before last time and date of submission of tender as notified.

If the Bidder is found ineligible after opening of tenders, his tender shall become invalid and cost of tender document shall not be refunded.

Notwithstanding anything stated above, RTDC reserves the right to assess the capabilities and capacity of the Bidder to perform the contract, in the overall interest of RTDC. In case, Bidder's capabilities and capacities are not found satisfactory, RTDC reserves the right to reject the tender.

Examination of Technical Bids and Determination of Responsiveness:

1. Prior to detailed evaluation of Technical Bids, the Employer will determine whether each Bid
   a) Meets the eligibility criteria defined in Clause
   b) Has been properly signed by an authorized signatory (accredited representative) holding power of Attorney in his favor.
   c) Is accompanied by the required Bid security and;
   d) Is responsive to the requirements of the Bidding documents.

2. A substantially responsive Technical Bid is one which conforms to all the terms, conditions and specification of the Bidding documents, without material deviation or reservation. A material deviation or reservation is one

   a) Which affects in any substantial way the scope, quality or performance of the works;

   b) which limits in any substantial way, the Client/Owner's rights or the Bidder's obligations under the Contract; or

3. If a Technical Bid is not substantially responsive, it will be rejected by the Client/Owner, and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation.

Instructions for financial bid submission-

In case of Lump Sum Price Tender, Bidder must ensure to quote single absolute amount in attached financial bid format. Quote should be an amount higher or below or same of the estimated project cost.

I. Financial Bid format is given herewith in the tender document.

II. The total of price quoted by bidder for Engineering, Manufacturing/ Procurement, Installation, Testing and Commissioning of lifts and travelators and for comprehensive operation & maintenance for 5 years shall be considered for financial evaluation.

SECTION-2

INSTRUCTIONS TO BIDDERs (ITB)

Instruction to Bidders (ITB)

A. General Instructions:

2.1 General terms of Bidding-

2.1.1. No Bidder shall submit more than one BID for the Project.

2.1.2. The Feasibility Report/Preliminary Project Report of the Project has been assessed however the Bidders are expected to carry out their own due diligence, surveys, investigations and other Preliminary examination of the Project before submitting their Bids. Nothing contained in the attached drawings/Scope of Work & Technical Specification shall be binding on the RTDC nor confer any right on the Bidders, and the RTDC shall have no liability what so ever in relation to or arising out of any or all contents of TENDER.

2.1.3. Notwithstanding anything to the contrary contained in this RFP, the Preliminary terms specified in the draft Agreement shall have overriding effect; provided, however, that any conditions or obligations imposed on the Bidder here under shall continue to have effect in addition to its obligations under the Agreement.

2.1.4. The BID shall be furnished in the financial bid format attached separately

2.1.5. The Bidder shall deposit a BID Security (EMD) of Rs. 21, 00,000/- (Twenty one Lac only) in accordance with the provisions of this RFP. The Bidder has to provide the BID Security (EMD) through FDR or in the form of a Bank Guarantee acceptable to the RTDC, as per format.

2.1.6. The validity period of the Bank Guarantee, shall not be less than 240 (two hundred and forty) days from the BID Due Date, inclusive of a claim period of 60 (Sixty) days, and may be extended as may be mutually agreed between the RTDC and the Bidder.

2.1.7. The BID shall be summarily rejected if it is not accompanied by the BID Security. The BID Security shall be refundable no later than 150 (one hundred and fifty) days from the BID Due Date except in the case of the Selected Bidder whose BID Security shall be retained till it has provided a Performance Security under the Agreement and the same is to be adjusted in the manner mentioned under the definition of Security deposit/ Retention money in GCC.

2.1.8. The Bidder should submit a Power of Attorney as per the format, authorizing the signatory of the BID to commit the Bidder.

2.1.9. Any condition or qualification or any other stipulation contained in the BID shall render the BID liable to rejection as a non-responsive BID.

2.1.10. The BID and all communications in relation to or concerning the Bidding Documents and the BID shall be in English language.

2.1.11. The documents including this RFP and all attached documents, provided by the RTDC are and shall remain or becomes the property of the RTDC and are Transmitted to the Bidders solely for the purpose of preparation and the submission of a BID in accordance here with. Bidders are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their BID.

2.1.12. The provisions of this Clause shall also apply to BIDs and all other documents submitted by the Bidders, and the RTDC will not return to the Bidders any BID, document or any information provided along there with.

2.1.13. This RFP is not transferable.

2.1.14. Any award of Project pursuant to this RFP shall be subject to the terms of Bidding Documents and also fulfilling the criterion as mentioned in Tender Document.

2.1.15. While bidding is open to persons from any country, the Eligibility of such Bidder shall be subject to approval of the RTDC from national security and public interest perspective. The decision of the RTDC in this behalf shall be final and conclusive and binding on the Bidder. The holding or acquisition of equity or control of a Bidder, shall include direct or indirect holding/ acquisition, including by transfer, of the direct or indirect legal or beneficial ownership or control, by persons acting for themselves or in concert and in determining such holding or acquisition, the RTDC shall be guided by the principles, precedents and definitions contained in the Securities and Exchange Board of India (Substantial Acquisition of Shares and Takeovers) Regulations,1997, or any substitute thereof, as in force on the date of such acquisition. The Bidder shall promptly inform the RTDC of any change in the shareholding, as above, and failure to do so shall render the Bidder liable for disqualification from the Bidding Process.

2.1.16. Notwithstanding anything to the contrary contained herein, in the event that the Bid Due Date falls within three months of the closing of the latest financial year of a Bidder, it shall ignore such financial year for the purposes of its Bid and furnish all its information and certification with reference to the 3 (three) years or 1 (one) year, as the case may be, preceding its latest financial year. For the avoidance of doubt, financial year shall, for the purposes of a Bid hereunder, mean the accounting year followed by the Bidder in the course of its normal business. Latest Financial Year will be (2019-2020)

2.1.17. Any entity which has been barred by GOI or Govt. of Himachal Pradesh for any type of civil works and the bar subsists as on the Bid Due Date, would not be eligible to submit the BID. Bidder need to submit Affidavit regarding the same.

2.1.18. The RTDC reserves the right to reject any eligible bidder on the basis of the information provided in Tender Document. The decision of the RTDC in this case shall be final.

2.2 Eligibility and qualification requirements of Bidder

2.2.1 For determining the eligibility of Bidder the following shall apply:

a) A Bidder shall not have a conflict of interest (the "Conflict of Interest") that affects the Bidding Process. Any Bidder found to have a Conflict of Interest shall be disqualified and liable for forfeiture of the BID Security or Performance Security as the case maybe. A Bidder shall be deemed to have a Conflict of Interest affecting the Bidding Process, if:

b) A Bidder shall be liable for disqualification and forfeiture of BID Security, if any legal, financial or technical adviser of the RTDC in relation to the Project is engaged by the Bidder, its Member or any Associate thereof, as the case may be, in any manner for

matters related to or incidental to such Project during the Bidding Process or subsequent to the (i) issue of the LOA or (ii) execution of the Agreement. In the event though such adviser is engaged by the selected Bidder or Contractor, as the case may be, after issuance of the LOA or execution of the Agreement for matters related or incidental to the P roject, then notwithstanding anything to the contrary contained herein or in the LOA or the Agreement and without Prejudice to any other right or remedy or the RTDC, including the forfeiture and appropriation of the BID Security or Performance Security, as the case may be, which the RTDC may have there under or otherwise, the LOA or the Agreement, as the case may be, shall be liable to be terminated without the RTDC being liable in any manner whatsoever to the Selected Bidder or Contractor for the same. For the avoidance or doubt, this disqualification shall not apply where such adviser was engaged by the Bidder, its Member or Associate in the past but its assignment expired or was terminated 6 (six) months prior to the date of issue of this RFP. Nor will this disqualification apply where such adviser is engaged after a period of 3(three) years from the date of commercial operation of the Project.

Other Instructions –

Lump sum tenders on behalf of Owner/Client are invited for the Work. The pre-qualification / enlistment of the contractors should be valid on the last date of submission of tenders. In case the last date of submission of tender is extended, the pre- qualification of contractor should be valid on the original date of submission of tenders.
The work is estimated to Rs. 10.37 Crore however, is given merely as a rough guide.
The tender document as uploaded can be seen on website ***www.himachal.nic.in/transport*** and can be downloaded free of cost.
Mode of Submission: **Earnest Money Deposit** Earnest Money Deposit of amount as mentioned in "NIT/ Memorandum (Annexure-I)" required to be submitted along with the tender in form of FDR or Bank Guarantee. The EMD shall be valid for minimum period of 240 (Two Hundred Forty) days from last day of submission of Tender.
The EMD of all unsuccessful Bidders will be returned within thirty (30) days of the Award of the contract to successful Bidder.
Financial Bidding
Interested Bidder who wish to participate in the tender has also to make following payments through Demand Draft only. Cost of Tender Document –Rs. 10,000/- + Applicable GST, To be paid through Demand Draft/-
Tender documents submitted by intending Bidders shall be opened only of those Bidders, whose Earnest

Money Deposit, Cost of Tender Document have been received.
The tender submitted shall become invalid if the Bidder is found ineligible. The Bidder does not submit all the documents (including GST registration) as stipulated in the tender document.
VALIDITY OF TENDER The tender for the works shall remain open for acceptance for a period of One Twenty (120) days from the date of bid submission date. If any Bidder withdraws his tender before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the RTDC, then the RTDC shall, without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money as aforesaid. Further the Bidders shall not be allowed to participate in the retendering process of work.
ACCEPTANCE OF TENDER RTDC reserves the right to reject any or all the tenders in part or full without assigning any reason whatsoever. RTDC does not bind itself to accept the lowest tender.
The tenders shall be strictly as per the conditions of contract. Tenders with any additional condition(s)/modifications shall be rejected.
The witnesses to the Tender/Contract Agreement shall be other than the Bidder/ Bidder's competing for this work and must indicate full name, address, and status/occupation with dated signatures.
The acceptance of tender will rest with the RTDC who does not bind itself to accept the lowest tender and reserves to itself the right to reject any or all the tenders received without assigning any reason thereof. Tenders in which, any of the prescribed conditions are not fulfilled or found incomplete in any respect are liable to be rejected.
On acceptance of tender, the name of the accredited representative(s) of the contractor who would be responsible for taking instructions from Engineer-in-Charge or its authorized representative shall be intimated by the contractor within 07 days of issue date of Letter of Intents by RTDC.
The Bidder shall not be permitted to tender for works if his near relative is posted in the project office or concerned office of the RTDC. The contractor shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any of the officers in RTDC. Any breach of this condition by the Bidder would render him liable to the withdrawal of the work awarded to him and forfeiture of Earnest Money and Security Deposit. This may also debar the contractor from tendering for future works under RTDC.
For the purpose of operation of this clause a near relative shall mean wife, husband, parents, grandparents, children, grandchildren, brothers, sisters, uncles, aunts, cousins and their corresponding in-laws.
The time of completion of the entire work, as contained in contract shall be as mentioned in "Memorandum - Annexure-I", which shall be reckoned from the 10th day after issue of the Letter of Intent by the RTDC.
Canvassing whether directly or indirectly, in connection with Bidders is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable for rejection.
The tender award, execution and completion of work shall be governed by tender documents consisting of (but not limited to) Letter of Intent, Scope of Work & Technical Specification , Special Conditions of Contract, General Conditions of Contract, Specifications, Drawings. The Bidders shall be deemed to have gone through the various conditions including sub-soil water conditions,

topography of the land, drainage and accessibility etc. or any other condition which in the opinion of contractor will affect his price/rates before quoting their rates. No claim whatsoever against the foregoing shall be entertained.

The drawings with the tender documents are Tender Drawing and are indicative only.

ADDENDA/CORRIGENDA

Addenda/Corrigenda to the tender documents may be issued prior to the date of submission of the tender to clarify or effect modification in specification and/or contract terms included in various tender documents. The Bidder shall suitably take into consideration such Addenda/Corrigenda while submitting his tender. The Bidder shall return such Addenda/ Corrigenda duly signed and stamped as confirmation of its receipt & acceptance and submit along with the tender document. All addenda/ Corrigenda shall be signed and stamped on each page by the Bidder and shall become part of the tender and contract documents.

SITE VISIT AND COLLECTING LOCAL INFORMATION

Before tendering, the Bidders are advised to visit the site, its surroundings to assess and satisfy themselves about the local conditions such as the working and other constraints at site, approach roads to the site, availability of water & power supply, application of taxes, duties and levies as applicable & any other relevant information required by them to execute complete scope of work. The Bidder may obtain all necessary information as to risks, weather conditions, contingencies & other circumstances (insurgencies etc.) which may influence or affect their tender prices. Bidder shall be deemed to have considered site conditions whether he has inspected it or not and to have satisfied himself in all respect before quoting his rates and no claim or extra charges whatsoever in this regard shall be entertained / payable by the RTDC at a later date.

ACCESS BY ROAD

Contractor, if necessary, shall build temporary access roads to the actual site of construction for the works at his own cost to make the site accessible. The Contractor shall maintain the same in motorable condition at all the times as directed by Engineer-in- Charge at his own cost. The contractor shall be required to permit the use of any roads so constructed by him for vehicles of RTDC or any other agencies / contractors who may be engaged on the project site, free of cost. Non-availability of access roads or approach to site, for the use of the contractor shall in no case condone any delay in the execution of work nor be the cause for any claim for compensation.

HANDING OVER & CLEARING OF SITE

The Contractor should note that area for construction may be made available in phases as per availability and in conjunction with pace of actual progress of work at site. The work may be required to be carried out in constrained situations. The work is to be carried out in such a way that the traffic, people movement, if any, is kept operative and nothing extra shall be payable to the contractor due to this phasing / sequencing of the work. The contractor is required to arrange the resources to complete the entire project within total stipulated time. Traffic diversion, if required, is to be done and maintained as per requirement of local traffic police or/and as per specification, by the contractor at his own cost and the contractor shall not be entitled for any extra payment, whatsoever, in this regard.

The efforts will be made by the RTDC to handover the site to the Contractor free of encumbrances. However, in case of any delay in handing over of the site to the Contractor, the RTDC shall only consider suitable extension of time for the execution of the work. It should be clearly

understood that the RTDC shall not consider any revision in contract price or any other compensation whatsoever viz. towards idleness of contractor's labour, equipment etc. Old structures on the proposed site, if required, shall be demolished by the contractor properly at his own cost unless and otherwise mentioned elsewhere in the tender document. The useful material obtained from demolition of structures & services shall be the property of the Owner/RTDC and these materials shall be stacked in workmanship like at the place specified by the Engineer-in- charge.

Necessary arrangement including its maintenance is to be made by the contractor for temporary diversion of flow of existing drain and road, as the case may be. The existing drain, road would be demolished, wherever required, with the progress of work under the scope of proposed project. The existing Road and Drain which are not in the alignment of the said project but are affected and/ or need to demolished during execution for smooth progress of the project, shall be rehabilitated to its original status and condition (including black topping) by the contractor at his own cost. The cost to be incurred by contractor in this regards shall be deemed to be included in the quoted rates of the bill of quantity items and contractor shall not be entitled for any extra payment whatsoever in this regard.

The Information about the public utilities (whether over ground or underground) electrical/ telephone/ water supply lines, OFC Cables, open drain etc. is the responsibility of contractor to ascertain the utilities that are to be affected by the works through the site investigation.

The contractor shall be responsible to obtain necessary approval from the respective authorities for shifting/ re-alignment of existing public utilities. RTDC shall only assist the contractor for visioning in obtaining the approval from the concerned authorities.

Any services affected by the works must be temporarily supported by the contractor who must also take all measures reasonably required by the various bodies to protect their services and property during the progress of works. It shall be deemed to be the part of the contract and no extra payment shall be made to the contractor for the same.

SCOPE OF WORK

The scope of work covered in this tender shall be as per the Scope of Work & Technical Specification, specifications, drawings, instructions, orders issued to the contractor from time to time during the pendency of work. The drawings for this work, which may be referred for tendering, provide general idea only about the work to be performed under the scope of this contract. The Work shall be executed on Engineering, Procurement & Construction (EPC) Basis. Details and drawings given in Tender document is for information purpose only and successful bidder shall undertake confirmatory survey for accuracy and completeness of data. It is in scope of successful Bidder to undertake all Site surveys, Geotechnical investigations, obtaining all required approvals from the relevant authorities, Carry out ticket counter/ Shop Drawings, Further detailing of Architectural, Structural works, MEP works etc as per Client/Owner's requirement and submit the same to Client/Owner for review and approval, Prepare Good for Construction Drawings duly approved by IIT/ PEC at its own cost, submit maintenance manual to client for approval before start of Maintenance period. The successful bidder shall have to prepare and submit "As Built Drawings" depicting the exact construction carried out on site, in soft and hard copy format.

Statutory and other charges for getting various required approvals shall be in scope of Successful bidder.

The "SCOPE OF WORK & TECHNICAL SPECIFICATION" are indicative only and may vary depending upon the actual requirement. The contractor shall be bound to carry out and complete the stipulated work irrespective of the variation in the Scope of Work & Technical Specification and any variation therein will be governed as per conditions of contract. Also refer section 8 for detailed Scope of work.

APPROVAL OF TEMPORARY / ENABLING WORKS

The setting and nature of all offices, huts, access road to the work areas and all other temporary works as may be required for the proper execution of the works shall be subject to the approval of the Engineer- in-charge. All the equipment's, labour, material including cement, reinforcement and the structural steel required for the enabling/ temporary works associated with the entire Contract- shall have to be arranged by the Contractor only. Nothing extra shall be paid to the Contractor on this account.

CLARIFICATION AFTER TENDER SUBMISSION

Bidder's attention is drawn to the fact that during the period, the tenders are under consideration, the Bidders are advised to refrain from contacting by any means, the RTDC and/or its employees/ representatives on matters related to the tender under consideration and that if necessary, RTDC will obtain clarifications in writing or as may be necessary. The tender evaluation and process of award of works is done by duly authorized Tender Scrutiny Committee and this committee is authorized to discuss and get clarification from the Bidders.

In case of difference, contradiction, discrepancy, with regard to conditions of contract, Specifications, Drawings, Scope of Work & Technical Specifications etc. forming part of the contract, the following shall prevail in order of precedence.

Letter of Intent
SCOPE OF WORK & TECHNICAL SPECIFICATIONS.
Special Condition of Contract.
General Conditions of Contract.
Drawings
CPWD/ HPPWD specifications (as specified in Technical Specification of the Tender) updated with correction slips issued up to last date of receipt of tenders.
Relevant B.I.S. Codes

Financial Bid

General Manager Dated:
Ropeways and Rapid Transport System Development Corporation Limited (RTDC)
US Club, Shimla - 171001
Himachal Pradesh

Sub: **Engineering, Manufacturing / Procurement, Installation, Testing and Commissioning of Lifts & Travelators from Lakkar Bazar Bus stand to Ridge in Shimla under Smart City Area Based Development including comprehensive operation & maintenance for 5 years on Engineering, Procurement & Construction (EPC) Basis.**

Dear Sir,

With reference to your RFP document dated *** **, I/we, having examined the Bidding Documents and understood their contents, hereby submit my/our BID for the aforesaid Project. The BID is unconditional and unqualified.

2. I/ We acknowledge that RTDC will be relying on the information provided in the BID and the documents accompanying the BID for selection of the Contractor for the aforesaid Project, and we certify that all information provided in the Bid are true and correct; nothing has been omitted which renders such information misleading; and all documents accompanying the BID are true copies of their respective originals.

3. The BID Price has been quoted by me/us after taking into consideration all the terms and conditions stated in the tender document, our own estimates of costs and after a careful assessment of the site and all the conditions that may affect the project cost and implementation of the project.

4. I/ We acknowledge the right of RTDC to reject our BID without assigning any reason or otherwise and hereby waive, to the fullest extent permitted by applicable law, our right to challenge the same on any account whatsoever.

5. In the event of my/ our being declared as the Selected Bidder, I/we agree to enter into a Agreement in accordance with the draft that has been provided to me/us prior to the BID Due Date. We agree not to seek any changes in the aforesaid draft and agree to abide by the same.

6. I/ We shall keep this offer valid for 120 (one hundred and twenty) days from the BID Due Date specified in the RFP.

7. **I/ We hereby submit our BID as under for undertaking the aforesaid Project in accordance with the Bidding Documents and the Agreement.**

Sr. No.	Section/Discipline	Sub Total	Amount in Rs.
1	**Engineering, Manufacturing / Procurement, Installation, Testing and Commissioning of Lifts & Travelators from Lakkar Bazar Bus stand to Ridge in Shimla as per Scope of Work & Technical Specifications mentioned in the tender document**		**₹ 0.00**
2	**Operation and Maintenance:**		
	Year 1	₹ 0.00	
	Year 2	₹ 0.00	
	Year 3	₹ 0.00	
	Year 4	₹ 0.00	
	Year 5	₹ 0.00	
			₹ 0.00
	Total (1+2) In Rs.		**₹ 0.00**

Yours faithfully,

Date: (Signature, name and designation of the Authorised Signatory)

Place:

Name & seal of Bidder.....

ACCEPTANCE OF TENDER CONDITIONS

From: (On the letter head of the company by the authorized officer having power of attorney)

RTDC,

_____

_____

Sub: Name of the work & NIT No.:

Sir,

This has reference to above referred tender. I/We are pleased to submit our tender for the above work and I/We hereby unconditionally accept the tender conditions and tender documents in its entirety for the above work. I/we are eligible to submit the tender for the subject tender and I/We are in possession of all the documents required. I/We have viewed and read the terms and conditions of this GCC/SCC carefully. I/We have downloaded the following documents forming part of the tender document:

a) Notice Inviting e-Tender. (pg- to pg-)
b) Blank Financial Bid (pg- to pg-)
c) Instructions to Bidders & General Conditions of Contract
d) Technical Specifications & Scope of Work (pg- to pg-)
e) Tender Drawing (pg- to pg-)
f) Corrigendum, if any (pg- to pg-)

I/we have submitted the mandatory documents such as cost of tender document, EMD and other documents as per Notice Inviting e-tender AND I/We agree to pay the cost of tender document, EMD, in the required format and other documents in the form and manner as described in NIT/ITB. Should this tender be accepted, I/We agree to abide by and fulfill all terms and conditions referred to above and as contained in tender documents elsewhere and in default thereof, to forfeit and pay RTDC, or its successors or its authorized nominees such sums of money as are stipulated in the notice inviting tenders and tender documents. If I/we fail to commence the work within 10 days of the date of issue of Letter of Intent and/or I/we fail to sign the agreement as per Clauses of Contract and/or I/we fail to submit performance guarantee as per Clauses of Contract, I/we agree that RTDC shall, without prejudice to any other right or remedy, be at liberty to cancel the Letter of Intent and to forfeit the said earnest money as specified above.

Date

Yours faithfully

(signature of the Bidder with rubber stamp)

SECTION-3

GENERAL CONDITIONS OF CONTRACT (GCC)

CLAUSES OF CONTRACT (CC)

DEFINITIONS

The Contract means the documents forming the tender and acceptance thereof and the formal agreement executed between the competent authority on behalf of RTDC and the contractor, together with the documents referred to therein including these conditions, the specifications, Designs, drawings and instructions issued from time to time by the Engineer- in-Charge and all these documents taken together, shall be deemed to form one contract and shall be complementary to one another. **Ropeway and Rapid Transport System Development Corporation Limited**, hereinafter called '**RTDC**' proposes to get the works executed as mentioned in the Contract on behalf of Owner/ Client as Implementing agency/Executing Agency.

3.1. In this contract, the following expressions shall, unless the context otherwise requires, have the meanings, hereby respectively assigned to them:-

APPROVAL means approved in writing including subsequent written confirmation of previous verbal approval.

CONTRACTOR shall mean an individual, a proprietary firm, a partnership firm or a company registered under the Companies Act 1956/ 2013, undertaking the works or the successors of such individual, firm or company and the permitted assignees of such individual, firm or company.

CONTRACT VALUE means the sum for which the tender is accepted as per the Letter of Intent.

DRAWINGS mean the drawings referred to in the contract document including modifications, if any, and such other drawings as may from time to time be furnished and/ or approved by RTDC.

DATE OF COMMENCEMENT OF WORK: Date of Commencement of work shall be the date of start of contract which is to be signed within 15 days after the date of issue of Letter of Intent.

ENGINEER-IN-CHARGE means the Engineer of RTDC who shall supervise and be in-charge of the work.

LANGUAGE: All documents and correspondence in respect of this contract shall be in English Language.

LETTER OF INTENT shall mean RTDC's letter or notification conveying its acceptance of the tender subject to such conditions as may have been stated there in.

MONTH means English Calendar month and a "Day" means a Calendar day of 24 Hr

OWNER/ CLIENT means the Shimla Smart City Limited who has awarded the work/ project through RTDC and/ or appointed RTDC as Implementing / Executing Agency/ Project Manager and/ or for whom RTDC is acting as an agent and on whose behalf RTDC is entering into the contract and getting the Work executed.

SITE means the lands, building and other places on, under, in or through which the Works are to be executed or carried out and any other lands or places provided by RTDC/Client/Owner or used for the purpose of the contract.

TENDER means the Contractor's priced offer to RTDC for the execution and completion of the Work and the remedying of any defects therein in accordance with the provisions of the Contract, as accepted by the Letter of Intent . The word TENDER is synonymous with Tender and the Word TENDER DOCUMENTS with "Tendering Documents" or "offer documents".

WRITING means any manuscript typed written or printed statement under or over signature and/or seal as the case may be.

Works or Work shall unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the works by or by virtue of the contract contracted to be executed whether temporary or permanent, and whether original, altered, substituted or additional.
The headings in the clauses/ conditions of tender documents are for convenience only and shall not be used for interpretation of the clause/ condition.
Words imparting the singular meaning only also include the plurals and vice versa where the context requires. Words importing persons or parties shall include firms and corporations and organizations having legal capacities.

Excepted Risk are risks due to riots (other than those on account of contractor's employees), war (whether declared or not) invasion, act of foreign enemies, hostilities, civil war, rebellion revolution, insurrection, military or usurped power, any acts of Government, damages from aircraft, acts of God, such as earthquake, lightening and unprecedented floods, and other causes over which the Contractor has no control and accepted as such by the RTDC or causes solely due to use or occupation by Government of the part of the Works in respect of which a certificate of completion has been issued or a cause solely due to RTDC's faulty design of Works.

Market Rate shall be the rate as decided by the Engineer-in-Charge on the basis of the prevailing cost of materials and labour at the site where the Work is to be executed plus the percentage mentioned elsewhere in the Tender Document to cover, all overheads and profits.

PERFORMANCE GUARANTEE:

Within 30 (Thirty) days from the date of issue of Letter of Intent or within such extended time as may be granted by RTDC in writing, the Contractor shall submit to RTDC an irrevocable performance bank guarantee in the form appended, from any Nationalized Bank or a Commercial schedule bank equivalent to 5% (five per cent only) of the contract value for the due and proper execution of the Contract. The Performance Guarantee shall be initially valid up to the stipulated date of completion of Work plus 60 days beyond that. In case the time for completion of works gets extended, the Contractor shall get the validity of Performance Guarantee extended to cover such extended time for completion of Work.

RTDC reserve the right of forfeiture of the performance guarantee in the event of the Contractor's failure to fulfill any of the contractual obligations or in the event of termination of contract as per terms and conditions of contract.

Performance guarantee shall be returned after successful completion / testing / commissioning and handing over the project to the Client up to the entire satisfaction of RTDC / Client.

In case the Contractor fails to submit the performance guarantee of the requisite amount within the stipulated period or extended period, Letter of Intent automatically will stand withdrawn and EMD of the Contractor shall be forfeited.

SECURITY DEPOSIT/ RETENTION MONEY

The Security deposit or the retention money shall be deducted from each running bill of the Contractor @ 5% (five per cent only) of the gross value of the Running Account bill. Earnest money shall be adjusted first in the security deposit and further recovery of security deposit shall commence only when the upto date amount of security deposit exceeds the earnest money deductible under this clause. No Interest shall be paid on amount so deducted.

Security deposit could be released after completion of defect liability period subject to submission of a Bank Guarantee of similar amount which shall be released after completion of Operation and Maintenance period.

The release/refund of security deposit of the Contractor shall be subject to the observance/compliance of the conditions as under and whichever is later:

a. Expiry of the defect liability period in conformity with provisions contained in clause (Defect liability clause). The expiry of defect liability period shall be

extended from time to time depending upon extension of time granted by RTDC.

b. The Contractor produces a clearance certificate from the labour office. As soon as the Work is virtually completed, the Contractor shall apply for the labour clearance certificate to the Labour Officer under intimation to the Engineer-in-Charge. The Engineer-in-Charge, on receipt of the said communication, shall write to the Labour Officer to intimate if any complaint is pending against the Contractor in respect of the Work. If no complaint is pending, on record till after 3 months after completion of the Work and/or no communication is received from the Labour Officer to this effect till six months after the date of completion, it will be deemed to have received the clearance certificate.

3.2. RTDC reserves the right of part or full forfeiture of security deposit in addition to other claims in the event of Contractor's failure to fulfill any of the contractual obligations or in the event of termination of contract as per terms and conditions of contract.

MOBILIZATION ADVANCE

Mobilization Advance up to maximum of amount as mentioned in the "Memorandum (Annexure-I)" shall be paid to the Contractor, if requested by him, upon submission of an irrevocable Bank Guarantee valid for contract period for an amount equivalent to 1.2 times of the Mobilization advance to take care of advance and interest at prescribed rate, from a nationalized bank or any Commercial scheduled bank in the enclosed Proforma. The Mobilization advance shall be bearing interest at a rate as mentioned in the Memorandum (Annexure-I).

The Mobilization Advance shall be paid in three installments which are as follows:

First Installment of fifty percent of total Mobilization Advance shall be paid after the agreement is signed and upon submission of performance guarantee for full amount as specified.

2nd installment of twenty five percent of total Mobilization Advance will be paid after the setting up of site office and site laboratory, complete mobilization of plant and machinery, scaffolding & shuttering materials etc.

The Balance twenty five percent of total Mobilization Advance shall be paid on completion of 10% of Work in terms of cost and after the Contractor has fully mobilized the work at site.

The Mobilization advance shall bear simple interest at the rate mentioned in the Memorandum (Annexure-I) and shall be calculated from the date of payment to the date of recovery (365 days in a year) both days inclusive, on the outstanding amount of advance. Recovery of such Mobilization Advance including interest shall be made by way of deduction

from the Contractor's bills commencing after first ten percent of the gross value of the Work is executed and paid, on pro-rata percentage basis to the gross value of the Work billed beyond 10% in such a way that the entire advance is recovered either by the time eighty percent of the gross value of the Work is executed and paid, together with interest due on the entire outstanding amount up to the date of recovery of the installment or on expiry of eighty percent of contract period (i.e. time allowed for completion of work in terms of Memorandum-Annexure-I) whichever is earlier.

The bank guarantee submitted by contractor against Mobilization Advance shall initially be made for the full amount as mentioned above and valid for the contract period, and be kept renewed from time to time to cover the balance amount and likely period of completion of recovery together with interest. However, the Contractor can submit part bank guarantees against the Mobilization advance in as many numbers as per proposed number of recovery installments equivalent to the amount of each installment.

DEVIATIONS / VARIATIONS EXTENT AND PRICING

The Engineer-in-Charge shall have power (i) to make any alterations in, omissions from, additions to or substitutions for, the original specifications, drawings, designs and instructions that may appear to him to be necessary during the progress of the Work, (ii) to omit part of the Works in case of non-availability of a portion of the site or for any other reasons and the Contractor shall be bound to carry out the Works in accordance with any instructions given to him in writing signed by the Engineer-in- Charge and such alterations, omissions, additions, or substitutions shall form part of the contract as if originally provided therein and any altered, additions or substituted works which the Contractor may be directed to do in the manner specified above as part of the Work, shall be carried out by the Contractor on the same conditions in all respects including price on which he agreed to do the main work except as hereunder provided:

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

in the proportion which the additional cost of the altered, additional or substituted work bears to the original tendered value plus 25% of the time calculated in (i) above or such further additional time as may be considered reasonable by the Engineer-in- Charge.

If the extra items includes any work which is not specified in the contract, then the Contractor may, within fifteen days of receipt of order or occurrence of the item(s), claim rates, supported by proper analysis, for the work and the Engineer-in-Charge shall within one

month of the receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the Contractor, determine the rates on the basis of the schedule rates/ market rates and the Contractor shall be paid in accordance with the rates so determined.

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

If the market rate for the substituted item so determined is more than the market rate of agreement item (to be substituted), the rate payable to the Contractor for the substituted item shall be the rate for the agreement item (to be substituted) so increased to the extent of the difference between the market rates of substituted item and the agreement item (to be substituted).

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

In the case of contract item(s), substituted item(s), contract cum substituted items, which exceed the contract price, the Contractor shall, within fifteen days of receipt of order of occurrence of the excess, claim revision of the contract price, supported by proper analysis for the work in excess of the above mentioned limits, provided that if the contract price so claimed are in excess of the price quoted by the Bidder, the Engineer-in-Charge shall within one month of receipt of the claims supported by analysis, after giving consideration to the analysis of the rates submitted by the Contractor, determine the contract price on the basis of the market rates and the Contractor shall be paid in accordance with the contract price so determined.

The provisions of the preceding paragraph shall also apply to the decrease in the rates of items for the work in excess of the limits laid down in Memorandum (Annexure-I), and the Engineer-in-charge shall, after giving notice to the Contractor within one month of occurrence of the excess and after taking into consideration any reply received from him within fifteen days of the receipt of the notice, revise the price for the work within one month of the expiry of the said period of fifteen days having regard to the market rates.

3.3. The Contractor shall send to the Engineer-in-Charge every month, an up to date account giving complete details of all claims for additional payments to which the Contractor may

consider himself entitled and of all additional work ordered by the Engineer-in-Charge which he has executed during the preceding month failing which the Contractor shall be deemed to have waived his right. However, the Engineer-in- charge may authorize consideration of such claims on merits.

ESCALATION

No claim on account of any escalation on whatsoever ground shall be entertained at any stage of Works. Price quoted by Contractor shall be firm and fixed for entire contract period as well as extended period for completion of the Works. No escalation shall be applicable on this contract.

COMPENSATION FOR DELAY

If the Contractor fails to maintain the required progress in terms of clause or relevant clause of GCC & Special Conditions of Contract, to complete the Work and clear the site on or before the contract or extended date of completion, he shall, without prejudice to any other right or remedy available under the law to RTDC on account of such breach, pay as greed compensation the amount calculated at the rates stipulated below as the Engineer in Charge (whose decision in writing shall be final and binding) may decide on the amount of tendered value of the Work for every completed day / week (as applicable) that the progress remains below that is specified in Clause or the relevant clause in GCC & Special Conditions of Contract or that the Work remains incomplete.

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

i. Compensation for delay of work @ 1.5% of contract value per month delay to be computed on daily basis.
   Provided always that the total amount of compensation for delay to be paid under this Condition shall not exceed 10% of the Tendered Value of work or of the Tendered Value of the item or group of items of work for which a separate period of completion is originally given. The amount of compensation may be adjusted or set-off against any sum payable to the Contractor under this or any other contract with RTDC.

   In case, the Contractor does not achieve a particular milestone mentioned elsewhere in the Tender Document, or the re-scheduled milestone(s) the amount shown against that milestone shall be withheld, to be adjusted against the compensation levied at the final grant of Extension of Time. With-holding of this amount or failure to achieve a milestone, shall be automatic without any notice to the Contractor. However, if the

Contractor catches up with the progress of work on the subsequent milestone(s), the withheld amount shall be released. In case the Contractor fails to make up for the delay in subsequent milestone(s), amount mentioned against each milestone missed subsequently also shall be withheld. However, no interest, whatsoever, shall be payable on such withheld amount.

ACTION IN CASE WORK NOT DONE AS PER SPECIFICATIONS

All Works under or in course of execution or executed in pursuance of the contract, shall at all times be open and accessible to the inspection and supervision of the Engineer-in-charge, his authorized subordinates in charge of the work and all the superior officers, officer of the Quality Assurance Unit of the RTDC or any organization engaged by the RTDC for Quality Assurance and the Contractor shall, at all times, during the usual working hours and at all other times at which reasonable notice of the visit of such officers has been given to the Contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing, present for that purpose. Orders given to the Contractor's agent shall be considered to have the same force as if they had been given to the Contractor himself. If it shall appear to the Engineer-in-charge or his authorized subordinates in-charge of the work or to the officer of Quality Assurance or his subordinate officers or the officers of the organization engaged by the RTDC for Quality Assurance or his subordinate officers, that any work has been executed with unsound, imperfect, or unskillful workmanship, or with materials or articles provided by him for the execution of the work which are unsound or of a quality inferior to that contracted or otherwise not in accordance with the contract, the Contractor shall, on demand in writing which shall be made within twelve months of the completion of the Work from the Engineer-in-Charge specifying the work, materials or articles complained of, notwithstanding that the same may have been passed, certified and paid for, forthwith rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own charge and cost. In the event of the failing to do so within a period specified by the Engineer-in-Charge in his demand aforesaid, then the Contractor shall be liable to pay compensation at the same rate as per conditions of contract (for non-completion of the work in time) for this default. In such case the Engineer-in-Charge may not accept the item of work at the rates applicable under the contract but may accept such items at reduced rates as the Engineer in charge may consider reasonable during the preparation of on account bills or final bill if the item is so acceptable without detriment to the safety and utility of the item and the structure or he may reject the work outright without any payment and/or get it and other connected and incidental items rectified, or removed and re-executed at the risk and cost of the Contractor. Decision of the Engineer-in-Charge to be conveyed in writing in respect of the same will be final and binding on the Contractor.

ACTION IN CASE OF BAD WORK

If it shall appear to the Engineer-in-Charge or his authorized representative in charge of the work or to the Chief Technical Examiner or to any other inspecting agency of Government/ State Government/ Owner where the work is being executed, that any work has been executed with unsound, imperfect, or unskillful workmanship or with materials of any inferior description, or that any materials or articles provided by him for the execution of the work are unsound or of a quality inferior to that contracted for or otherwise not in accordance with the contract, the Contractor shall on demand in writing which shall be made within twelve months of the completion of the Work from the Engineer-in-Charge specifying the work, materials or articles complained of, notwithstanding that the same may have been passed, Certified and paid for, forthwith rectify, or remove and reconstruct the work so specified in whole or in part as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own proper charge and cost, and in the event of his failing to do so within a period to be specified by the Engineer-in-Charge in his demand aforesaid while the Contractor failure to do so shall continue, the Engineer-in-Charge may rectify or remove and re-execute the work or remove and replace with others, the material or articles complained of as the case may be at the risk and expense in all respects of the Contractor.

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

If the Contractor, having been given by the Engineer-in-Charge a notice in writing to rectify, reconstruct or replace any defective work or that the Work is being performed in an inefficient or otherwise improper or un-workmanlike manner, shall omit to comply with the requirement of such notice for a period of seven days thereafter; or

If the Contractor has, without reasonable cause, suspended the progress of the Work or has failed to proceed with the Work with due diligence so that, in the opinion of the Engineer-in-Charge (which shall be final and binding), he will be unable to secure completion of the Work by the date for completion and continues to do so after a notice in writing of seven days from the Engineer-in-Charge; or

If the Contractor fails to complete the Work within the stipulated date or items of work with individual date of completion, if any stipulated, on or before such date(s) of completion and does not complete them within the period specified in a notice given in writing in that behalf by the Engineer-in-Charge; or

If the Contractor persistently neglects to carry out his obligations under the contract and / or commits default in complying with any of the terms and conditions of the contract and does not remedy it or take effective steps to remedy it within 7 days after a notice in writing is given to him in that behalf by the Engineer-in-Charge; or

If the Contractor shall offer or give or agree to give to any person in RTDC's service or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any action relation to the obtaining or execution of this or any other contract for RTDC; or

If the Contractor shall enter into a contract with RTDC in connection with which commission has been paid or agreed to be paid by him or to his knowledge, unless the particulars of any such commission and the terms of payment thereof have been previously disclosed in writing to the Engineer-in-Charge; or

If the Contractor shall obtain a contract with RTDC as a result of wrong tendering or other non-bona-fide methods of competitive tendering ; or If the contractor being an individual, or if a firm, any partner thereof shall at any time be adjudged insolvent or have a

receiving order or order for administration of his estate made against him or shall take any proceedings for liquidation or composition (other than a voluntary liquidation for the purpose of amalgamation or reconstruction) under any Insolvency Act for the time being in force or make any conveyance or assignment of his effects or composition or arrangement for the benefit of his creditors or purport so to do, or if any application be made under any Insolvency Act for the time being in force for the sequestration of his estate or if a trust deed be executed by him for benefit of his creditors; or If the Contractor being a company, shall pass a resolution or the Court shall make an order for the winding up of the company, or a receiver or manager on behalf of the debenture holders or otherwise shall be appointed or circumstances shall arise which entitle the Court or debenture holders to appoint a receiver or manager; or If the Contractor shall suffer an execution being levied on his goods and allow it to be continued for a period of 21 days, or. If the Contractor assigns, transfers, sublets (engagement of labour on a piece-work basis or of the labour with materials not to be incorporated in the work, shall not be deemed to be subletting) or otherwise parts with or attempts to assign, transfer sublet or otherwise parts with the entire works or any portion thereof without and prior written approval of the Engineer-in-Charge.

When the Contractor has made himself liable for action under any of the cases aforesaid, the Engineer-in-Charge may, without prejudice to any other right or remedy which shall have accrued or shall accrue hereafter to RTDC, by a notice in writing to cancel the contract as whole or only such items of work in default from the Contract, the Engineer-in-charge shall have powers:

Take possession of site and any materials, constructional plant, implements, stores, etc. thereon; and/ or Carry out the incomplete work by any means at the risk and cost of the contractor; and/ or

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

To determine or rescind the contract as aforesaid (of which termination or rescission notice in writing to the Contractor under the hand of the Engineer-in-Charge shall be conclusive evidence). Upon such determination or rescission the full security deposit shall become recoverable under the contract and performance guarantee shall be liable to be forfeited and un-used materials, construction plants, implements, temporary buildings, etc. shall be taken over and shall be absolutely at the disposal of the RTDC. If any portion of the Security Deposit has not been paid or received it would be called for and forfeited; and/ or

To employ labour paid by the RTDC and to supply materials to carry out the Work or any part of the Work debiting the Contractor with the cost of the labour and the price of the materials (the amount of which cost and price certified by the Engineer- in-Charge shall be final and conclusive against the Contractor) and crediting him with the value of the work done in all respects in the same manner and at the same rates as if it had been carried out by the Contractor under the terms of his contract. The certificate of the Engineer-in- Charge as to the value of the work done shall be final and conclusive against the Contractor provided always that action under the sub- clause shall only be taken after giving notice in writing to the Contractor. If the expenses incurred by the RTDC are less than the amount payable to the Contractor at his agreement rates, the difference shall not be paid to the Contractor; and/ or

After giving notice to the Contractor to measure up the work of the Contractor and to take such whole, or the balance or part thereof as shall be un-executed or delayed with reference to the General Conditions of Contract / or relevant clause of Condition Special of Contract, out of his hands and to give it to another contractor to complete in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor if the whole work had been executed by him (the amount of which excess certified in writing of the Engineer-in- Charge shall be final and conclusive) shall be borne and paid by the original contractor and may be deducted from any money due to him by RTDC under his contract or on any other account whatsoever or from his security deposit or the proceeds of sales of unused materials, construction plants, implements temporary buildings etc. thereof or a sufficient part thereof as the case may be. If the expenses incurred by the RTDC are less than the amount payable to the Contractor at his agreement rates, the difference shall not be paid to the Contractor; and/or

By a notice in writing to withdraw from the Contractor any items or items of work as the Engineer-in-charge may determine in his absolute discretion and get the same executed at the risk and cost of the Contractor.

Any excess expenditure incurred or to be incurred by RTDC in completing the Works or part of the Works or the excess loss or damages suffered or may be suffered by RTDC as aforesaid after allowing such credit shall without prejudice to any other right or remedy available to RTDC in law be recovered from any moneys due to the Contractor on any account, and if such moneys are not sufficient the Contractor shall be called upon in writing and shall be liable to pay the same within 30 days.

If the Contractor shall fail to pay the required sum within the aforesaid period of 30 days, the Engineer-in-Charge shall have the right to sell any or all of the Contractor's unused materials, constructional plant, implements, temporary buildings, etc. and apply the proceeds of sale thereof towards the satisfaction of any sums due from the Contractor under the contract and

if thereafter there be any balance outstanding from the Contractor, it shall be recovered in accordance with the provisions of the contract and law.

Any sums in excess of the amounts due to RTDC and unsold materials, constructional plant etc. shall be returned to the Contractor, provided always that if cost or anticipated cost of completion by RTDC of the Works or part of the Works is less than the amount which the Contractor would have been paid had he completed the Works or part of the Works, such benefit shall not accrue to the contractor.

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

Provided further that if any of the recoveries to be made, while taking action as above, are in excess of the security deposit forfeited, these shall be limited to the amount by which the excess cost incurred by the RTDC exceeds the security deposit so forfeited.

CONTRACTOR LIABLE TO PAY COMPENSATION EVEN IF ACTION NOT TAKEN

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

CARRYING OUT PART WORK AT RISK & COST OF CONTRACTOR

If Contractor:

At any time makes default during currency of Work or does not execute any part of the Work with due diligence and continues to do so even after a notice in writing of 7 days in this respect from the Engineer-in-Charge;

or

Commits default in complying with any of the terms and conditions of the contract and does not remedy it or takes effective steps to remedy it within 7 days even after a notice in writing is given in that behalf by the Engineer-in-Charge;

or

Fails to complete the Work(s) or items of work with individual dates of completion, on or before the date(s) so determined, and does not complete them within the period specified in the notice given in writing in that behalf by the Engineer-in-Charge.

The Engineer-in-Charge without invoking action under conditions of contract may, without

prejudice to any other right or remedy against the Contractor which have either accrued or accrue thereafter to RTDC, by a notice in writing to take the part work/part incomplete work of any item(s) out of his hands and shall have powers to:

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

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

In determining the amount, credit shall be given to the Contractor with the value of work done in all respect in the same manner and at the same rate as if it had been carried out by the original contractor under the terms of his contract, the value of contractor's materials taken over and incorporated in the work and use of plant and machinery belonging to the Contractor. The certificate of the Engineer-in-Charge as to the value of work done shall be final and conclusive against the Contractor provided always that action under this clause shall only be taken after giving notice in writing to the Contractor. Provided also that if the expenses incurred by RTDC are less than the amount payable to the Contractor at his agreement rates, the difference shall not be payable to the Contractor.

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

If the Contractor fails to pay the required sum within the aforesaid period of 30 days, the Engineer-in-Charge shall have the right to sell any or all of the Contractors' unused materials, constructional plant, implements, temporary building at site etc. and adjust the proceeds of sale thereof towards the dues recoverable from the Contractor under the contract and if thereafter there remains any balance outstanding, it shall be recovered in accordance with the provisions of the contract. In the event of above course being adopted by the Engineer-in-Charge, the Contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advance on any account or with a view to the execution of the Work or the performance of the contract.

SUSPENSION OF WORKS

(a) The Contractor shall, on receipt of the order in writing of the Engineer-in-charge, suspend the progress of the Works or any part thereof for such time and in such manner as the

Engineer-in-charge may consider necessary for any of the following reasons:

On account of any default on part of the Contractor, or For proper execution of the Works or part thereof for reason other than the default of the Contractor, or For safety of the Works or part thereof.

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

(b) If the suspension is ordered for reasons (ii) and (iii) in sub-para (a) above.
i) The Contractor shall be entitled to an extension of the time equal to the period of every such suspension plus 25% for completion period. No adjustment in contract price will be allowed for reasons of such suspension.
ii)In the event of the Contractor treating the suspension as an abandonment of the Contract by RTDC, he shall have no claim to payment of any compensation on account of any profit or advantage which he may have derived from the execution of the Work in full.

TERMINATION OF CONTRACT ON DEATH OF CONTRACTOR

Without prejudice to any of the right or remedies under this contract if the Contractor (in case Contractor is an individual or proprietor) dies, the Engineer in-charge shall have the option of terminating the contract without compensation to the Contractor.

TIME ESSENCE OF CONTRACT & EXTENSION FOR DELAY

The time allowed for execution of the Works as specified in the Memorandum (Annexure-I) or the extended time in accordance with these conditions shall be the essence of the contract. The execution of the works shall commence from such time period as mentioned in MEMORANDUM (ANNEXURE – I) or the date on which the Engineer-in-Charge issues written orders to commence the Work. If the Contractor commits default in commencing the execution of the work as aforesaid, the RTDC shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the earnest money & performance guarantee absolutely.

3.4. Within 15 (Ffiteen) days of issue of Letter of Intent, the Contractor shall submit a time and Progress Chart (CPM/ PERT/ Quantified Bar Chart) and get it approved by the Engineer-in-Charge. The Chart shall be prepared in direct relation to the time stated in the contract documents for completion of items of the Works. It shall indicate the forecast (mile-stones) of the dates of commencement and completion of various items, trades, sections of the Work and may be amended as necessary by agreement between the Engineer-in-Charge and the Contractor within the limitations of time stipulated in the Contract documents and further to ensure good progress during the execution of the Work, the Contractor shall in all cases in which the time allowed for any work exceeds one month (save for special jobs for which a separate program has been agreed upon) complete 1/8th of the whole of Work before 1/4th of

the whole time allowed in the contract has elapsed, 3/8th of the Work before one half of such time has elapsed and 3/4th of the Work before 3/4th of such time has elapsed. The physical progress report including photographs shall be submitted by the Contractor on the prescribed format & the intervals (not exceeding one month)as decided by the Engineer in Charge. The compensation for delay as per Tender Document shall be enviable at intermediate stages also, in case the required progress is not achieved to meet the above time deadlines of the completion period and/ or milestones of time and progress chart, provided always that the total amount of Compensation for delay to be paid under this condition shall not exceed 10% of the tendered value of Work".

If the Work(s) be delayed by:

1. force-majeure or
2. Abnormally bad weather, or
3. Serious loss or damage by fire, or
4. Civil commotion, local commotion of workmen, strike or lockout, affecting any or the tradesmen employed on the work, or
5. Delay on the part of other contractors or tradesmen engaged by Engineer-in-Charge in executing work not forming part of the Contract, or
6. Non-availability of stores, which are responsibility of the RTDC or,
7. Non-availability or break down of tools and plant to be supplied or supplied by RTDC or,
8. Any other cause which, in the absolute discretion of the RTDC, is beyond the Contractor's control, then upon the happening of any such event causing delay, the Contractor shall immediately give notice thereof in writing to the Engineer-in-Charge within 07 days but shall nevertheless use constantly his best endeavor to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-in-Charge to proceed with the Works.

3.5. Request for extension of time, to be eligible for consideration, shall be made by the Contractor in writing within fourteen days of the happening of the event causing delay in the prescribed form. The Contractor may also, if practicable, indicate in such a request the period for which extension is desired. In any such case RTDC may give a fair and reasonable extension of time for completion of Work. Such extension shall be communicated to the Contractor by the Engineer-in-Charge in writing within a reasonable time from the receipt of such request. Non application by the Contractor for extension of time shall not be a bar for giving a fair and reasonable extension by the Engineer-in-Charge and the extension of time so given by the Engineer-in-Charge shall be binding on the Contractor.

TIME SCHEDULE & PROGRESS

3.6. Time allowed for carrying out all the Works as entered in the tender shall be as mentioned in the "Memorandum (Annexure-I)" which shall be reckoned from the 15th day from the date on which the Letter of Intent is issued to the Contractor. Time shall be the essence of the contract

and Contractor shall ensure the completion of the entire work within the stipulated time of completion.

The Contractor shall also furnish within 15 days of date of issue of Letter of Intent a CPM network/ PERT chart/ Bar Chart for completion of work within stipulated time. This will be duly got approved from RTDC. This approved Network/ PERT Chart shall form a part of the agreement. Achievement of milestones as well as total completion has to be within the time period allowed.

Contractor shall mobilize and employ sufficient resources for completion of all the Works as indicated in the agreed Bar Chart/PERT Network. No additional payment will be made to the Contractor for any multiple shift work or other incentive methods contemplated by him in his work schedule even though the time schedule is approved by the Engineer-in-Charge.

During the currency of the Work, the Contractor is expected to adhere to the time schedule on mile stone and total completion and this adherence will be a part of Contractor' s performance under the contract. . During the execution of the work Contractor is expected to participate in the review and updating of the PERT Network/Bar Chart undertaken by the RTDC. These reviews may be undertaken at the discretion of Engineer-in-charge either as a periodical appraisal measure or when the quantum of work order on the Contractor is substantially changed through deviation orders or amendments. The review shall be held at site or any of the offices of RTDC/Owner /consultant at the sole discretion of RTDC. The Contractor will adhere to the revised schedule thereafter. The approval to the revised schedule resulting in a completion date beyond the stipulated date of completion shall not automatically amount to a grant of extension of time to the Contractor.

Contractor shall submit (as directed by Engineer-in-Charge) progress reports on a computer based program (program and software to be approved by Engineer-in- Charge) highlighting status of various activities and physical completion of Work. The Contractor shall send completion report with as built drawings to the office of Engineer- in-Charge, of RTDC in writing within a period of 30 days of completion of Work.

The photographs of the project taken on last day of every month indicating progress of Work (in soft copies) shall be attached along with the physical progress reports to be submitted to Engineer-in-charge.

TAXES AND DUTIES

3.7. Except as otherwise specifically provided in the contract, the Contractor shall be liable and responsible for the payment, of all taxes, such as GST (State and Central) & any other applicable tax (es), duty (ies), levy, cess if any, in the state concerned which may be specified by

local/state/ central government from time to time on all material articles which may be used for this Work. The rates quoted by him in the tender in bill of quantities shall be inclusive of all taxes and GST.

In the event of nonpayment/ default in payment of any of the above taxes, RTDC reserves the right to with-hold the dues/ payments of Contractor and make payment to local/state/Central Government authorities or to laborers' as may be applicable.

The imposition of any new and/or increase in the aforesaid taxes, duties levies (including fresh imposition of any other Tax) is imposed by Statute, after the last stipulated date for the receipt of tender including extensions if any and the Contractor thereupon necessarily and properly pays such taxes/levies/cess, the Contractor shall be reimbursed the amount so paid, provided such payments, if any, is not, in the opinion of Engineering-in charge attributable to delay in execution of Work within the control of Contractor. The Contractor shall, within a period of 30 days of the imposition of any such further tax or levy or cess, give a written notice thereof to the Engineering- in-charge that the same is given pursuant to this condition, together with all necessary information relating thereto.

The rate quoted by the Contractor shall be deemed to be inclusive of all taxes and GST as given in Tender Document Tax deductions at source shall be made as per laws prevalent in the State as applicable for the Work.

The stamp duty and registration charges, if any, on the contract agreement levied by the Government or any other statutory body, shall be paid by the Contractor as applicable in the State for the Work.

It will be incumbent upon the Contractor to obtain a registration certificate as a dealer under the GST Act and necessary evidence to this effect shall be furnished by the Contractor to RTDC.

The Bidder shall quote his rates inclusive of GST in conjunction with other terms and conditions. In case, the GST on Works contract on execution of Works is waived off by the State Govt. at later stage for this project, the equivalent amount from the date of waiver of such tax (as per prevailing rate as on the date of waiver of all type of Taxes and GST Works Contract) shall be deducted from the amount payable to the Contractor from subsequent RA bills.

In the event of decrease / relaxation and / or waiver of any of the existing / prevailing tax(es), duties, levies, cess by Central / state Govt. or any other statutory body (ies), after the last stipulated date for the receipt of tender including extension (if any), and the Contractor thereupon has been paid or has raised claims of such tax(es), duties, levies, cess; such sums shall be recovered / deducted (from claims raised but which has not been paid) effective from the date as reckoned in the relevant statutory order / law / ordnance etc. The Contractor, shall, within a period of 30 days of any such waiver/relaxation/decrease in tax(es), duties, levies, cess, give a written notice thereof to Engineer-in-charge stating the statutory change with documentary proof thereto. Provided always that Engineer-in-charge shall have full powers to effect recovery/deduction on account of any such statutory change even if Contractor has not intimated in the event when any such statutory action comes to his notice.

INCOME TAX DEDUCTION (TDS)

Income tax deductions shall be made from all payments made to the Contractor

including advances against work done, as per the rules and regulations in force, in accordance with the Income Tax act prevailing from time to time.

GOODS AND SERVICES TAX (GST)

The Bidder shall quote rates inclusive of all type of tax and GST and nothing extra shall be paid. The Contractor must have GST registration number and will provide copy of registration to RTDC before release of any payment by RTDC. The Contractor will submit regular Invoice / Bill fulfilling all conditions of Goods and Service Tax (GST) Rules.

ROYALTY ON MATERIALS:

The Contractor shall deposit royalty and obtain necessary permit for supply of bajri, stone, kankar, sand and other materials etc. from the local authorities and quoted rates shall be inclusive of royalty.

The Contractor shall be deemed to have inspected the site, its surrounding and acquainted itself with the nature of the ground, accessibility of the site and full extent and nature of all operations necessary for the full and proper execution of the contract, space for storage of materials, constructional plant, temporary works, restrictions on the plying of heavy vehicles in area, supply and use of labour materials, plant, equipment and laws, rules and regulations, if any, imposed by the local authorities.

The price to be tendered is for complete work and complete in all respects. It will be deemed to include all constructional plant, labour, supervision materials, transport, all temporary works, erection, maintenance, contractor's profit and establishment/overheads, together with preparation of designs & drawings pertaining to casting yard, shop drawing, fabrication drawing (if required), staging form work, stacking yard, etc. all general risk, all taxes, royalty, duties, cess, octroi and other levies, insurance liabilities and obligations set out or implied in the Tender Documents and contract.

If any temporary/ permanent structure is encountered or safety of such structure in the vicinity is endangered due to execution of the project, the Contractor has to protect the structure(s) by any means as per direction of Engineer-in–Charge. If any damage is caused to any temporary or permanent structure(s) in the vicinity due to execution of the project, the Contractor has to make good the same by any means as per direction of Engineer-in–Charge. The Contractor should inspect the site of work from this point of view. The cost to be incurred in this regard shall be deemed to be included in his quoted price and the Contractor shall not be entitled for any extra payment in this regard.

INSURANCE OF WORKS, ETC.

Contractor is required to take contractor's all risk policy or erection all risk policy (as the case may be) from an approved insurance company in the joint name with RTDC and bear all costs towards the same for the full period of execution of Works including the defect liability period for the full amount of contract against all loss of damage from whatever cause arising other than Excepted Risks for which he is responsible under the terms of the contract and in such manner that the RTDC and the Contractor are covered during the period of construction of Works and/or also covered during the period of defect liability for loss or damage to the Work and the temporary Works to the full value of such Works.

Policy should cover the materials, constructional plant, centering, shuttering and scaffolding

materials and other things brought to the site for their full value. Whenever required by RTDC, the Contractor shall produce the policy or the policies of insurance and the receipts for payment of the current premium.

INSURANCE UNDER WORKMEN COMPENSATION ACT

Contractor is required to take insurance cover under the Workman Compensation Act, 1923 amended from time to time from an approved insurance company and pay premium charges thereof. Wherever required by RTDC the Contractor shall produce the policy or the policies of Insurance and the receipt of payment of the current premiums.

THIRD PARTY INSURANCE

Contractor is required to take third party insurance cover for an amount of 5% (five percent) of contract value from an approved insurance company for insurance against any damage, injury or loss which may occur to any person or property including that of RTDC / Owner / Client, arising out of the execution of the Works or temporary Works. Wherever required by RTDC the Contractor shall produce the policy or the policies of Insurance and the receipt of payment of the current premiums.

In case of failure of the Contractor to obtain contractors all risk policy, insurance under workman compensation act and third party insurance as described above within one month from the date of commencement of Work, running account payments of the Contractor shall be withheld till such time the aforesaid insurance covers are obtained by the Contractor.

If the Contractor could not effect a comprehensive insurance cover against risks which he may be required to effect under the terms of the contract, then he shall give his attention to get the best insurance cover available and even in case of effecting a wider insurance cover than the one which the subsidiary of the General Insurance Company could offer, such an insurance is ought to be done after the RTDC's approval, by or through the subsidiary of the General Insurance Company.

The Contractor shall at all times indemnify RTDC and Owner against all claims, damages or compensation under the provision of Payment of Wages Act-1936, Minimum Wages Act-1948, Employer's liability Act-1938, the Workmen's Compensation Act-1947, Industrial Disputes Act-1947 and Maternity Benefit Act-1961 or any modifications thereof or any other law in force or as consequence of any accident or injury to any workman or other persons in or about the Works, whether in the employment of the Contractor or not, against all costs, charges and expenses of any suit, action or proceedings arising out of such incident or injury and against all sum or sums which may with the consent of the Contractor be paid to compromise or compound any such claim. Without limiting his obligations and liabilities as above provided, the Contractor shall insure against all claims, damages or compensation payable under the Workmen's Compensation Act 1923 or any modification thereof or any other law relating thereto.

PAYMENTS

All running payments shall be regarded as payments by way of advance against the final payment only and not as payments for work actually done and completed and/or accepted by RTDC and shall not preclude the recovery for bad, unsound and imperfect or unskilled work to be removed and taken away and reconstructed or re- erected or be considered as an

admission of the due performance of the Contract, or any part thereof, in this respect, or the accruing of any claim, nor shall it conclude, determine or affect in any way the powers of the RTDC under these conditions or any of them as to the final settlement and adjustments of the accounts or otherwise, or in any other way vary/ affect the contract. The final bill shall be submitted by the Contractor within three months of the completion of Work, otherwise RTDC's certificate of the measurement and of the total amount payable for the Work accordingly shall be final and binding on Contractor. Each running bills should be accompanied by two sets of at-least 20 (twenty) photographs as per direction of Engineer-in-charge taken from various points depicting status of work as on report/ bill date and Monthly Progress Report for the concerned month in the pro-forma to be given/ approved by Engineer-in-Charge. Intermittent progress photographs as and when required shall also be provided by the Contractor at his own cost as per direction of Engineer-in-Charge. No payment of running account bill shall be released unless it is accompanied by photographs and Monthly Progress Report as above.

It is clearly agreed and understood by the Contractor that notwithstanding anything to the contrary that may be stated in the agreement between RTDC and the Contractor; the Contractor shall become entitled to payment only after RTDC has received the corresponding payment(s) from the Client/ Owner for the work done by the Contractor. Any delay in the release of payment by the Client/ Owner to RTDC leading to a delay in the release the corresponding payment by RTDC to the Contractor shall not entitle the Contractor to any compensation/ interest from RTDC.

All payments shall be released by way of e-transfer through RTGS/NEFT in India directly from their Bank account by RTDC.

MEASUREMENTS OF WORKS

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

Except where any general or detailed description of the Work expressly shows to the contrary, measurement shall be taken in accordance with the procedure set forth in the CPWD Specification. In the case of items which are not covered by specifications, mode of measurement as specified in the Technical Specifications of the contract and if for any item no such technical specification is available, then a relevant standard method of measurement issued by the Bureau of Indian Standard shall be followed.

Provided further that, in case of Cancellation/Determination of Contract in fFull or in part in accordance with clause of Tender Document (and its sub-clauses), following methodology shall be adopted in respect of measurements in addition to what has been mentioned in foregoing:-

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

If for any reason the Contractor or his authorized representative is not available and the work of recording measurements is suspended by the Engineer-in-Charge or his representative, the Engineer-in-Charge and RTDC shall not entertain any claim from Contractor for any loss or damages on this account. If the Contractor or his authorized representative does not remain

present at the time of such measurements after the Contractor or his authorized representative has been given a notice in writing three (3) days in advance or fails to countersign or to record objection within a week from the date of the measurement, then such measurements recorded in his absence by the Engineer-in-Charge or his representative shall be deemed to be accepted by the Contractor. The Contractor shall, without extra charge, provide all assistance with every appliance, labour and other things necessary for measurements and recording levels.

COMPUTERISED MEASUREMENT BOOKS

Engineer-in-Charge shall, except as otherwise provided, ascertain and determine by measurement the value of work done in accordance with the contract. All measurements of all items having financial value shall be entered by the Contractor and compiled in the shape of the Computerized Measurement Book ("CMB") as per the format of RTDC so that a complete record is obtained of all the items of Works performed under the contract. All such measurements and levels recorded by the Contractor or his authorized representative from time to time, during the progress of the work, shall be got checked by the Contractor from the Engineer-in-Charge or his authorized representative as per interval or program fixed in consultation with Engineer-in-Charge or his authorized representative.

After the necessary corrections made by the Engineer-in-Charge, the measurement sheets shall be returned to the Contractor for incorporating the corrections and for resubmission to the Engineer-in- Charge for the dated signatures by the Engineer-in- Charge and the Contractor or their representatives in token of their acceptance.

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

The final, fair, CMB given by the Contractor, duly bound, with its pages numbered, should be 100% correct, and no cutting or over-writing in the measurements would thereafter be allowed. If at all any error is noticed, the Contractor shall have to submit a fresh CMB with its pages duly numbered and bound, after getting the earlier MB cancelled by the RTDC. The Contractor shall submit two spare copies of such CMB's for the purpose of reference and record by the various officers of the RTDC.

The Contractor shall also submit to RTDC separately his computerized abstract of cost and the bill based on these measurements, duly bound, and its pages numbered along with two spare copies of the bills.

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

The Contractor shall give not less than seven days' notice to the Engineer-in-Charge or his authorized representative in charge of the work before covering up or otherwise placing beyond the reach of checking and/or test checking the measurement of any work in order that

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

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

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

WITHHOLDING AND LIEN IN RESPECT OF SUMS DUE FROM CONTRACTOR

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

It is an agreed term of the contract that the sum of money or moneys so withheld or retained under the lien referred to above by the Engineer-in-Charge or RTDC will be kept withheld or retained as such by the Engineer-in-Charge or RTDC till the claim arising out of or under the contract is determined by the competent court and that the Contractor will have no claim for interest or damages whatsoever on any account in respect of such withholding or retention under the lien referred to above and duly notified as such to the Contractor. For the purpose of this clause, where the Contractor is a partnership firm or a limited company, the Engineer-in-Charge or the RTDC shall be entitled to withhold and also have a lien to retain towards such claimed amount or amounts in whole or in part from any sum found payable to any partner/limited company, as the case may whether in his individual capacity or otherwise. RTDC shall have the right to cause an audit and technical examination of the Works and the final bills of the Contractor including all supporting vouchers, abstract, etc, to be made after payment of the final bill and if as a result of such audit and technical examination any sum is found to have been overpaid in respect of any work done by the Contractor under the contract

or any work claimed to have been done by him under the contract and found not to have been executed, the Contractor shall be liable to refund the amount of over-payment and it shall be lawful for RTDC to recover the same from him in the manner prescribed in tender document of this clause or in any other manner legally permissible; and if it is found that the Contractor was paid less than what was due to him under the contract in respect of any work executed by him under it, the amount of such under payment shall be duly paid by RTDC to the Contractor, without any interest thereon whatsoever.

LIEN IN RESPECT OF CLAIMS IN OTHER CONTRACTS

Any sum of money due and payable to the Contractor (including the security deposit returnable to him) under the contract may be withheld or retained by way of lien by the Engineer-in-Charge or by RTDC against any claim of the Engineer-in-Charge or RTDC in respect of payment of a sum of money arising out of or under any other contract made by the Contractor with the Engineer-in-Charge or the RTDC. It is an agreed term of the contract that the sum of money so withheld or retained under this clause by the Engineer-in-Charge or the RTDC will be kept withheld or retained as such by the Engineer-in-Charge or the RTDC or till his claim arising out of the same contract or any other contract is either mutually settled or determined by the competent court, as the case may be, and that the Contractor shall have no claim for interest or damages whatsoever on this account or on any other ground in respect of any sum of money withheld or retained under this clause and duly notified as such to the Contractor.

WORK TO BE EXECUTED IN ACCORDANCE WITH SPECIFICATIONS, DRAWINGS AND ORDERS ETC.

All the Work shall be carried out as per the CPWD specifications, drawings and instructions of the Engineer-in-Charge of RTDC and the quoted price shall include for supply of required materials including proper storage, consumables, skilled & unskilled labour, supervision and tools, tackles, plant & machinery complete as called for in the detailed specifications and conditions of the contract. Latest updated CPWD specifications shall be followed for execution of Work.
The Contractor shall execute the whole and every part of the Work in the most substantial and workman like manner both as regards materials and otherwise in every respect in
strict accordance with the specifications.

The Contractor shall also conform exactly, fully and faithfully to the design, drawings and instructions in writing in respect of the Work assigned by the Engineer-in-Charge.

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

MATERIALS TO BE PROVIDED BY THE CONTRACTOR

The Contractor shall, at his own expense, provide all materials, required including Cement & Steel for the Works. The Contractor shall at his own expense and without delay; supply to the Engineer-in-Charge samples of materials to be used on the Work and shall get the same approved in advance. All such materials to be provided by the Contractor shall be in conformity with the specifications laid down or referred to in the contract.

The Contractor shall, if requested by the Engineer-in-Charge furnish proof, to the satisfaction of the Engineer-in-Charge that the materials so comply.

The Contractor shall, at his risk and cost, submit the samples of materials to be tested or analyzed and bear all charges and cost of testing unless specifically provided for otherwise elsewhere in the contract or specifications. The Engineer-in-Charge or his authorized representative shall, at all times, have access to the Works and to all workshops and places where Work is being prepared or from where materials, manufactured articles or machinery are being obtained for the Works and the Contractor shall afford every facility and every assistance and cost in obtaining the right and visit to such access. The Engineer-in-Charge shall have full powers to require the removal from the premises of all materials which in his opinion are not in accordance with the specifications and in case of default, the Engineer-in-Charge shall be at liberty to employ at the expense of the Contractor, other persons to remove the same without being answerable or accountable for any loss or damage that may happen or arise to such materials. The Engineer-in-Charge shall also have full power to require other proper materials to be substituted thereof and in case of default, the Engineer-in-Charge may cause the same to the supplies and all costs which may require such removal and substitution shall be borne by the Contractor

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MATERIALS AND SAMPLES

The materials/products used on the Works shall be one of the approved make/ brands out of list of manufacturers / brands /makes given in the Tender Documents. The Contractor shall submit samples/ specimens out of approved makes of materials/ products to the Engineer-in-Charge for prior approval. In exceptional circumstances Engineer-in-Charge may allow alternate equivalent makes/brands of products/ materials at his sole discretion. The final choice of brand / make shall remain with the Engineer- in-Charge, whose decision in this matter shall be final and binding and nothing extra on this account shall be payable to the Contractor. In case single brand/ make are mentioned, other equivalent makes/ brands may be considered by the Engineer-in- Charge. In case of variance in CPWD Specifications from approved products/makes specification, the specification of approved product/make shall prevail for which nothing shall be paid extra to the Contractor. In case no make or brand of any materials, articles, fittings and accessories etc. is specified, the same shall comply with the relevant Indian Standard Specifications and shall bear the ISI/BIS mark. The Engineer of RTDC and the Owner shall have the discretion to check quality of materials and equipment's to be incorporated in the Work, at source of supply or site of Work and even after incorporation in the Work. They shall also have the discretion to check the workmanship of various items of work to be executed in this Work. The Contractor shall provide the necessary facilities and assistance for this purpose.

The above provisions shall not absolve the Contractor from the quality of final product and in getting the material and workmanship quality checked and approved from the Engineer-in-Charge of RTDC.

The Contractor shall well in advance, produce samples of all materials, articles, fittings,

accessories etc. that he proposes to use and get them approved in writing by RTDC. The materials articles etc. as approved shall be labelled as such and shall be signed by RTDC and the Contractor's representative.

The approved samples shall be kept in the custody of the Engineer-in- Charge of RTDC till completion of the Work. Thereafter the samples except those destroyed during testing shall be returned to the Contractor No payment will be made to the Contractor for the samples or samples destroyed in testing.

The brands of all materials, articles, fittings etc. approved together with the names of the manufacturers and firms from which supplies have been arranged shall be recorded in the site order book.

The Contractor shall set up and maintain at his cost, a field testing laboratory for all day to day tests at his own cost to the satisfaction of the Engineer-in-Charge. This field testing laboratory shall be provided with equipment and facilities to carry out all mandatory field tests as per CPWD (as the case may be) specifications. The laboratory building shall be constructed and installed with the appropriate facilities, Temperature and humidity controls shall be available wherever necessary during testing of samples. All equipment's shall be provided by the Contractor so as to be compatible with the testing requirements specified. The Contractor shall maintain all the equipment's in good working condition for the duration of the contract. The Contractor shall provide approved qualified personnel to run the laboratory for the duration of the Contract. The number of staff and equipment available must at all times be sufficient to keep pace with the sampling and testing programmer as required by the Engineer-in-charge. The Contractor shall fully service the site laboratory and shall supply everything necessary for its proper functioning, including all transport needed to move equipment and samples to and from sampling points on the site, etc. The Contractor shall re-calibrate all measuring devices whenever so required by the Engineer-in-charge and shall submit the results of such calibration without delay. All field test shall be carried out in the presence of RTDC's representative. All costs towards samples, materials, collection, transport, manpower, testing etc. shall be borne by the Contractor and are deemed to be included in the rates quoted by him in the bill of quantities.
The Contractor shall display the calibration certificate of each equipment at the location of equipment & shall get recalibrated at least one week before its expiry date.

MATERIALS PROCURED WITH THE ASSISTANCE OF RTDC

If any material for the execution of this contract is procured with the assistance of RTDC either by issue from its stores or purchase made under orders or permits or licenses obtained by RTDC, the Contractor shall hold and use the said materials economically and solely for the purpose of this contract and shall not dispose them without the permission of Engineer-in-charge. The Contractor, if required by the RTDC, shall return all such surplus or unserviceable materials that may be left with him after the completion of the contract or at its termination on whatsoever reason, on being paid or credited such price as the Engineer-in-charge shall determine having due regard to the conditions of materials. The price allowed to the Contractor, however, shall not exceed the amount charged to him excluding the element of storage charges which shall be 10% of the cost charged to Contractor. The decision of the Engineer-in-charge shall be final and conclusive.

Contractor has / have to deploy security personnel for safeguarding of materials procured at site.

CONTRACTOR TO SUPPLY TOOLS & PLANTS

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

MOBILIZATION OF MEN, MATERIALS AND MACHINERY:

All expenses towards mobilization at site and de-mobilization including bringing in equipment, work force, materials, dismantling the equipments, clearing the site etc. shall be deemed to be included in price quoted and no separate payment on account of such expenses shall be entertained.

It shall be entirely the Contractor's responsibility to provide, operate and maintain all necessary construction equipment's, scaffoldings and safety, gadget, lifting tackles, tools and appliances to perform the Work in a workman like and efficient manner and complete all jobs as per the specifications and within the schedule time of completion of Work. Further, Contractor shall also be responsible for obtaining temporary electric and water connection for all purposes. The Contractor shall also make standby arrangement for water & electricity to ensure un-interrupted supply.

It shall be the responsibility of the Contractor to obtain the approval for any revision and/or modification desired by him from RTDC before implementation.

The procurement and supply in sequence and at the appropriate time of all materials and consumable shall be entirely the Contractor's responsibilities and his rates for execution of Work shall be inclusive of supply of all these items.

It is mandatory for the Contractor to provide safety equipment's and gadgets to his all workers, supervisory and technical staff engaged in the execution of the Work while working. The minimum requirement (but not limited to) shall be gum boots, safety helmets, rubber hand gloves, face masks, safety nets, safety belts, goggles etc. as per Work requirements. Sufficient nos. of these equipment's and gadgets shall also be provided to RTDC by the Contractor at his own cost for use of RTDC Officials and/ or workforce while working/supervision of Work at site. No staff/ worker shall be allowed to enter the site without these equipment's/ gadgets.

The cost of the above equipment's/ gadgets are deemed to be included in the price quoted by the Contractor for the Works as scope of work and Contractor shall not be entitled for any extra payment in these regard. The above norm is to be strictly complied with at site. In case the Contractor is found to be deficient in providing safety equipment's/ gadgets in the opinion

of Engineer-in-charge, the Engineer-in- charge at his option can procure the same at the risk & cost of Contractor and provide the same for the use of worksite and shall make the recoveries from the bills of the Contractor for the same. The Contractor shall abide by all rules & regulations pertaining to Health, Safety and Environment.

It shall be the duty and responsibility of the Contractor to bring to the notice of the RTDC in writing as to any variation, discrepancy or any other changes required and to obtain revised drawings and designs and / or approval of the RTDC in writing for the same.

All materials, construction plants and equipments etc. once brought by the Contractor within the project area, will not be allowed to be removed from the premises without the written permission of the Engineer-in-charge. Similarly, all enabling works built by the Contractor for the main construction undertaken by him, shall not be dismantled and removed without the written authority of the RTDC.

Contractor shall have to prepare the bar bending schedule, shop and fabrication drawings free of cost, if required for any of the items of work.

Five copies of these drawings each including for revision will be submitted to RTDC for approval. Before executing the item, shop drawings and bar bending schedule should be approved by RTDC.

RTDC shall supply work force in the various categories to assist the Contractor in execution of the Works on recoverable basis as per provision mentioned elsewhere in the contract.

All Contractors' plant, machinery and equipment shall be kept in perfect condition during currency of the contract.

QUALITY ASSURANCE PROGRAMME

To ensure that the services under the scope of this contract are in accordance with the specifications, the Contractor shall adopt Quality Assurance Programme to control such activities at the necessary points:

The Contractor shall prepare and finalize such Quality Assurance Programme within 15 days from date of issue Letter of Intent. RTDC shall also carryout quality audit and quality surveillance of systems and procedures of Contractor's quality control activities.
The Contractor shall have the proper organization structure for the management and implementation of the proposed Quality Assurance Program.

A Quality Assurance Programmer of Contractor shall generally cover the following:

- Documentation control system.
- The procedure for purpose of materials and source inspection.
- System for site controls including process controls.
- Control of non-conforming items and systems for corrective actions.
- Inspection and test procedure for site activities.
- System for indication and appraisal of inspection status.
- System for maintenance of records.
- System for handling, storage and delivery.

A quality plan detailing out quality practices and procedures, relevant standards and acceptance levels for all types of work under the scope of this contract.

All the quality reports shall be submitted by the Contractor in the formats appended hereto. Checklist enclosed here in this document shall be followed while carrying out construction activities. If any item is not covered by the checklist/ formats appended hereto, the format for the same may be developed and submitted to Engineer-in-Charge for approval and the same shall be adopted. These filled in formats shall be prepared in two copies and duly signed by representatives of contractor and RTDC. All the costs associate with printing of formats and testing of materials required as per technical specifications or by Engineer-in-charge shall be included in the Contractor's quoted price.

CONTRACT COORDINATION PROCEDURES, COORDINATION MEETINGS AND PROGRESS REPORTING

The Contractor shall prepare and finalize in consultation with RTDC, a detailed contract coordination procedure within 15 days from the date of issue of Letter of Intent for the purpose of execution of the Contract. The Contractor shall have to attend all the meetings at any place in India at his own cost with RTDC, Owners/ Clients or Consultants of RTDC/ Owner/ Client during the currency of the Contract, as and when required and fully cooperate with such personal and agencies involved during these discussions. The Contractor shall not deal in any way directly with the Clients/ Owners or Consultants of RTDC/Owner/ Clients and any dealing/correspondence, if required, at any time with Clients/ Owners/ Consultants shall be through RTDC only. During the execution of the Work, Contractor shall submit at his own cost a detailed monthly progress & programme report to the Engineer-in-charge of RTDC by 5th day of every month. The format of monthly progress & programme report shall be as approved by Engineer-in-Charge of RTDC.

COMPLETION CERTIFICATE AND COMPLETION PLANS

Within ten days of the completion of the Work, the Contractor shall give notice of such completion to the Engineer-in-Charge and within thirty days of the receipt of such notice, the Engineer-in-Charge shall inspect the work and if there is no defect in the work, shall furnish the Contractor with a final certificate of completion, otherwise a provisional certificate of physical completion indicating defects (a) to be rectified by the Contractor and/or (b) for which payment will be made at reduced rates, shall be issued. But no final certificate of completion shall be issued, nor shall the Work be considered to be complete until the Contractor shall have removed from the premises on which the Work shall be executed all scaffolding, surplus materials, rubbish and all huts and sanitary arrangements required for his/their work people on the site in connection with the execution of the Works as shall have been erected or constructed by the Contractor(s) and cleaned off the dirt from all wood work, doors, windows, walls, floor or other parts of the building, in, upon, or about which the Work is to be executed or of which he may have had possession for the purpose of the execution thereof, and not until the work shall have been measured by the Engineer-in-Charge. If the Contractor shall fail to comply with the requirements of this clause as to removal of scaffolding, surplus materials and rubbish and all huts and sanitary arrangements as aforesaid and cleaning off dirt on or before the date fixed for the completion of Work, the Engineer-in-Charge may at the expense of the Contractor remove such scaffolding, surplus materials and rubbish etc., and dispose of the same as he thinks fit and clean off such dirt as aforesaid, and the Contractor shall have no claim in respect of scaffolding or surplus materials as aforesaid except for any sum actually realized by the sale thereof less actual cost incurred on removal of materials / debris / malba, etc.

The Contractor shall submit completion plan as required vide Scope of Work and Technical Specifications as applicable within thirty days of the completion of the Work. In case, the Contractor fails to submit the completion plan as aforesaid, he shall be liable to pay a sum equivalent to 2.5% of the value of the Work subject to a ceiling of Rs.5,00,000 (Rs. Five Lakhs

only) as may be fixed by the Engineer-in-charge concerned and in this respect the decision of the Engineer-in-charge shall be final and binding on the Contractor.

PROHIBITION OF UNAUTHORISED CONSTRUCTION & OCCUPATION

No unauthorized buildings, construction of structures should be put up by the Contractor anywhere on the project site, neither any building built by him shall be occupied in un-authorized manner by him or his staff.

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

However, the Engineer-in-Charge, through a notice, may require the Contractor to remove the illegal occupation any time on or before construction and delivery.

FORECLOSURE OF CONTRACT BY RTDC/OWNER

If at any time after the commencement of the Work, the RTDC shall for any reason whatsoever is required to abandon the Work or is not require the whole work thereof as specified in the tender to be carried out, the Engineer-in-Charge shall give notice in writing of the fact to the Contractor, who shall have no claim to any payment of compensation whatsoever on account of any profit or advantage which he might have derived from the execution of the Work in full, but which he did not derive in consequence of the foreclosure of the whole or part of the Works.

DEFECTS LIABILITY PERIOD

The Contractor shall be responsible for the rectification of defects in the works for a period 2 years from the date of taking over of the Works by the RTDC or Client, whichever is later. Any defects discovered and brought to the notice of the Contractor forthwith shall be attended to and rectified by him at his own cost and expense. In case the Contractor fails to carry out these rectifications, the same may, without prejudice to any other right or remedy available, be got rectified by RTDC at the cost and expense of the Contractor.

The Contractor is expected to carry out the construction work in workmen like manner so as to meet the requirement and specification for the project. It is expected that the workmanship and materials will be reasonably fit for the purpose for which they are required.

Defects or defective work is where standard and quality of workmanship and materials as specified in the contract is deficient. Defect is defined as a failure of the completed project to satisfy the express or implied quality or quantity obligations of the construction contract. Defective construction works are defined as the works which fail short of complying with the express descriptions or requirements of the contract, especially any drawings or specifications with any implied terms and conditions as to its quality, workmanship, durability, aesthetic, performance or design. Defects in construction projects are attributable to various reasons.
Some of the defects are structural defects which results in cracks or collapse of faulty

defective plumbing, inadequate or faulty drainage system, inadequate or faulty ventilation, cooling or heating systems, inadequate fire systems etc. The defects could be various on accounts of different reasons for variety of the projects.

The Engineer -in-charge shall issue the practical completion certificate for the project. During the Defect Liability Period which commences on completion of the Work, the Engineering In-charge shall inform or the Contractor is expected to be informed of any defective works by the Client's representative of the defects and make good at Contractor's cost with an intention of giving opportunity to the Contractor of making good the defects appeared during that period. It is the Contractor's obligation under the contract to rectify the defects that appear during Defect Liability Period and the contract or shall within a reasonable time after receipt of such instructions comply with the same at his own cost. The Engineering In charge shall issue a certificate to that effect and completion of making good defects shall be deemed for all the purpose of this contract to have taken place on the day named in such defect liability certificate.

If defective work or workmanship or design have been knowingly covered-up or conceived so as to constitute fraud, commencement of the Defect Liability Period may be delayed. The decided period may be delayed until discovery actually occurs or until the time when at least the defect could have been discovered with reasonable diligence, whichever is earlier.

Also, in case of defect, the Engineer- in -charge shall give notice to the Contractor of any Defects before the end of the Defects Liability Period. . The Defects Liability Period shall be extended for as long as Defects remain to be corrected. Every time notice of Defect/Defects is given, the Contractor shall correct the notified Defect/Defects within the duration of time specified by the Engineer's notice. The Engineer- in –charge may issue notice to the Contractor to carry out removal of defects or deficiencies, if any, noticed in his inspection, or brought to his notice. The Contractor shall remove the defects and deficiencies within the period specified in the notice and submit to the Engineer- in -charge a compliance report.

The Completion Stage shall be the stage when the Contractor has completed all of the Works and fixed all of the defects that were on the list of issue by Engineer-in-charge. When this happens, the Engineer- in -charge must issue a 'Certificate of Completion'. On the issue of 'Certificate of Completion', the 'Defect Liability Period' starts. The Contractor also must issue a 'Certificate statement' as an acknowledgment to the Engineer-in-charge not later than 14 days after the 'Certificate of Completion' has been issued. During the 'Defect Liability Period', the Contractor has to obey all written instructions from the Engineer- in -charge to carry out repairs and fix any defects which appear in the Works. If the Contractor does not, due to his own faults finish the repair works or fix the defects by the end of 'Defect Liability Period', the 'Defect Liability Period' will continue until all works instructed by Engineer- in -charge is done.

RESTRICTION ON SUBLETTING

The Contractor shall not sublet or assign the whole or part of the Works except where otherwise provided, by the contract. The provision of labour on piece work basis shall not be deemed to be a subletting under this clause.

The Contractor may entrust specialist items of works like MEP services, water proofing, interiors, landscaping etc. to the agencies specialized in the specific trade. The Contractor shall give the names and details of such firm whom it is going to employ for approval of RTDC. These details shall include the expertise, financial status, technical manpower, equipment, resources and list of works executed and on hand of the specialist agency. Further, prior written approval is required from RTDC to deploy such agency / sub- contractor.

FORCE MAJEURE

Any delay in or failure to perform by either party, shall not constitute default so as to give rise to any claim for damages, to the extent such delay or failure to perform is caused by an act of God, or by fire, explosion, flood or other natural catastrophe, governmental legislation, orders or regulation etc. Failure of the Client / Owner to hand over the entire site and / or release funds for the project, to RTDC, shall also constitute force majeure. The time for performance of the obligation by the parties shall be deemed to be extended for a period equal to the duration of the force majeure event. Both parties shall make their best efforts to minimize the delay caused by the force majeure event. If the failure / delay of the Client /Owner in handing over the entire site and / or in releasing the funds continues even on the expiry of the stipulated date of completion, RTDC, may, at the request of the Contractor, foreclose the contract without any liability to either party. In the event of such foreclosure, the Contractor shall not be entitled to any compensation whatsoever. If prior to such foreclosure the Contractor has brought any materials to the site, the Engineer-in- Charge shall always have the option of taking over of all such materials at their purchase price or at the local current rates, whichever is lower.

NO COMPENSATION CLAUSE

The Contractor shall have no claim whatsoever for compensation or idle charges against RTDC on any ground or for any reason, whatsoever.

DIRECTION FOR WORKS

All Works under the contract shall be executed under the direction and subject to approval in all respect of the Engineer-in-Charge of RTDC who shall be entitled to direct at whatever point or points and in whatever manner Works are to be commenced and executed.

The Engineer-in-Charge and his representative shall communicate or confirm their instructions to the Contractor in respect of the execution of Work during their site inspection in a “Works Site Order Book” maintained at the site office of Engineer-in-Charge. The Contractor or his authorized representative shall confirm receipt of such instructions by signing against the relevant orders in the book.

WORK IN MONSOON AND RAIN

The execution of the Work may entail working in the monsoon also. The Contractor must maintain labour force as may be required for the job and plan and execute the construction and erection according to the prescribed schedule. No special/ extra rate will be considered for such work in monsoon. The Contractor’s rate shall be considered inclusive of cost of dewatering due to rains required if any and no extra rate shall be payable on this account. The stipulated period for completion of project includes the monsoon period, holidays & festivals.

WORK ON SUNDAYS, HOLIDAYS AND DURING NIGHT

For carrying out work on Sunday and Holidays or during night, the Contractor will approach the Engineer-in-Charge or his representative at least two days in advance and obtain his permission. The Engineer-in- Charge at his discretion can refuse such permission. The Contractor shall have no claim on this account whatsoever. If work demand, the Contractor shall make arrangements to carry out the work on Sundays, Holidays and in two, three shifts

with the approval of Engineer-in-Charge at no extra cost to RTDC.

WATER AND ELECTRICITY

The Contractor shall make his own arrangement for water & electrical power for construction and other purposes at his own cost and pay requisite electricity and water charges. The Contractor shall also make standby arrangement for water & electricity to ensure un-interrupted supply.

LAND FOR LABOUR HUTS/SITE OFFICE & STORAGE ACCOMMODATION

The Contractor shall arrange the land for temporary office, storage accommodation and labour huts at his own cost and get the clearance of local authorities for setting up/construction of labour camp and same is deemed to be included in the rates quoted by the Contractor for the Works. The Contractor shall ensure that the area of labour huts is kept clean and sanitary conditions are maintained as laid down by the local authorities controlling the area. The labour huts shall be so placed that it does not hinder the progress of Work or access to the worksite. The vacant possession of the land used, for the purpose shall be given back by Contractor after completion of the Work.

The security deposit of the Contractor shall be released only after Contractor demolishes all structures including foundations and gives back clear vacant possession of this land. In the event the Contractor has to shift his labour campus at any time during execution of the Work on the instructions of local authorities or as per the requirement of the work progress or as may be required by RTDC, he shall comply with such instructions at his cost and risk and no claim whatsoever shall be entertained on this account.

WATCH, WARD AND LIGHTING OF WORK PLACE

The Contractor shall at his own cost take all precautions to ensure safety of life and property by providing necessary barriers, obstructions , lights, watchmen etc. during the progress of work as directed by Engineer-in- charge.

SCOPE OF WORK AND TECHNICAL SPECIFICATIONS

The Scope of work and technical specifications are only approximation which may vary as per the actual requirement at site.

WATER PROOF TREATMENT

The water proof treatment shall be of type and specifications as per scope of work.

The water-proofing of basement, roofs, water retaining areas shall be and remain fully effective for a period of not less than 10(Ten) years to be reckoned from the date of expiring of the Defect Liability period, prescribed in the contract. At any time during the said guarantee period if RTDC finds any defects in the said treatment or any evidence of re-infestation, dampness, leakage in any part of buildings or structure and notifies the Contractor of the same, the Contractor shall be liable to rectify the defect or give re-treatment and shall commence the work or such rectification or re-treatment within seven days from the date of issue of such letter to him. If the Contractor fails to commence such work within the stipulated

period, the RTDC may get the same done by another agency at the Contractor's cost and risk and the decision of the Engineer-in- Charge of RTDC for the cost payable by the Contractor shall be final and binding upon him.

Re-treatment if required shall be attended to and carried out by the Contractor within seven days of the notice from Engineer-in-Charge of RTDC.

The RTDC reserves the right to get the quality of treatment checked in accordance with recognized test methods and in case it is found that the chemicals with the required concentration and rate of application have not been applied, or the water proofing treatment is not done as per specifications, the Contractor will be required to do the re- treatment in accordance with the required concentration & specifications at no extra cost failing which no payment for such work will be made. The extent of work thus rejected shall be determined by RTDC. Water proofing shall be got done through approved / specialized agencies only with prior approval of Engineer-in-Charge.

The Contractor shall make such arrangement as may be necessary to safeguard the workers and residents of the building against any poisonous effect of the chemicals used during the execution of the Work.

During the execution of Work, if any damage shall occur to the treatment already done, either due to rain or any other circumstances, the same shall be rectified and made good to the entire satisfaction of Engineer-In-Charge by the Contractor at his cost and risk.

The Contractor shall make his own arrangement for all equipment's required for the execution of the job. The Contractor whose tender is accepted shall execute Guarantee Bond in the prescribed form as appended for guaranteeing the water proofing treatment.

INDIAN STANDARDS

Wherever any reference is made to any IS in any particular specifications, drawings, scope of work or technical specifications, it means the Indian Standards editions with up to date amendments issued till last date of receipt of Tender Documents.

CENTERING & SHUTTERING

Marine plywood or steel plates or any material mentioned elsewhere in the Tender Document or as approved by Engineer-in-Charge shall be used for formwork. The shuttering plates shall be cleaned and oiled before every repetition and shall be used only after obtaining approval of RTDC's Engineer-in-Charge at site. The number of repetitions allowed for plywood and steel shuttering shall be at the discretion of Engineer-in-Charge of RTDC depending upon the condition of shuttering surface after each use and the decision of Engineer-in-Charge in this regard shall be final and binding on the Contractor. No claim whatsoever on this account shall be admissible.

RECORDS OF CONSUMPTION OF CEMENT & STEEL

For the purpose of keeping a record of cement and steel received at site and consumed in Works, the Contractor shall maintain a properly bound register in the form approved by the RTDC, showing columns like quantity received and used in Work and balance in hand, etc. This

register shall be signed daily by the Contractor's representative and RTDC's representative.

The register of cement & steel shall be kept at site in the safe custody of RTDC's Engineer-in-Charge during progress of the Work. This provision will not, however, absolve the Contractor from the quality of the final product.

In case cement or steel quantity consumed is lesser as compared to the theoretical requirement of the same as per HPPWD/CPWD (as the case may be) specifications/ norms, the Work will be devalued and/ or a penal rate (i.e. double the rate at which cement/ steel purchased last) recovery for lesser consumption of cement/ steel shall be made from the payment for the work done subject to the condition that the tests results fall within the acceptable criteria as per HPPWD/CPWD (as the case may be) specifications otherwise the Work shall have to be dismantled and redone by the Contractor at no extra cost. In case of cement, if actual consumption is less than 98% of the theoretical consumption, a recovery shall be effected from the Contractor's bills at the penal rate for the actual quantity which is lower than 98% of theoretical consumption.

TESTS AND INSPECTION

The Contractor shall carry out the various mandatory tests as per specifications and the technical documents that will be furnished to him during the performance of the Work. All the tests on materials, as recommended by HPPWD/CPWD and relevant Indian Standard Codes or other standard specifications (including all amendments current at the last date of submission of tender documents) shall be got carried out by the Contractor at the field testing laboratory or any other recognized institution/ laboratory, at the direction of the RTDC. All testing charges, expenses etc. shall be borne by the Contractor. All the tests, either on the field or outside laboratories concerning the execution of the Work and supply of materials shall be got carried out by the Contractor or RTDC at the cost of the Contractor.

WORKS TO BE OPEN TO INSPECTION

All Works executed or under the course of execution in pursuance of this contract shall at all times be open to inspection and supervision of the RTDC. The Work during its progress or after its completion may also be inspected, by Chief Technical Examiner of Government of India (CTE) and/or an inspecting authority of State Government of State in which Work is executed and/or by third party checks by Owner/ Client. The compliance of observations/improvements as suggested by the inspecting officers of RTDC/CTE/ State authorities/ Owner shall be obligatory on the part of the Contractor at the cost of Contractor.

BORROW AREAS

The Contractor shall make his own arrangements for borrow pits and borrow disposal areas including their approaches and space for movement of man, machinery, other equipment's as required for carrying out the Works. The Contractor shall be responsible for taking all safety measures, getting approval, making payment of royalties, charges etc. and nothing extra shall be paid to the Contractor on this account and price quoted by the Contractor for the Work shall deemed to include the same.

CARE OF WORKS

From the commencement to the completion of Works and handing over, the Contractor shall take full responsibility for care thereof all the Works and in case of any damage/loss to the

Works or to any part thereof or to any temporary works due to lack of precautions or due to negligence on part of Contractor, the same shall be made good by the Contractor.

CO-ORDINATION WITH OTHER AGENCIES

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 Contractor. Proper co-ordination with other Agencies will be Contractor's responsibility. In case of any dispute, the decision of RTDC shall be final and binding on the Contractor. No claim whatsoever shall be admissible on this account.

SETTING OUT OF THE WORKS

The Contractor shall be responsible for the true and proper setting out of the WWrks and for the correctness of the position, levels, dimensions and alignment of all parts of the works. If at any time during the progress of Works, shall any error appear or arise in the position, levels, dimensions or alignment of any part of the Works, the Contractor shall at his own expenses rectify such error to the satisfaction of Engineer-in-charge. The checking of any setting out or of any line or level by the engineers of RTDC shall not in any way relieve the Contractor of his responsibility for the correctness.

NOTICE BEFORE COVERING UP THE WORK

The Contractor shall give not less than seven days notice before covering up or otherwise placing beyond the reach of measurement any work, to the Engineer-in- charge in order that the same may be inspected and measured. If any work is covered up or placed beyond the reach of inspection/measurement without such notice or his consent being obtained the same shall be uncovered at the Contractor's expenses and he shall have to make it good at his own expenses.

SITE CLEARANCE

The Contractor shall ensure that the working site is kept clean and free of obstructions for easy access to job site and also from safety point of view. Before handing over the Work to the RTDC the Contractor shall remove all temporary structures like the site offices, cement go-down, stores, labour hutments etc., scaffolding rubbish, debris etc. left over materials tools and plants, equipment's etc., clean the site to the entire satisfaction of the Engineer-in-charge. If this is not done the same will be got done by RTDC at the risk and cost of Contractor

The Contractor shall clean all floors, remove cement/ lime/ paint drops and deposits, clean joinery, glass panes etc., touching all painter's works and carry out all other necessary items of works to make the premises clean and tidy before handing over the building, and the rates quoted by the Contractor shall be deemed to have included the same.

SET-OFF OF CONTRACTOR'S LIABILITIES

RTDC shall have the right to deduct or set off the expenses incurred or likely to be incurred by it in rectifying the defects and/or any claim under this agreement against the Contractor from any or against any amount payable to the Contractor under this agreement including security deposit and proceeds of performance guarantee.

POSSESSION PRIOR TO COMPLETION

RTDC shall have the right to take possession of or use any completed or partially completed work or part of the work. Such possession or use shall not be deemed to be any acceptance of any work not completed in accordance with the contract agreement. If such prior possession or use by RTDC delays the progress of Work an equitable adjustment in the time of completion will be made and the contract agreement shall be deemed to be modified accordingly. The decision of RTDC in such case shall be final binding and conclusive.

When the whole of the Works or a part of Work have been completed, the Contractor will give a notice to that effect to the Engineer-in-Charge in writing. The Engineer-in-Charge shall within 7 days of the date of receipt of such notice inspect the Works and give instructions in writing to the Contractor specifying the balance work which is required to be done by the Contractor and shall also notify the Contractor of any defect in the Works affecting completion.

The Contractor shall, during the course of execution, prepare and keep updated a complete set of "as built" drawings to show each and every change from the contract drawings. Changes recorded shall be countersigned by the Engineer-in-Charge and the Contractor. Four copies of "as built" drawings shall be supplied to RTDC by the Contractor within 30 days of the completion. All costs incurred in this respect shall be borne by the Contractor.

EMPLOYMENT OF PERSONNEL

The Contractor shall employ only Indian Nationals as his representatives, servants and workmen after verifying their antecedents and loyalty. He shall ensure that no personnel of doubtful antecedents and any other nationality in any way is associated with the Works.

In case RTDC observed misconduct, negligence or incompetence etc. on the part of any representative, agent, servant and workmen or employees etc. of the Contractor, the RTDC shall have full power and without giving any reason to the Contractor, instruct the Contractor to remove such engineer / staff / worker from site and provide suitable replacements. The decision of the Engineer-in-charge shall be final and binding on the Contractor. The Contractor shall not be allowed any compensation on this account.

TECHNICAL STAFF FOR WORK

The Contractor shall employ at his cost the adequate number of technical staff during the execution of this Work depending upon the requirement of Work. For this purpose, the numbers to be deployed, their qualification, experience as decided by RTDC shall be final and binding on Contractor. The Contractor shall not be entitled for any extra payment in this regard.

The technical staff should be available at site, whenever required by RTDC to take instructions.

Within 15 days of Letter of Intent, the Contractor shall submit a site organizational chart and resume including details of experience of the Project-in-Charge and other staff proposed to be deputed by him and the technical team shall be deputed by them on the Project after getting approval from Engineer-in-Charge. If desired by the Contractor at later date, the Project-in-Charge and other staff whose resume is approved by RTDC can be replaced with prior written approval of RTDC and replacement shall be with equivalent or superior candidate only.

Decision of Engineer-in-Charge shall be final and binding on the Contractor.

Even after approving the site organizational chart, the Engineer-in-Charge, due to technical reasons and exigency of work, can direct the Contractor to depute such additional staff as in view of Engineer-in-Charge is necessary and having qualification and experience as approved by the Engineer-in-Charge. The removal of such additional staff from the site shall only be with the prior written approval of Engineer-in-Charge. The Contractor shall not be paid anything extra whatsoever on account of deployment of additional staff and decision of the Engineer-in-Charge shall be final and binding on the Contractor.

In case the Contractor fails to employ the staff as aforesaid, he shall be liable to pay a reasonable amount not exceeding a sum of Rs. 50,000 (Rupees Fifty Thousand only) for each month of default in the case of each person. The decision of the Engineer-in-charge as to number of technical staff to be adequate for the project and the period for which the desired strength of technical staff was not employed by the Contractor and as to the reasonableness of the amount to be deducted on this account shall be final and binding on the Contractor as to the amount and the Contractor's liability to pay the said amount.

VALUABLE ARTICLES FOUND AT SITE

All gold, silver and other minerals of any description and all precious stones, coins, treasure, relics, antiques and all other similar things which shall be found in, under or upon the site, shall be the property of the Owner/ RTDC.

MATERIALS OBTAINED FROM DISMANTLEMENT TO BE OWNER'S PROPERTY

All materials like stone, boulders and other materials obtained during the work of dismantling, excavation etc. will be considered RTDC/Owner's property and such materials shall be disposed off to the best advantage of RTDC/Owner according to the instructions in writing issued by the Engineer-in-charge.

FURNISHED OFFICE ACCOMMODATION & MOBILITY COMMUNICATION TO BE ARRANGED BY CONTRACTOR

On acceptance of tender, the Contractor, at his own cost, will construct a suitably equipped office at site with basic facilities such as telephone(s), fax, internet, photocopier, computer(s) and printer(s) along with operator(s), regular electric & drinking water supply and e-vehicles for the RTDC's staff / Engineer in Charge (EIC) with driver, fuel and maintenance etc. as per the requirement of the project. The Contractor shall maintain the aforesaid facilities intact/operational during the duration of the contract or maximum up to 6 months beyond the stipulated contractual completion date if the Work is delayed due to any reasons. Operation and maintenance cost of all such materials, equipment's / services shall be borne by the Contractor.
The Contractor shall also make sufficient arrangement for photography/video-graphy so that photographs video can be taken of any specific activity at any point of time. The Contractor shall also make arrangement of software like MS Project etc. for the purpose of preparing progress report, etc.

The Contractor shall make all arrangements for ground breaking ceremony/inaugural function etc. for the project as required and the cost towards it deemed to be included in his rates/offer. Any expenditure already incurred/to be incurred by RTDC on this account, shall be

recovered from the Contractor.

LABOUR LAWS

LABOUR LAWS TO BE COMPLIED BY THE CONTRACTOR

The Contractor shall obtain a valid license under the Contract Labour (Regulation & Abolition) Act 1970 and the Contract Labour (Regulation &Abolition) Central Rules 1971 and amended from time to time, and continue to have a valid license until the completion of the Work including defect liability period. The Contractor shall also adhere by the provision of the Child Labour (Prohibition and Regulation) Act, 1986 and as amended from time to time.

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

Any failure to fulfill above requirement shall attract the penal provisions of this contract. No labour below the age of 18 years shall be employed on the work.

Payment of wages:

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

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

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

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

Under the provision of Minimum Wages (Central) Rules, 1950, the Contractor is bound to allow to the labours directly or indirectly employed in the Works one day rest for 6 days continuous work and pay wages at the same rate as for duty. In the event of default, the

Engineer-in-Charge shall have the right to deduct the sum or sums not paid on account of wages for weekly holidays to any labours and pay the same to the persons entitled thereto from any money due to the Contractor by the Engineer-in-Charge concerned

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

The Contractor shall indemnify and keep indemnified RTDC against payments to be made under and for the observance of the laws aforesaid and the RTDC Contractor's Labour Regulations without prejudice to his right to claim indemnity from his sub- contractors.

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

LABOUR SAFETY PROVISION

The Contractor shall be fully responsible to observe the labour safety provisions.

The Contractor shall, at his own cost, take all precautions to ensure safety of life and property by providing necessary barriers, lights, watchmen etc. during the progress of work as directed by Engineer-in- charge.

In case of all labour directly or indirectly employed in Work for the performance on the Contractor's part of this contract, the Contractor shall comply with all rules framed by Govt. from time to time for the protection of health and sanitary arrangements for workers.

OBSERVANCE OF LABOUR LAWS

The Contractor shall be fully responsible for observance of all labour laws applicable including local laws and other laws applicable in this matter and shall indemnify and keep indemnified RTDC against effect or non observance of any such laws. The Contractor shall be liable to make payment to all its employees, workers and sub-contractors and make compliance with labour laws. If RTDC or the Client/ Owner is held liable as "Principal Employer" to pay contributions etc. under legislation of Government or Court decision in respect of the employees of the Contractor, then the Contractor would reimburse the amount of such payments, contribution etc. to RTDC and/ or same shall be deducted from the payments, security deposit etc. of the Contractor.

The Contractor shall submit proof of having valid EPF registration certificate. He shall within 7 days of the close of every month, submit to RTDC a statement showing the recoveries of contributions in respect of each employee employed by or through him and shall furnish to RTDC such information as the RTDC is required to furnish under the provisions of para 36 B of the EPF scheme 1952 to the EPF authorities and other information required by EPFO authorities from time to time. He shall also submit a copy of challan every month in token of proof of having deposited the subscription and contribution of workers engaged on the

project.

In case, the Contractor is not complying the above provision RTDC shall withhold payment to the extent of 4.70% (Four point Seven Zero percent) of the value of the running account bill and shall release only after the submission of above mentioned details. If it is incumbent upon RTDC to deposit withhold amount with EPF authorities, the withhold amount shall be deposited by RTDC with EPF authorities. In such a case RTDC shall not refund this withheld amount to the Contractor even after the production of EPF registration certificate.

LABOUR CESS

The rates of the Contractor shall be inclusive of labour cess. RTDC shall make a recovery @ 1% on account of labour cess from each RA bill of the Contractor and labour cess so recovered/deducted shall be deposited with the Labour Board of the concerned state. In case the Labour Board is not established in the state, recovery made by RTDC on account of labour cess shall be retained under suspense account and will be deposited with the Labour Board at later date as & when the Labour Board is constituted in the state.

Every contractor, sub-contractor, affiliates, their legal assigns or heirs as the case may, shall be responsible for registration of every Building worker who has completed eighteen years of age but has not completed sixty years of age and who has been engaged in any Building or Other Construction Work for not less than Ninety Days during the preceding twelve months; with the Board / Funds as applicable under various sections of "The Buildings And Other Construction workers (Regulation of Employment and Conditions of Service) Act, 1996 and the Building and other Construction worker's Welfare Cess Act, 1996.

The Contractor shall also be responsible for maintaining register of beneficiaries i.e. the workers in such form as may be prescribed by the competent authority & the same shall be kept open at all reasonable times for inspection of relevant authority and officials of Client / RTDC.

The Contractor shall be further responsible for maintaining such register & records; giving such particulars of Building workers employed by him, the work performed by them, the number of hours of work which shall constitute a normal working day, the wages paid to them, the receipts given by them and, such other particulars in such form as may be prescribed by the authority or RTDC.

In the event of Contractor failing to comply with the above clause(s) in part or in full, RTDC, without prejudice to any other rights or remedy available under law or any other clause(s) of contract, shall be at absolute liberty to forfeit any sum or sums that are payable or could become payable on account of execution of contract work and decision of Engineer-in-charge shall be final & binding in this regard on the Contractor.

RECOVERY OF COMPENSATION PAID TO WORKMEN

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

ENSURING PAYMENT AND AMENITIES TO WORKERS IF CONTRACTOR FAILS

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

CHANGE IN FIRM'S CONSTITUTION TO BE INTIMATED

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

INDEMNITY AGAINST PATENT RIGHTS

The Contractor shall fully indemnify the RTDC from and against all claims and proceedings for or on account of any infringement of any patent rights, design, trademark or name or other protected rights in respect of any construction plant, machine, work or material used for in connection with the Works or temporary works.

LAW COVERING THE CONTRACT

This contract shall be governed by the Indian laws for the time being in force.

LAWS, BYE-LAWS RELATING TO THE WORK

The Contractor shall strictly adhere by the provisions, for the time being in force, of law relating to Works or any regulations and bylaws made by any local authority or any water & lighting agencies or any undertakings within the limits of the jurisdiction of which the Work is proposed to be executed. The Contractor shall be bound to give to the authorities concerned such notices and take all approvals as may be provided in the law, regulations or bylaws as aforesaid, and to pay all fees and taxes payable to such authorities in respect thereof.

CONTRACT AGREEMENT

The Contractor shall enter into a Contract Agreement with the RTDC within 15 (Fifteen) days from the date of Letter of Intent or within such extended time, as may be granted by the RTDC failing which no payment shall be released to the Contractor. The cost of stamp papers, stamp duty, registration, if applicable on the contract, shall be borne by the Contractor. In case, the Contractor does not sign the agreement as above or start the work within 15 (Fifteen) days of the issue of Letter of Intent, his earnest money is liable to be forfeited and Letter of Intent consequently will stand withdrawn.

MANNER OF EXECUTION OF AGREEMENT

The agreement as per prescribed performa as enclosed shall be signed at the office of the RTDC within 15 (Fifteen days) days from the date of issue of Letter of Intent. The Contractor shall provide for signing of the Contract, appropriate Power of Attorney and the requisite documents/ materials. Unless and until a formal contract is prepared and executed, the Letter of Intent read in conjunction with the Tendering Documents will constitute a binding contract.

The agreement will be signed in five originals and the Contractor shall be provided with one signed original and the other four originals will be retained by the RTDC.

The Contractor shall provide free of cost to the RTDC all the Engineering data, drawings and descriptive materials submitted along with the tender, in at least three (3) copies to form an integral part of the Agreement within seven 7 days after issuing of Letter of Intent.
Subsequent to signing of the Agreement, the Contractor at his own cost shall provide to the RTDC with at least five (5) true hard bound copies of Agreement within thirty (30) days of its signing.

JURISDICTION

The agreement shall be executed at Shimla on non-judicial stamp paper purchased in Shimla and the courts in Shimla alone will have jurisdiction to deal with matters arising there from, to the exclusion of all other courts.

ARBITRATION

1. Arbitration Procedure:
   If the efforts, to resolve all or any of the disputes through conciliation fail, then such a dispute shall be referred within 30 days from conclusion of conciliation process to a Sole Arbitrator who would be nominated by Secretary Transport, Himachal Pradesh. The Arbitration and Conciliation Act, 1996 as amended from time to time, will be applicable. The venue of such arbitration shall be at Shimla. The award of the sole Arbitrator shall be binding on all parties. The cost of Arbitration shall be borne by the respective parties.

2. The place of arbitration shall be Shimla, H.P.
3. English Language
   The request for arbitration, the answer to the request, the terms of reference, any written submissions, any orders and awards shall be in English and, if oral hearings take place, English shall be the language to be used in the hearings. The award shall be made in writing.
4. Enforcement of Award
   The Parties agree that the decision or award, which shall be a speaking order, resulting from arbitration shall be final and binding upon the Parties and shall be enforceable in accordance with the provision of the Arbitration and Conciliation Act 1996 subject to the rights of the aggrieved parties to secure relief from any higher forum.
5. Performance during Arbitration
   The Arbitration Proceedings shall be governed by Indian Arbitration and Conciliation Act 1996, as amended from time to time including provisions in force at the time the reference is made. Pending the submission of and/or decision on a Dispute and until the arbitral award is published; the Parties shall continue to perform their respective obligations under this Agreement without prejudice to a final adjustment in accordance with such award. The courts at Shimla shall have the sole exclusive jurisdiction to try all the cases arising out of this agreement.

6. Notices
   That any notice under the terms of this Agreement shall be in writing by registered post or delivered personally and signed by the party or his/its duly authorized representative giving such notice. All activities including day to day management, billing, termination , etc. will be carried out from the office of the CEO, Shimla Smart City Limited or by his duly authorized representative. Notice shall be addressed as follows:

   Chief Executive Officer

SECTION-4

LABOUR SAFETY, HEALTH

AND

REGULATIONS INCLUDING FORMS

1. LABOUR SAFETY PROVISIONS

Suitable scaffolds should be provided for workmen for all works that cannot safely be done from the ground, or from solid construction except such short period work as can be done safely from ladders. When a ladder is used an extra mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well, suitable footholds and hand holds shall be provided on the ladder and the ladder shall be given an inclination not steeper than ¼ to 1 (1/4 horizontal and 1 vertical).

Scaffolding or staging more than 3.6m (12 feet) above the ground or floor, swung or suspended from an overhead support or erected with stationery support shall have a guard rail properly attached or bolted, braced and otherwise secured at least 90 cm. (3 feet) high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such opening as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.

Working platforms, gangways, and stairways should be so constructed that they should not sag unduly or unequally, and if the height of the platform or the gangway or the stairway is more that 3.6m (12 feet) above ground level or floor level, they should be closely boarded, should have adequate width & should be suitable fastened as described in (2.0) above. Every opening in the floor of a building or in a working platform shall be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 90 cm (3 feet).

Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9m. (30 feet) in length while the width between side rails in rung ladder shall in no case be less than 29 cm. (11.5”) for ladder up to and including 3m (10 feet) in length. For longer ladders this width should be increased at least 1/4" for each additional 30 cm (1 ft.) of length. Uniform step spacing shall not exceed 30 cm (12"). Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites of the Work shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The Contractor shall provide all necessary fencing and lights to protect the public from accident, and shall be bound to bear the expenses of defense of every suit, action or other 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 such suit, action or proceedings to any such person or which may, with the consent of the Contractor, be paid to compensate any claim by any such person.

2. EXCAVATION AND TRENCHING

All trenches, 1.2mts.(four feet) or more in depth, shall at all times be supplied with at least one ladder for each 30m.(100 feet) in length or fraction thereof, ladder shall be extended from bottom of the trench to at least 90cm (3feet) above the surface of the ground. The side of the trenches, which are 1.5

m. (5feet) or more in depth shall be stepped back to give suitable slope or securely held by timber bracing, so as to avoid the danger or sides to collapsing. The excavated materials shall not be placed within 1.5m (5 feet) of the edges of the trench or half of the depth of the trench, whichever is more.
Cutting shall be done from top to bottom. Under no circumstances undermining or undercutting shall be done.

Demolition - Before any demolition work is commenced and also during the progress of the work following precautions shall be observed:

All roads and open areas adjacent to the Work site shall either be closed or suitably protected.
No electric cable or apparatus which is likely to be a source of danger or 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 or fire or explosion or flooding. No floor, roof or other part of the building shall be overloaded with debris or materials as to render it unsafe. All necessary personal safety equipments as considered adequate by the Engineer-in-charge should be kept available for the use of persons employed on the site and maintained in a condition suitable for immediate use, and the Contractor should take adequate step to ensure proper use of equipment by those concerned. The following safety equipment shall be invariably provided.

Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.

Those engaged in white washing and mixing or stacking of cement bags or any materials which are injurious to the eye shall be provided with protective goggles.

Those engaged in welding works shall be provided with welders protective eye shields.

Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe interval.

When workers are employed for works in sewers and manholes, which are in active use, the Contractors shall ensure that the manhole covers are opened and ventilated at-least for an hour before the workers are allowed to get into the manholes, and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident the public. In addition, the Contractor shall ensure that the following safety measures are adhered to:

Entry for workers into the sewer line shall not be allowed except under supervision of the Junior Engineer or any other higher officer.

At least 5 to 6 manholes upstream and downstream should be kept open for at least 2 to 3 hours before any man is allowed to enter into the manholes for working inside.

Before entry, presence of Toxic gases should be tested by inserting wet lead acetate paper which changes color in the presence of such gases and gives indication of their presence. Presence of Oxygen should be verified by lowering a detector lamp into the manhole. In case, no Oxygen is found inside the sewer line, workers should be sent only with Oxygen kit.

Safety belt with rope should be provided to the workers. While working inside the manholes such rope should be handled by two men standing outside to enable him to be pulled out during emergency.

The area should be barricaded or cordoned off by suitable means to avoid mishaps of any kind. Proper warning signs should be displayed for the safety of the public whenever cleaning works are undertaken during night or day.

No smoking or open flames shall be allowed near the blocked manhole being cleaned.

The malba obtained on account of cleaning of blocked manholes and sewer lines should be immediately removed to avoid accidents on account of slippery nature of the malba.

Workers should not be allowed to work inside the manhole continuously. He should be given rest intermittently. The Engineer-In-charge may decide the time up to which a worker may be allowed to work continuously inside the manhole.

Gas masks with Oxygen Cylinder should be kept at site for use in emergency.

Air-blowers should be used for flow of fresh air through the manholes. Whenever called for, portable air-blowers are recommended for ventilating the manholes. The Motors for these shall be vapour proof and of totally enclosed type. Non sparking gas engines also could be used but they should be placed at-least 2 metres away from the opening and on the leeward side protected from wind so that they will not be a source of friction on any inflammable gas that might be present.

The workers engaged for cleaning the manholes / sewers should be properly trained before allowing to work in the manhole.

The workers shall be provided with Gumboots or non sparking shoes, bump helmets and gloves non sparking tools, safety lights and gas masks and portable air blowers (when necessary). They must be supplied with barrier cream for anointing the limbs before working inside the sewer lines.

Workmen descending a manhole shall try each ladder step or rung carefully before putting his full weight on it to guard against insecure fastening due to corrosion of the rung fixed to manhole well.

If a man has received a physical injury, he should be brought out of the sewer immediately and adequate medical aid should be provided to him.

The extent to which these precautions are to be taken depend on individual situation but the decision of the Engineer-In-charge regarding the steps to be taken in this regard in an individual case will be final.

The Contractor shall not employ men and women below the age of 18 years on the work of painting with products containing lead in any form. Wherever men above the age of 18 are employed on the work of lead painting the following precautions should be taken.

I. No paint containing lead or lead products shall be used except in the form of paste or readymade paint.

II. Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint is dry rubbed and scrapped.

III. Overalls shall be supplied by the Contractor to the workmen and adequate facilities shall be provided to enable the working painters to wash during the cessation of work.

IV.

a) White lead, sulphate or lead work products containing those pigments shall not be used in painting operation except in the form of paste or of paints ready for use. Measures shall be taken whenever required in order to prevent danger arising from the application of paint in the form of spray.
   Measures shall be taken, whenever practicable to prevent danger arising out of dust caused by dry rubbing down and scrapping.

b) Adequate facilities shall be provided to enable working painter to wash during and on cessation of work.

c) Suitable arrangements shall be made to prevent clothing put off during working hours being spoiled by painting materials.

V.

a) Cases of lead poisoning and of suspected lead poisoning shall be notified and shall be subsequently verified by a medical man appointed by the competent authorities of RTDC. The RTDC may require when necessary a medical examination of workers. Instructions with regard to the special hygienic precautions to be taken in the painting trade shall be distributed to working painters.
   When the work is done near any place where there is risk of drowning, all necessary equipments should be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provisions should be made for prompt first aid treatment for all injuries likely to be sustained during the course of the work.
   Use of hoisting machines and tackle including their attachment encourage and supports shall conform to the following standard of conditions.

b) These shall be of good mechanical construction, sound material and adequate strength and free from patent, defects and shall be kept in good working order. Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from patent defects.

Every crane driver or hoisting appliance operator shall be properly qualified and no person under the age of 21 years should be in-charge of any hoisting machine including any scaffolding, winch or giving signals to operator. In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or as means of suspension the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of a hoisting machine having a variable safe working load, each safe working load and the conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this clause shall be loaded beyond the safe working load except for the purpose of testing. In case of RTDC machines, the safe working load shall be notified by the Engineer-in-Charge. As regards Contractor's machines the Contractor shall notify the safe working load of the machine to the Engineer-in-charge whenever he brings any machinery to site of work and get verified by the Engineer-in-Charge. Motors gearing, transmission electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguard. Hoisting appliances should be provided with such means as will reduce to the minimum the risk of accidental descent of the load. Adequate precautions should be taken to reduce the minimum the risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations, which are already energized, insulating mats, wearing apparel, such as gloves sleeves and boots as may be necessary be provided. The worker should not wear any rings, watches and carry keys or other materials, which are good conductors of electricity. All scaffold, ladders, and other safety devices mentioned or described herein shall be maintained in safe condition and no scaffold ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near places of work. These safety provisions should be brought to the notice of all concerned by display on a notice board at a prominent place of work spot. The person responsible for compliance of the safety codes shall be named therein by the Contractor. To ensure effective enforcement of the rules and regulations relating to safety precautions the arrangements made by the Contractor shall be open to inspection by RTDC Official or their representatives. Notwithstanding the above Clauses there is nothing in these to exempt the Contractor from the operations of any other Act or Rule in force in the Republic of India.

SECTION-5

FORMS AND FORMATS

Appendix - 'N'

PROFORMAS: PROFORMA –I

The list of similar works as stated in the Minimum Qualification requirement for Bidders and Similar Works – Clause I

PROFORMA-I					
Sr. No.	Name of the Project	Name of the Employer	Stipulated date of completion	Actual date of completion	Actual Cost of work done
1	2	3	4	5	6

NOTE:

Scanned Attested copies of completion /performance certificates from the Engineer- in- Charge for each work should be annexed in the support of information furnished in the above proforma.

Works shall be grouped financial year-wise.

PROFORMA-II

YEARLY TURNOVER OF CONSTRUCTION WORKS DURING THE LAST THREE YEARS.

PROFORMA-II					
Sr. No.	Financial year	Annual Turnover of Civil Engineering Works	Updated value to current year	Average of last 3 years	Page No.
1					
2					
3					
Total					

NOTE: The above figures shall tally with the audited balance sheets uploaded by the Bidders duly certified by Statutory Auditor/ Chartered Accountant.

Appendix - 'O'

FORM XXVI
AFFIDAVIT

(To be submitted by bidder on non-judicial stamp paper of Rs. 100/- (Rupees Hundred only) duly attached by Notary Public)

(To be submitted in Envelop-1)

Affidavit of Mr. .....S/o..... R/o .....

I, the deponent above named do hereby solemnly affirm and declare as under:
That I am the Proprietor/Authorized signatory of M/s ……. Having its Head Office/Regd. Office at ……..

That the information/documents/Experience certificates submitted by M/s……. along with the tender for …… *(NAMEOF WORK*)…… To RTDC Ltd. are genuine and true and nothing has been concealed. I shall have no objection in case RTDC verifies them from issuing authority (ies).

I shall also have no objection in providing the original copy of the document(s), in case RTDC demand so for verification.

I hereby confirm that in case, any document, information & / or certificate submitted by me found to be incorrect / false / fabricated, RTDC at its discretion may disqualify / reject / terminate the bid/contract and also forfeit the EMD / All dues.

I shall have no objection in case RTDC verifies any or all Bank Guarantee(s) under any of the clause(s) of Contract including those issued towards EMD and Performance Guarantee from the Zonal Branch /office issuing Bank and I/We shall have no right or claim on my submitted EMD before RTDC receives said verification.

That the Bank Guarantee issued against the EMD issued by (name and address of the Bank) is genuine and if found at any stage to be incorrect / false / fabricated, RTDC shall reject my bid, cancel pre-qualification and debar me from participating in any future tender for three years.

I, ..., the Proprietor / Authorised signatory of M/s..... do hereby confirm that the contents of the above Affidavit are true to my knowledge and nothing has been concealed there from..... and that no part of it is false.

Verified at ..... this..... day of .....

DEPONENT

ATTESTED BY (NOTARY PUBLIC)

APPLICATION FOR EXTENSION OF TIME
(To be completed by the Contractor)

P A R T –I

Name of Contractor

Name of the work as given in the Agreement

Agreement No.

Estimated amount put to tender

Date of commencement work as per agreement

Period allowed for completion of work as per agreement

Date of completion stipulated as per agreement

Period for which extension of time has been give previously

Extension granted

First extension vide Engineer-in- charge letter No… ……date	Months	Days
2nd extension vide Engineer-in- charge letter No…… date	Months	Days
3rd extension vide Engineer-in- charge letter No……. date	Months	Days
4th extension vide engineer-in- charge letter No……. date	Months	Days

Total extension previously given

Reasons for which extension have been previously given (copies of the previous application should be attached)

Period for which extension is applied for:

Hindrances on account of which extension is applied for with dates on which hindrances occurred, and the period for which these are likely to last.

Serial No.

Nature of hindrance

Date of Occurrence

Period for which it is likely to last

Period for which extension required for this particular hindrance. Over lapping period, if any, with reference to item

Net extension applied for

Remarks, if any

Total period for which extension is now applied for on account of hindrances mentioned above ……. Month / days.

Extension of time required for extra work.

Details of extra work and on the amount involved: Total value of extra work

Proportionate period of extension of time based on estimated amount put to tender on account of extra work.

Total extension of time required for 11 & 12

Submitted to the Engineer-in-Charges office.

SIGNATURE OF CONTRACTOR

DATE

APPLICATION FOR EXTENSION OF TIME
(PART – II)

Date of receipt of application from Contractor for the work in the Engineer-in- charge office.

Acknowledgement issued by Engineer-in-charge vide his letter No. dated

Engineer-in-charge remarks regarding hindrances mentioned by the Contractor.

Serial No.

Nature of hindrance

Date of occurrence of hindrance

Period for which hindrance, is likely to last

Extension of time period applied for by the contractor Over lapping period, if any, giving reference to items which over lap

Net period for which extension is recommended.

Remarks as to why the hindrance occurred and justification for extension recommended.

Engineer-in-charge recommendations.

The present progress of the work should be stated and whether the work is likely to be completed by the date up to which extension has been applied for. If extension of time is not recommended, what compensation is proposed to be levied under the agreement.

SIGNATURTE OF ENGINEER-IN-CHARGE

PROFORMA FOR EXTENSION OF TIME

P A R T – III

To

NAME

ADDRESS OF THE CONTRACTOR SUBJECT:

Dear Sir(s)

Reference your letter No _____ dated _____ , in connection with the grant of extension of time for completion of the work…..

The date of completion for the above mentioned work, is …… as stipulated in the agreement, dated ……

Extension of time for completion of the above mentioned work is granted upto_____, without prejudice to the right of the RTDC to recover compensation for delay in accordance with the provision made in Clause of the said agreement dated the ___/ ___/ ___. It is also clearly understood that the RTDC shall not consider any revision in contract price or any other compensation whatsoever due to grant of this extension.

Provided that notwithstanding the extension hereby granted, time is and shall still continue to be the essence of the said agreement.

Yours faithfully,

FOR RTDC Ltd.

PROFORMA OF BANK GUARANTEEIN LIEU OF EMD (TENDER BOND)

(Judicial Stamp paper of appropriate value as per stamp Act-of respective state)

Ropeways and Rapid Transport System Development Corporation limited.
US CLUB, Shimla
Himachal Pradesh

In consideration of RTDC Limited, having its Registered Office at, US CLUB Shimla (hereinafter called "RTDC" which expression shall unless repugnant to the subject or context include its successors and assigns) having issued Notice Inviting Tender No ..... and M/s.....
Having its Registered Head Office at..... (hereinafter called the "BIDDER") is to participate in the said tender for.....

Whereas RTDC, as a special case, has agreed to accept an irrevocable and unconditional Tender Bank Guarantee for an amount of Rs..... valid upto.....from the Bidder in lieu of Cash Deposit of Rs..... required to be made by the Bidder, as a condition precedent for participation in the said tender.

We the ..... (hereinafter called the "BANK") having its Registered, Office at..... and branch office at..... do hereby unconditionally and irrevocably undertake to pay immediately on demand in writing and without demur/protest any amount but not exceeding Rs ..... Any such demand made by RTDC shall be conclusive and binding on us irrespective of any dispute or differences that may be raised by the Bidder. Any change in the constitution of the Bidder or the Bank shall not discharge our liability under the guarantee.

We, the..... Bank, lastly undertake not to revoke this guarantee during its currency without the prior consent of RTDC in writing and this guarantee shall remain valid upto.....Unless a claim is made within three months from the date of expiry i.e. ..... (three months after the date of expiry), we shall be relieved of our liability under this guarantee thereafter.

FOR AND ON BEHALF OF BANK

PLACE :

DATED :

WITNESS.

1.

2

PROFORMA OF BANK GUARANTEE (PERFORMANCE)

(Judicial Stamp paper of appropriate value as per stamp Act-of respective state)

Ropeways and Rapid Transport System Development Corporation limited.
US CLUB, Shimla
Himachal Pradesh

Whereas the Ropeways and Rapid Transport System Development Corporation limited, having its Registered Office at US Club, Shimla (hereinafter called "RTDC" which expression shall include its successors and assigns) having awarded a work order/contract / supply order No. dated (hereinafter called the contract) to M/s. .... (hereinafter called the contractor / supplier) at a total price of Rs..... subject to the terms and conditions contained in the contract.

WHEREAS, the terms and conditions of the contract require the contractor to furnish a bank guarantee for Rs.... (Rupees….) being ..... % of the total value of the contract for proper execution and due fulfillment of the terms and conditions contained in the contract.

We, the Bank, (hereinafter called the "Bank") do hereby unconditionally and irrevocably undertake to pay to RTDC immediately on demand in writing and without protest/or demur all moneys payable by the contractor/supplier to RTDC in connection with the execution/supply of and performance of the works/equipment, inclusive of any loss, damages, charges, expenses and costs caused to or suffered by or which would be caused to or suffered by RTDC by reason of any breach by the contractor/supplier of any of the terms and conditions contained in the contract as specified in the notice of demand made by RTDC to the bank. Any such demand made by RTDC on the bank shall be conclusive evidence of the amount due and payable by the bank under this guarantee. However, the Bank's liability under this guarantee, shall be limited to Rs.....in the aggregate and the bank hereby agrees to the following terms and conditions:-

(i) This guarantee shall be a continuing guarantee and irrevocable for all claims of RTDC as specified above and shall be valid during the period specified for the performance of the contract including the period of maintenance/warranty i.e. up to.....

(ii) We, the said bank further agree with RTDC that RTDC shall have the fullest liberty without our consent and without affecting in any manner our obligations and liabilities hereunder to vary any of the terms and conditions of the said contract or to extend time for performance of contract by the contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by RTDC against the contractor/supplier under the contract and forbear or enforce any of the terms and conditions relating to the said contract and we shall not be relieved from our liability by reason of any such variations or extension being granted to the contractor or for any forbearance, act or omission on the part of RTDC or any indulgence by RTDC to the contractor or by any such matter or thing whatsoever, which under the law relating to the sureties would, but for this provision, have effect of so relieving us.

This guarantee/undertaking shall be in addition to any other guarantee or security whatsoever RTDC may

now or at any time have in relation to the performance of the works/equipment and RTDC shall have full re-course to or enforce this security in performance to any other security or guarantee which the RTDC may have or obtained and there shall be no forbearance on the part of RTDC in enforcing or requiring enforcement of any other security which shall have the effect of releasing the Bank from its full liability. It shall not be necessary for RTDC to proceed against the said contractor/supplier before proceeding against the Bank. This guarantee/ undertaking shall not be determined or affected by the liquidation or winding up, dissolution or change of constitution or insolvency of the supplier/ contractor, but shall in all respects and for all purposes be binding and operative until payment of all moneys payable to RTDC in terms thereof are paid by the Bank.

The Bank hereby waives all rights at any time inconsistent with the terms of this Guarantee and the obligations of the bank in terms hereof, shall not be otherwise effected or suspended by reasons of any dispute or disputes having been raised by the supplier/contractor (whether or not pending before any Arbitrator, Tribunal or Court) or any denial of liability by the supplier/contractor stopping or preventing or purporting to stop or prevent any payment by the Bank to RTDC in terms hereof.

We, the said Bank, lastly undertake not to revoke this guarantee during its currency except with the previous consent of RTDC in writing. Unless a claim is made in writing within three months from the date of expiry of this guarantee i.e..... (three months after the date of expiry) we shall be relieved from all liabilities under this guarantee thereafter.

Signed this ..... day of ..... at…….

For and on behalf of Bank

WITNESS.

1._____

2._____

PROFORMA OF BANK GUARANTEE (FOR MOBILIZATION ADVANCE)

(Judicial Stamp paper of appropriate value as per stamp Act-of respective state)

Ropeways and Rapid Transport System Development Corporation limited.
US CLUB, Shimla
Himachal Pradesh

In consideration of the Ropeways and Rapid Transport System Development Corporation limited, having its Registered Office at US CLUB Shimla (hereinafter called "RTDC" which expression shall unless repugnant to the subject or context include his successor and assigns) having agreed under the terms and conditions of Contract No..... dated..... made between..... and RTDC in connection with..... (hereinafter called "the said contract") to make at the request of the Contractor a Mobilization Advance of Rs..... for utilizing it for the purpose of the Contract on his furnishing a guarantee acceptable to RTDC, we the ..... Bank Ltd., (hereinafter referred to the "the said Bank") and having our registered office at..... do hereby guarantee the due recovery by RTDC of the said advance as provided according to the terms and conditions of the Contract. We.....do hereby undertake to pay the amount due and payable under this Guarantee without any demur, merely on a demand from RTDC stating that the amount claimed is due to RTDC under the said Agreement. Any such demand made on the..... shall be conclusive as regards the amount due and payable by the..... under this guarantee and..... agree that the liability of the ..... to pay RTDC the amount so demanded shall be absolute and unconditional notwithstanding any dispute or disputes raised by the Contractor and notwithstanding any legal proceeding pending in any court or Tribunal relating thereto. However, our liability under this Guarantee shall be restricted to an amount not exceeding Rs..... We ..... Bank further agree that RTDC shall be the sole judge of and as to whether the amount claimed has fallen due to RTDC under the said agreement or whether the said Contractor has not utilized the said advance or any part thereof for the purpose of the Contract and the extent of loss or damage caused to or suffered by RTDC on account of the said advance together with interest not being recovered in full and the decision of RTDC that the amount has fallen due from contractor or the said Contractor has not utilized the said advance or any part thereto for the purpose of the contract and as to the amount or amounts of loss or damage caused to or suffered by RTDC shall be final and binding on us.

We, the said Bank, further agree that the Guarantee herein contained shall remain in full force and effect till the said advance has been fully recovered and its claims satisfied or discharged and till RTDC certify that the said advance has been fully recovered from the said Contractor, and accordingly discharges this Guarantee subject, however, that RTDC shall have no claims under this Guarantee after the said advance has been fully recovered, unless a notice of the claims under this Guarantee has been served on the Bank before the expiry of the said Bank Guarantee in which case the same shall be enforceable against the Bank.

RTDC shall have the fullest liberty without affecting in any way the liability of the Bank under this Guarantee or indemnity from time to time to vary any of the terms and conditions of the said Contract or the advance or to extend time of performance by the said Contractor or to postpone for any time and from time to time of the powers exercisable by it against the said Contractor and either to enforce or forbear from enforcing any of terms and conditions governing the said Contract or the advance or securities available to RTDC and the said Bank shall not be released from its liability under these presents by any exercise by RTDC of the liberty with reference to the matters aforesaid or by reasons of

time being given to the said Contractor or any other forbearance, act or omission on the part of RTDC or any indulgence by RTDC to the said Contractor or of any other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect of so releasing the bank from its such liability. It shall not be necessary for RTDC to proceed against the Contractor before proceeding against the Bank and the Guarantee herein contained shall be enforceable against the Bank notwithstanding any security which RTDC may have obtained or obtain from the Contractor or shall at the time when proceedings are taken against the Bank hereunder be outstanding or unrealized.

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

Dated this .....day of.....

Dated

For and on behalf of Bank

(NAME AND DESIGNATION)

PROFORMA OF BANK GUARANTEE
(IN LIEU OF SECURITY DEPOSIT)

(Judicial Stamp paper of appropriate value as per stamp Act-of respective state)

Ropeways and Rapid Transport System Development Corporation limited.
US CLUB, Shimla
Himachal Pradesh

In consideration of the Ropeways and Rapid Transport System Development Corporation limited, having its Registered Office at USCLUB, Shimla (hereinafter called "RTDC") which expression shall include its successors and assigns having awarded to M/s..... (hereinafter called "the Supplier/Contractor") which expression shall wherever the subject or context so permits includes its successors and assigns) a Contract in terms inter-alia of RTDC's letter No..... dated..... and the Contract/Purchase Conditions of RTDC and upon the condition of the Supplier/Contractor furnishing Security for the performance of the Supplier's obligations and /or discharge of the contractor's/supplier's liability under and/or in connection with the said contract upto a sum of Rs..... (Rupees..... only)

We,..... ((hereinafter called "The Bank") which expression shall include its successors and assigns) hereby undertake and guarantee payment to RTDC forthwith on the same day on demand in writing and without protest or demur of any and all moneys payable by the supplier/contractor to RTDC under, in respect or in connection with the said contract inclusive of all the losses, damages, costs, charges and expenses and other moneys payable in respect of the above as specified in any notice of demand made by RTDC to the Bank with reference to this guarantee up to and aggregate limit of Rs.....(Rupees.....only) and the bank hereby agree with RTDC that:

This Guarantee shall be continuing guarantee and shall …… remain valid and irrevocable for all claims of RTDC and liabilities of Supplier/Contractor arising upto and until midnight of.....

This Guarantee shall be in addition to any other Guarantee or Security whatsoever that RTDC now or at any time have in relation to the Contractor/Supplier's obligations/liabilities under and/or in connection with the said supply/contract, and RTDC shall have full authority to take recourse or to enforce this Security in preference to any other Guarantee or Security which RTDC may have or obtain and no forbearance on the part of RTDC in enforcing or requiring enforcement of any other Security shall have the effect of releasing the Bank from its liability hereunder.

RTDC shall be at liberty without reference to the Bank and without affecting the full liability of the Bank hereunder to take any other security in respect of the Supplier's/Contractor's obligations and/ or liabilities under or in connection with the said supply/contract or to grant time and / or indulgence to the supplier / contractor or to increase or otherwise vary the prices or the total contract value or to release or to forbear from enforcement of all or any of the conditions under the said supply / contract and / or the remedies of RTDC under any other security/securities now or hereafter held by RTDC and no such dealings, increase(s) or other indulgence(s) or arrangement(s) with the supplier / contractor or releasing or forbearance whatsoever shall have the effect of releasing the Bank from its full liability to RTDC hereunder or prejudicing rights of RTDC against the Bank. This Guarantee shall not be determined or

affected by the liquidation or winding up, dissolution or change of constitution or insolvency of the supplier / contractor but shall in all respects and for all purposes be binding and operative until payment of all moneys payable to RTDC in terms thereof.

The Bank hereby waives all rights at any time inconsistent with the terms of this Guarantee and the obligations of the Bank in terms hereof shall not be otherwise affected or suspended by reason of any dispute or disputes having been raised by the supplier /contractor (whether or not pending before any Arbitrator, Tribunal or Court) or any denial or liability by the supplier/ contractor stopping/ preventing or purporting to stop or prevent any payment by the Bank to RTDC in terms thereof. The amount stated in any notice of demand addressed by RTDC to the Guarantor as liable to be paid to RTDC by the supplier/contractor or as suffered or incurred by RTDC on account of any losses or damages, costs, charges and / or expenses shall as between the Bank and RTDC be conclusive of the amount so liable to be paid to RTDC or suffered or incurred by RTDC as the case may be and payable by the Guarantor to RTDC in terms hereof subject to a maximum of Rs ..... (Rupees ..... only), Unless demand or claim under this Guarantee is made on the Guarantor in writing within three months form the date of expiry of the Guarantee i.e. upto ..... the Guarantor shall be discharged from all liabilities under this Guarantee there under.

Notwithstanding anything contained herein before our liability under this guarantee is restricted to Rs . ..... (Rupees .....only).

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

For and on behalf of the Bank

Place

Date

WITNESS:

1.
2.

PROFORMA OF BANK GUARANTEE
(FOR MOBILIZATION ADVANCE WITH INTEREST BEARING)
(Judicial Stamp per Stamp Act - paper of appropriate value as respective state)

Ropeways and Rapid Transport System Development Corporation limited
US CLUB, Shimla
Himachal Pradesh

In consideration of the Ropeways and Rapid Transport System Development Corporation limited, having its Registered Office at US CLUB, Shimla (hereinafter called "RTDC" which expression shall unless repugnant to the subject: or context Include his successor and assigns) having agreed under the terms and conditions of Contract No. dated made between (name of the contractor) and RTDC in connection with (name of work) hereinafter called "the said contract") to make at the request of the Contractor a Mobilization Advance of Rs. _____ carrying interest @ … % p.a. for utilizing it for the purpose of the Contract on his furnishing a guarantee acceptable to RTDC, we the Bank (hereinafter referred to the "the said Bank") and having our registered office at do hereby guarantee the due recovery by RTDC of the said advance alongwith interest as provided according to the terms and conditions of the contract.

We do hereby undertake to pay the amount due and payable under this Guarantee without any demur, merely, on a demand from RTDC stating that the amount claimed is due to RTDC under the said Agreement. Any such demand made on the said bank shall be conclusive as regards the amount due and payable by the said contractor under this guarantee and agree that the liability of the said bank to pay RTDC the amount so demanded shall be absolute and unconditional notwithstanding any dispute or disputes raised by the Contractor and notwithstanding any legal proceeding pending in any court or Tribunal relating thereto. However, our liability under this Guarantee shall be restricted to an amount not exceeding Rs … inclusive of interest @ …….% p.a. We the said bank further agree that RTDC shall be the sole judge of and as to whether the amount claimed has fallen due to RTDC under the said agreement or whether the said Contractor has not utilized the said advance or any part thereof for the purpose of the Contract and the extent of loss or damage caused to or suffered by RTDC on account of the said advance together with interest not being recovered in full and the decision of RTDC that the amount has fallen due from' contractor or the said Contractor has not utilized the said advance or any part thereto for the purpose of the contract and as to the amount or amounts of loss or damage caused to or suffered by RTDC shall be final and binding on us.

We, the said Bank, further agree that the Guarantee herein contained shall remain in full force and effect till the said advance has been fully recovered and its claims satisfied or discharged and till RTDC certify Contractor, and accordingly discharges this Guarantee subject, however, that RTDC shall have no claims under this Guarantee unless a notice of the claims under this Guarantee has been served on the Bank before the expiry of the said Bank Guarantee in which case the same shall be enforceable against the Bank.

RTDC shall have the fullest liberty without affecting in any way the liability of the Bank under this

Guarantee or indemnity from time to time to vary any of the terms and conditions of the said Contract or the advance or to extend time of performance by the said Contractor or to postpone for any time and from time to time of the powers exercisable by it against the said Contractor and either to enforce or forbear from enforcing any of terms and conditions governing the said Contract or the advance or securities available to RTDC and the said Bank shall not be released from its liability under these presents by any exercise by RTDC of the liberty with reference to the matters aforesaid or by reasons of time being given to the said Contractor or any other forbearance, act or omission on the part of RTDC or any indulgence by RTDC to the said Contractor or of any other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect of so releasing the bank from its such liability.

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

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

Dated this…… day of……..

Place:
Date:

Witness:
1
2

GUARANTEE TO BE EXECUTED BY CONTRACTOR FOR REMOVAL OF DEFECTS AFTER COMPLETION IN RESPECT OF WATER PROOFING WORKS

The agreement made this …….. day of …….. Two thousand and …….. between …… (hereinafter called Guarantor of the one part) and the RTDC (hereinafter called the Execution Agency of the other part).

WHEREAS this agreement is supplementary to a contract (hereinafter called the Contract), dated …… and made between the GUARANTOR OF THE ONE part and the RTDC of the other part, whereby the Contractor, inter-alia, undertook to render the buildings and structures in the said contract recited completely water and leak proof.

AND WHEREAS the Guarantor agreed to give a guarantee to the effect that the said structures will remain water and leak proof for ten years from the date of expiry of the Defect Liability period, prescribed in the Contract. .

NOW THE GUARANTOR hereby guarantees that water proofing treatment given by him will render the structures completely leak proof and the minimum life of such water proofing treatment shall be ten years to be reckoned from the from the date of expiry of the Defect Liability period prescribed in the contract.

Provided that the Guarantor will not be responsible for leakage caused by earthquake or structural defects or misuse of roof or alteration and for such purpose.

Misuse of roof shall mean any operation, which will damage proofing treatment, like chopping of fire wood and things of the same nature which might cause damage to the roof.

Alternation shall mean construction of an additional storey or a part of the roof or construction adjoining to existing roof whereby proofing treatment is removed in parts.

The decision of the Engineer-in-Charge with regard to cause of leakage shall be final

During this period of guarantee, the Guarantor shall make good all defects and in case of any defect being found, render the building water proof to the satisfaction of the Engineer-in-Charge at his cost and shall commence the work for such rectification within seven days from the date of issue of notice from the Engineer-in- Charge calling upon him to rectify the defects failing which the work shall be got done by the RTDC by some other contractor at the guarantor's cost and risk. The decision of Engineer-in-Charge as to the cost, payable by the Guarantor shall be final and binding.

That if the Guarantor fails to execute the water proofing or commits breach there- under, then the Guarantor will indemnify RTDC and his successors against all laws damage, cost, expense or otherwise which may be incurred by it by reason of any default on the part of the Guarantor in performance and observance of this supplementary agreement. As to the amount of loss and / or damage and/ or cost incurred by the RTDC, the decision of the Engineer-in-Charge will final and binding on the parties.

IN WITNESS WHEREOF these presents have been executed by the Obligator,,,,.....and by ..... for and on behalf of the RTDC on the day, month and year first above written.

Signed, sealed and delivered by Obligator in the presence of-

1.

2.

Signed for and on behalf of the RTDC by

In presence of:

1.

2.

AGREEMENT FORM

This agreement made this day of (Month) (Year), between the Ropeways and Rapid Transport System Development Corporation limited (RTDC), a company incorporated under the Companies Act, 2013 having its Registered Office at US CLUB Shimla (hereinafter referred to as the "RTDC" which expression shall include its administrators, successors, executors and assigns) of the one part and M/s (NAME OF CONTRACTOR) (hereinafter referred to as the 'Contractor' which expression shall unless the context requires otherwise include its administrators, successors, executors and permitted assigns) of the other part. WHEREAS, RTDC, has desirous of construction of (NAME OF WORK) (hereinafter referred to as the "PROJECT") on behalf of the (NAME OF OWNER/MINISTRY) (hereinafter referred to as "OWNER"), had invited tenders as per Tender documents vide NIT No. _____. AND WHEREAS (NAME OF CONTRACTOR) had participated in the above referred tender vide their tender dated _____ and RTDC has accepted their aforesaid tender and award the contract for (NAME OF PROJECT) on the terms and conditions contained in its Letter of Intent No. _____ and the documents referred to therein, which have been unequivocally accepted by (NAME OF CONTRACTOR) vide their acceptance letter dated _____ resulting into a contract.

NOW THEREFORE THIS DEED WITNESSETH AS UNDER:

ARTICLE 1.0 – AWARD OF CONTRACT

SCOPE OF WORK

RTDC has awarded the contract to **(NAME OF CONTRACTOR)** for the work of **(NAME OF WORK)** on the terms and conditions in its letter of intent No. _____ dated ____ and the documents referred to therein. The award has taken effect from **(DATE)** i.e. the date of issue of aforesaid letter of intent. The terms and expressions used in this agreement shall have the same meanings as are assigned to them in the "Contract Documents" referred to in the succeeding Article.

ARTICLE 2.0 – CONTRACT DOCUMENTS

The contract shall be performed strictly as per the terms and conditions stipulated herein and in the following documents attached herewith (hereinafter referred to as "Contract Documents").

RTDC Notice Inviting Tender vide No. _____ date _____and RTDC's tender documents consisting of:

General Conditions of Contract (GCC) along with amendments/errata to GCC (if any) issued (Volume-I).

Special Conditions of Contract including Appendices & Annexures, Volume-II.

Tripartite Agreement between Shimla Smart City Limited, RTDC and the Contractor (Volume III)

Scope of work and technical specifications along with amendments/ corrigendum of schedule items, if any (Volume-IV).

(NAME OF CONTRACTOR) letter proposal dated _____ and their subsequent communication:
Letter of Acceptance of Tender Conditions dated _____

RTDC's detailed Letter of Intent No. _____ dated ____. Agreed time schedule, Contractor's Organization Chart and list of Plant and Equipment's submitted by Contractor.

All the aforesaid contract documents referred here in Article 2 shall form an integral part of this Agreement, in so far as the same or any part thereof , to the tender documents and what has been specifically agreed to by RTDC in its Letter of Intent. Any matter inconsistent therewith, contrary or repugnant thereto or deviations taken by the Contractor in its "TENDER" but not agreed to specifically by RTDC in its Letter of Intent, shall be deemed to have been withdrawn by the Contractor without any cost implication to RTDC. For the sake of brevity, this Agreement along with its aforesaid contract documents and Letter of Intent shall be referred to as the "Contract".

ARTICLE 3.0 – CONDITIONS & CONVENANTS

The scope of Contract, Consideration, terms of payments, advance, security deposits, taxes wherever applicable, insurance, agreed time schedule, compensation for delay and all other terms and conditions contained in RTDC's Letter of Intent No. _____ dated _____ are to be read in conjunction with other aforesaid contract documents. The contract shall be duly performed by the contractor strictly and faithfully in accordance with the terms of this contract.

The scope of work shall also include all such items which are not specifically mentioned in the Contract Documents but which are reasonably implied for the satisfactory completion of the entire scope of work envisaged under this contract unless otherwise specifically excluded from the scope of work in the Letter of Intent.

Contractor shall adhere to all requirements stipulated in the Contract documents.

Time is the essence of the Contract and it shall be strictly adhered to. The progress of work shall conform to agreed works schedule/contract documents and Letter of Intent.

This agreement constitutes full and complete understanding between the parties and terms of the presents. It shall supersede all prior correspondence to the extent of inconsistency or repugnancy to the terms and conditions contained in Agreement.

Any modification of the Agreement shall be effected only by a written instrument signed by the

authorized representative of both the parties.

The total contract price for the entire scope of this contract as detailed in Letter of Intent is Rs. _____ (Rupees_____ only), which shall be governed by the stipulations of the contract documents.

ARTICLE 4.0 – NO WAIVER OF RIGHTS

Neither the inspection by RTDC or the Engineer-in-Charge or Owner or any of their officials, employees or agents nor order by RTDC or the Engineer-in-Charge for payment of money or any payment for or acceptance of, the whole or any part of the work by RTDC or the Engineer-in-Charge nor any extension of time nor any possession taken by the Engineer-in-Charge shall operate as waiver of any provisions of the contract, or of any power herein reserved to RTDC, or any right to damage herein provided, nor shall any waiver of any breach in the contract be held to be a waiver or any other or subsequent breach.

ARTICLE 5.0 – GOVERNING LAW AND JURISDICTION

The Laws applicable to this contract shall be the laws in force in India and jurisdiction of Shimla Court (s) only.

Notice of Default

Notice of default given by either party to the other party under the Agreement shall be in writing and shall be deemed to have been duly and properly served upon the parties hereto, if delivered against acknowledgment due or by FAX or by registered mail duly addressed to the signatories at the address mentioned herein above.

IN WITNESS WHEREOF, the parties through their duly authorized representatives have executed these presents (execution whereof has been approved by the Competent Authorities of both the parties) on the day, month and year first above mentioned at Shimla.

For and on behalf of:

(Ropeways and Rapid Transport System Development Corporation limited (RTDC)

WITNESS:

1.
2.

For and on behalf of:

(NAME OF CONTRACTOR)

WITNESS
1.
2.

FORM 7 - FORM OF POWER OF ATTORNEY FOR SIGNING THE BID DOCUMENTS

(On a Stamp Paper of relevant value)

Know all men by these presents, we, ... (name of Contractor and address of the registered office) do hereby irrevocably constitute, nominate, appoint and authorize Mr / Ms ..... son/daughter/wife of ..... and presently residing at ....., who is presently employed with us and holding the position of ..... as our true and lawful attorney (hereinafter referred to as the "Attorney") to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of bid for "**Engineering, Manufacturing/ Procurement, Installation, Testing and Commissioning of Lifts & Travelators from Lakkar Bazar Bus stand to Ridge in Shimla under Smart City Area Based Development including comprehensive operation & maintenance for 5 years on Engineering, Procurement & Construction (EPC) Basis**" being developed by the RTDC including but not limited to signing and submission of all applications, proposals/bids and other documents and writings, participating in pre-bid and other conferences and providing information/ responses to RTDC, representing us in all matters before RTDC, signing and execution of all contracts and undertakings consequent to acceptance of our proposal and generally dealing with RTDC in all matters in connection with or relating to or arising out of our Proposal for the said work and/or upon award thereof to us till the entering into of the agreement with RTDC.

AND GENERALLY to act as our Attorney or agent on behalf of us in relation to the bid for "**Engineering, Manufacturing/ Procurement, Installation, Testing and Commissioning of Lifts & Travelators from Lakkar Bazar Bus stand to Ridge in Shimla under Smart City Area Based Development including comprehensive operation & maintenance for 5 years on Engineering, Procurement & Construction (EPC) Basis**" and to execute and do all instruments, acts, deeds, matters and things in relation to the said Proposal or any incidental or ancillary activity, as fully and effectually in all respects as we could do if personally present.

AND We hereby agree to ratify and confirm all acts, deeds and things whatsoever lawfully done or caused to be done by our said Attorney and that all acts, deeds and things done by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, ... THE ABOVE NAMED PRINCIPAL HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS ..... DAY OF ....., 202..

For

.....

(Signature, name, designation and address)

Witness

1.

2.

Notarized

Accepted

(Signature, name, designation and address of the Attorney)

AFFIDAVIT *(Black listing)

1. I, the undersigned, do hereby certify that all the statements made in the Tender document are true and correct.

2. The undersigned also hereby certifies that neither our firm M/s. _____ nor any of its constituent partners are blacklisted by any of the Govt./Semi Govt. and public undertakings and not have abandoned any work of buildings / Infrastructures works in India nor any contract awarded to us for such works have been rescinded, during last five years prior to the date of this application.

_____

Signed by an Authorized Officer of the Firm

_____

Title of Officer

_____

Name of Firm

_____

Date

s

SECTION-6

SPECIAL CONDITION OF

CONTRACT (SCC)

SPECIAL CONDITIONS OF CONTRACT (SCC)

1. The following special conditions shall be read in conjunction with General conditions of contract. If there are any provisions in these Special Conditions, which are at variance with the provisions of General Conditions of Contract, the provisions in the Special Conditions shall take precedence.

2. Where any portion of Special Conditions of Contract is repugnant to or at variance with any provision of the instructions to Bidder and General Conditions of Contract and / or the other documents forming part of the contract then unless a different intention appears the provision of the Special Conditions of Contract shall be deemed to override the provisions of the general conditions of contract and / or the other documents forming part of the contract only to the extent such repugnant/variance in the special conditions of contract as are not possible of being reconciled with the provision with instructions to Bidder or General Conditions of contract and / or the other documents from part of the contract.

3. Scope of work and technical specifications may vary or if any changes are needed then it should bring to the attention of RTDC.

4. Drawings are given by RTDC in tender document; if any deviations found and correction required then it should be brought to RTDC for rectification.

5. The scope of work which is missing or not defined in the given Scope of work in this Tender Document, then the Contractor has to submit the items for approval to RTDC.

6. The Contractor has to submit sample of the items defined in scope of work and technical specifications and the same are to be approved by RTDC, before use.

7. It is Lump sum price tender/EPC Tender. Bidder should quote an absolute amount above or below of Estimated Project Cost.

8. The several documents forming the tender are to be taken as mutually complementary to one another, detailed drawings shall be followed in preference to small scale drawings and figured dimension in preference to scaled dimensions.

9. The tender shall be governed by General conditions of contract, preamble and general Instructions to tenderer and special Conditions of Contract. Wherever there is discordance between any of these documents, various provisions shall have overriding priority in the following order: -

I) Special conditions of contract & Technical specifications.
II) Preamble and General Instructions to Tenderer

III) General conditions of contract.

10. If there are varying or conflicting provisions in the documents forming part of the contract, RTDC shall be deciding authority with regard to the intentions of the provisions and decision shall be final and binding on the contractor.

11. SCOPE OF WORK: -

Scopes of works shall be as per relevant IS code, BIS and CPWD specifications. For the purpose of measurement, Dimensions, volumes, weights etc shall be in Metric Units.

1) Provision of escalators in stations for passenger movements;
2) All associated civil works for providing;

i) Pit for housing escalator parts, adjacent sump of size 0.5m x 0.5m x 2m, etc.
ii) Intermediate support (if vertical rise is more than 5m)

3) Transportation of material and equipment for installation purpose;
4) Spare parts, special tools, testing and diagnostic equipment and measuring instruments;

5) Training;
6) Documentation;
7) Control and monitoring system for Escalators;

8) Maintenance for specified period;
9) Canopy above the escalator;

10) FOB extension;
11) Load bearing support pillars thereof;

12) Suitable arrangement to prevent the public from falling down from the sides at top landing; a floor (flush with escalator floor plate at lower landing) at a level higher than the platform floor level and a ramp to bridge the (higher) escalator floor plate level and the (lower) platform floor level;

13) Provision of portable pump(s) and their utilization for pumping out of rain water accumulation in the pit, during monsoons;

14) Covering up of open spaces enclosed between escalator-wall and escalator-escalator;
15) Triangle protection; anti-climbing;

16) Access restriction and anti-slide arrangements;

17) Railing or other suitable arrangement to ensure that the public approaches the escalator entry in straight/ orderly manner;

18) A lockable closet/ enclosure for the controller;
19) Provision of earthing pits for achieving an earthing resistance of max 1.0 Ω;

20) Making LT power supply available for the escalator.

12. The works to be governed by this contract shall cover designing (including vetting of the design from IIT or PEC), manufacturing, supplying, transportation till destination, safe custody at site, Insurance, Erection, civil works, testing and commissioning of the works as per specifications of this tender.

13. All electrical installation works shall confirm to relevant Indian Standard code of Practice and carried out as per relevant safety code of practices, guide for safety procedures in electrical work as per I.S. 5216/Pt. I & II/1982 shall be observed.

14. The rates shall be quoted for a standard vertical height of escalator of 10.5 meters. The actual payment to be made to the supplier shall be + 0.6% of given rate with variation of vertical height for every + 0.15 meters i.e. if the height become 10.65 meter then the amount paid to bidder will be 1.006 times the given rate and if height becomes 10.35 meter then amount paid will be 0.994 times of given rate and accordingly.

15. Rate variation in the height will be applicable only on ex factory price. No variation in civil work installation and commissioning will be given.

16. The warranty period of goods shall start after successful commissioning of escalators at site as relevant warranty clause as mentioned herein this tender. The warranty shall be for a period of 24 months from the date of commissioning of the escalator or 30 months from the date of supply whichever is earlier. The warranty period would cover comprehensive maintenance inclusive of all spares, material and labour cost.

17. PARTICULAR CONDITIONS: -

- **i.** The work shall be done in accordance with Technical Specifications, relevant IS code, BIS and CPWD specifications. The contractor is advised to go through the Technical Specification before offering their quotations.
- **ii.** The work shall be carried out in the best workmanship an any defects in the work of changed in the design as per site conditions are pointed out by the inspecting authority shall be carried out by the contracted within the tendered rates.
- **iii.** In case of any dispute, regarding work the decision of the RTDC Engineer or his representative shall be final and binding to the contractor.
- **iv.** If any damage is caused to the nearby area / property as a result of execution of work, it shall be responsibility of the contractor to repairs and make good the loss properly at his own cost to the satisfaction of the RTDC/representatives.
- **v.** All the earth works debris shall be removed daily after execution of the day work and throw outside the premises by the contractors at his own cost and labour.
- **vi.** Any defects /discrepancy pointed out to the contractor during site inspection shall be rectified by the contractor at his own cost.

vii. The tenderer shall responsible for obtaining the approval of local authority i.e. RTDC/ CPWD/ PWD/Municipal Corporation /state authority and also pay all necessary charges for road cutting etc for cable laying.

18. Contractor's drawings etc.

Any calculations, designs, drawings, schedules, IS specifications, information data, progress charts etc. required by RTDC Engineer / representative in connection with contract, shall be furnished by Contractor at his own expenses. Contractor will be required to furnish drawings, designs and calculations etc for basic designs and employment schedules provided by RTDC in case no modification/deviation is proposed by contractor for a particular basic design/employment schedule. Providing Engineering Drawings, Technical data, operation manuals, catalogues, spare parts lists etc for the said equipments as erected at site.

19. Contractor's Responsibility for discrepancy

All designs and drawings submitted by Contractor shall be based on a thorough study and shall be such that Contractor is satisfied about their suitability. RTDC's approval will be based on these considerations. Notwithstanding approval communicated by RTDC/ representative, during progress of contract for designs and drawings, prototype samples of components, materials and equipments after inspection of materials, after erection and adjustments to installations, ultimate responsibility for correct design and execution of work shall be with contractor unless RTDC insists on adoption of his own designs in spite of Contractor not being agreeable to it.

The tenderer shall get himself acquainted with the site condition to know exact amount of work involved before quoting.

20. Submission of drawings:

The contractor shall furnish at his own expense all calculations, designs, drawings, explanatory notes, schedule information, procedure for approval and submission of drawings and designs for approval to RTDC/representative. General arrangement drawing (GAD) for the first escalator should be submitted to consignee within one month from the date of award to each consignee. Supply of escalator should commence within 3 months after approval of GAD of individual escalator. Consignee will endeavor to approve the sites General Arrangement Drawing (GAD) within 30 days from the date of its submission by the contractor.

21. Loading and unloading of heavy materials:

The contractor shall make his own arrangements for loading or unloading of all materials at Work sites.

22. Monthly progress report:

The contractor shall furnish during the first week of every calendar month, a progress showing progress of finalization of designs and drawings, materials received at site and the works carried

out during the preceding months. As far as possible the presentation shall be neat and tabulation from accompanied by colored diagram wherever applicable.

23. Availability of Escalators:

The availability is defined as escalators available for use on hourly basis and will be calculated on quarterly basis. The log of availability will be maintained by the consignee.

Escalator Performance Data shall include identification of Escalator, its location, Fault data, Operating hours direction wise, hours due to non-operation due to faults, Energy consumption etc as further decided by RTDC & contractor mutually. As detailed in Technical Specification, fault data & Escalator Performance Data can be downloaded from Controller by connecting a notebook computer which can also be downloaded in hard disk/Pen or Flash Drive independently using escalator control panel itself. The details of different Protocol / codes (sequence of flow of data and not the source code) of the specification for data transfer and all other associated information shall be handed over to RTDC for development of web based remote data collection & monitoring system by RTDC at a later date.

24. DOWNTIME PENALTY

During Warranty period

Penalty shall be levied on the tenderer for maintaining availability below the limit of 95%. Penalty shall be calculated as % age of cost of escalator including cost of commissioning on quarterly basis as given below:

Availability Slab	**Applicable penalty**
95% to 90%	0.5% for every 1% (or part of) reduction in availability of escalator
Below 90%	1% for every 1% (or part of) reduction in availability of escalator maximum upto 10% of contract value.

During Comprehensive AMC period

Penalty shall be levied on the bidder for maintaining availability below the limit of 95%. Penalty shall be calculated as % age of quarterly payment as given below and will be deducted from the respective quarterly payments. Penalty calculation will be done over quarterly payment period:

Availability Slab	**Applicable penalty**
95% to 90%	0.5% for every 1% (or part of) reduction in availability of escalator
Below 90%	1% for every 1% (or part of) reduction in availability of escalator maximum upto quarterly AMC charge as per AMC contract per quarter.

OTHER CONDITRIONS

1. **Additional Conditions;**

1.1. Excavated good earth declared surplus or otherwise shall be disposed of at designated locations as per the directions of RTDC, which shall be different from the disposal site for disintegrated rock, etc.

1.2. For soil required for re-filling, if sufficient space is not available for stacking at site of excavation, the Contractor shall make his own arrangements for transporting and stacking the

earth elsewhere and then bring it back for re-filling. Nothing extra shall be paid on this account for to and fro carriage.

1.3. Disposal of surplus excavated earth including mud, liquid mud, dismantled RCC; dismantled brick work etc. shall be made only in the dumping yard approved by local authority. It will be the responsibility of the Contractor to get the permission for dumping yard from local authority as required. If any royalty /fees is payable to local authority, such royalty / fees shall also be borne by the Contractor. Disposal shall be carried out strictly as per the regulations of local authority. However, the above materials shall not be removed out of Owner's premises without prior written authorization of RTDC.

1.4. All the Charges required for vetting of the designs done by The Contractor by IIT/ PEC or any other reputable agency approved by RTDC etc. shall be deemed to have been included in the quoted price.

1.5. The Contractor shall, at his own expense and without extra charges, make provision for all pumping, dewatering, dredging or bailing out water, if necessary, irrespective of the source of water. The water so pumped out shall be discharged as per local byelaws and as approved by the Engineer-in-charge. The Contractor shall also take all necessary precautions in diverting channels and in discharging the drained water as not to cause damage to the works, crops or any other property within/outside the plot. Excavated area for the basement/ foundation trenches shall be kept free from water while all the works below Ground level are in progress. Nothing extra shall be paid on this account in terms of time and cost.

1.6. Further Contractor shall take all necessary precautions to protect and safe guard the foundation of the adjacent building / Structure / Overhead/Underground utilities. Nothing extra shall be payable on this account.

2. **Construction Power, Water and other facilities**

2.1. RTDC may provide construction power for office purpose only, at one point, on chargeable basis. Client shall not provide power for any other purpose and the Contractor shall be exclusively responsible to make his own arrangements for supply of power for his use including area illumination, construction activities, fabrication, without any extra cost to Client.

2.2. RTDC shall provide water for construction purpose at one point in the vicinity of the site of Work. Contractor shall make all arrangements for distribution, storage, use and drainage of the same at his own cost.

2.3. RTDC shall endeavor to provide land out of available land to the Contractor, for the sole purpose of field office using Contractor's own container (porta cabin). No land shall be provided for accommodation of workers/labour.

2.4. The Contractor shall remove all temporary buildings / facilities etc. before leaving the site after completion of works in all respect. In the event that Contractor fails to clear the site within 3 weeks after receiving intimation from RTDC to do so, RTDC shall be free to engage the services of any third party to clear the site at Contractor's risk and cost. All expenses incurred on this account shall be recovered from the Contractor.

2.5. If RTDC provides water and electricity, the cost for such facility will be borne by the Contractor at the prevailing rates of local Government bodies as per actual.

3. TAXES, DUTIES, ROYALTY, PRICES

3.1. Royalty

3.1.1. All royalties etc., as may be required for any Borrow Areas, including right of way etc. to be arranged by Contractor shall be deemed to have been included in the quoted prices.

3.1.2. Contractor's quoted price should include the royalty on different applicable items as per the prevailing State Government rates.

4. Underground and overhead structures

4.1. The Contractor will familiarise himself with and obtain information and details from RTDC in respect of all existing structures, overhead lines, existing pipelines and utilities existing at the job site before commencing work. The Contractor shall execute the work in such a manner that the said structures, utilities, pipelines etc. are not disturbed or damaged, and shall indemnify and keep indemnified RTDC from and against any destruction thereof or damages thereto.

5. Electrical Contractor's License

5.1. The Contractor or its nominated Sub-Contractor(s), as the case may be, shall have a valid electrical contractor's license for working in the State in which the job site is located. The CONTRACTOR shall furnish a copy of the same to Engineer-in-charge before commencement of any electrical work or work pertaining to Electrical System.

6. **Project Review Meetings**

6.1. The Contractor, immediately on award of work shall submit details of his key personnel to be engaged for the work at site. In addition, he shall furnish the Engineer-in-Charge detailed programme of his staff involved with the work.

6.2. The Contractor shall present the programme and status at various review meetings as required.

6.3. Weekly Review Meetings: Shall be attended by Local Team of Contractor headed by Project - in-Charge.

Agenda	a) Weekly programme v/s actual achieved in the past week and programme for next week. b) Remedial Actions and hold up analysis.

	c) Client query approval.

6.4. Monthly Review Meetings: Shall be attended by Project-in-Charge and the Management Representative who can take independent decisions

Agenda	a) Progress Status/Statistics. b) Completion Outlook. c) Major hold ups / slippages. d) Assistance required. e) Critical issues. f) Client query/approval. g) Anticipated cash flow requirement for next two months

7. PROJECT OFFICE ACCOMMODATION

7.1. The Contractor shall provide, erect and maintain at his own cost separate temporary water tight, Puff insulated air-conditioned office accommodation in the form of two (02) Nos. Porta Cabins each of size 20‟ X 10‟ or Quantity and Size of Porta cabin as approved by RTDC at designated locations for the use by RTDC with the following minimum facilities in each cabin. These shall be available till handing over of the project.

7.1.1. Toilet facility - 1 No. portable for each cabin
7.1.2. Modular Work Stations - 3 Nos. in each cabin
7.1.3. Executive Chairs - 3 Nos. shoulder rest
7.1.4. Visitors Chairs - 6 Nos.
7.1.5. Overhead Storage Racks - All along the walls
7.1.6. Adequate Number of Power plugs –
7.1.7. White Board with Markers - 1 No. in each cabin
7.1.8. Pin-Up Display board of size as required
7.1.9. Free Drinking water, stabilised power and lighting as required for the duration of the Project.
7.1.10. Janitorial and Housekeeping services

7.2. The Contractor has to relocate the Porta Cabins if required as per the exigencies of the Work and as directed by RTDC without any extra cost. After completion of the Project the Contractor shall take away this material and the site shall be cleaned free from all construction debris.

8. RECOMMENDED MAKES OF MATERIALS

8.1. A list of recommended makes of materials is as per Tender Document

8.2. The order of preference amongst the various products/materials shall be as follows:

8.2.1. The products / materials shall be as per the Brand specified in the Tender document

8.2.2. If the Brand is not specified then the products/material shall be ISI marked and the same shall be got approved by the Engineer-in- Charge before execution.

8.2.3. If ISI marked product/material is not available, the same shall be as approved by the Engineer-in-Charge before execution.

8.3. In case of natural products such as Kota stone, Marble, Granite etc.,

8.3.1. the stones used shall be of **premium** grade and they shall be homogenous in colour with consistency in pattern, texture, tone, marking and colour. No discolouration, spots, fissures or cracks and pocked surfaces shall be allowed.

8.3.2. Where it is difficult to guarantee uniformity in colour and other properties, Contractor shall make all efforts to match the colour, shade, texture of the product with the approved sample. If in the opinion of the RTDC there is significant variation in properties, RTDC shall direct the Contractor to remove the same from the site immediately and replace with products matching with the approved sample within reasonable period. The decision of RTDC shall be final and binding.

9. COMPLETION CERTIFICATES/ NOC FROM LOCAL STATUTORY BODIES

9.1. Contractor has to arrange at his own cost building/ work completion certificates or NOCs if required to be obtained, from the local statutory bodies of central and state govt. such as Municipal Corporation, electrical, safety, Fire authority, Chief Controller of Explosives (CCOE) etc. Any fees required for obtaining such NOCs shall be paid by RTDC on production of relevant depository challans/ receipts from such Govt. authorities. Initial building approval drawings shall be made available by RTDC

9.2. The application on behalf of RTDC for submission to relevant authorities along with copies of required certificates complete in all respects shall be prepared and submitted by the Contractor well ahead of time so that the actual construction / commissioning of the work is not delayed for want of the approval inspection by concerned authorities.

9.3. The inspection of the Works by the authorities shall be arranged by the Contractor and necessary co-ordination and liaison work in this respect shall be the responsibility of the Contractor.

10. TOOLS, PLANTS AND MACHINERY ("T&P")

10.1. The Contractor shall provide and install at site adequate T&P for construction of the Project Works. The deployment of T&P shall be planned as per work requirement to suit the nature, quantum and speed of the work for lifting/hoisting construction materials/equipment etc.

10.2. The T&P shall be maintained in good working condition throughout the progress of work.

10.3. All adequate precaution regarding formal upkeep of valid Statutory/Safety credentials of major construction equipment as directed by RTDC, their installation, operation, maintenance, materials etc., shall be taken care of.

10.4. The operating staff to be deployed shall be properly qualified and adequately trained and experienced. All safety precautions shall be taken during the project duration, against possible

accident. The Contractor shall deploy his representative to effectively enforce the safety rules and regulations in this regard.

11. Construction Equipment & Mechanisation of Construction Activities

11.1. The above list is only minimal and indicative. The Contractor shall deploy all necessary tools and plants as per the requirement of the work.

11.2. The Contractor shall without prejudice to his overall responsibility to execute and complete the Work as per specifications and Time Schedule, progressively deploy adequate equipment, and tools & tackles and augment the same as decided by Engineer-in-Charge depending on the exigencies of the work so as to suit the construction schedule.

12. INTERFERENCE WITH TRAFFIC AND ADJOINING PROPERTIES/ BUILDINGS

12.1. In case any operation connected with the Works requires temporary diversion of the traffic, or obstruction or closure of any road, or any other 'right of way', the approval of RTDC and the respective competent authorities shall be obtained at least one week in advance.

12.2. The Contractor shall at all times during execution of the Works, ensure an uninterrupted flow of traffic around the site so as not to cause any nuisance to the general public.

12.3. If in order to avoid undue interference with the traffic and adjoining properties, RTDC instructs the Contractor to take special precautions or work within restricted time periods; the Contractor shall carry out the Works during such time and in such manner as directed by RTDC.

13. LIGHTING & WATCH AND WARD:

13.1. The Contractor shall at his own cost take all precautions to ensure safety of life and property by providing necessary barriers, area lighting at the construction site and approaches, watchmen, necessary watch towers etc. during progress of work at all hours including night hours, if required, as directed by the Engineer-in-charge.

13.2. The Contractor shall be responsible for the watch and ward of all construction premises and buildings, safety of all fittings and fixtures including sanitary and water supply fittings and fixtures provided by him against pilferage and breakage during the period of installation till handing over of all the works to RTDC.

14. Monthly Bills of Contractor

Contractor shall submit Monthly bills for the Work executed. Minimum amount of such bills shall not be less than 5 % of Contract value.

15. Indicative Project Milestone and Time period of the Project

Entire project should be completed and delivered within six Months of time from the date of award of contract that includes Monsoon.

The time allowed for carrying out the Work as entered in the Tender shall be strictly observed by the Contractor and shall be reckoned from the date on which the Letter of Intent is given to the Contractor. The Work shall throughout the stipulated period of the Contract be proceeded with all due diligence as time being deemed to be the essence of the contract on the part of the Contractor.

The Contractor should complete the physical work as far as possible as per phase given below:

Indicative Time lines of the Project	Description	Execution Stage						O & M Stage
		Milestone – 1	**Milestone-2**	**Milestone - 3**	**Milestone-4**	**Milestone-5**	**Milestone-6**	**Y1-Y5**
	Time lines and Payment	Time line – 2 months Payment - 10%	Time line – 2 months Payment - 15%	Time line – 2 months Payment - 25%	Time line – 2 months Payment - 20%	Time line – 2 months Payment 20%	Time line – 2 months Payment - 10%	
	Civil Works	• Site Mobilization • Surveying works • Completion of Design • Validation of design from IIT / PEC/ NIT • Excavation work – 40%	• Excavation work – 100% • PCC – 100% • Foundation work – 100 % • Columns / walls (Lifts) – 20% • Columns lower Bridge – 50% • Buildings – upto GF slab -100%	• Columns / walls (Lifts) – 40% • Columns lower Bridge – 100% • Buildings – upto RF slab / machine room - 100% • Columns / walls (Lifts) – 60% • Columns upper Bridge – 50% • Slab lower Bridge- 100% • Brick work -100%	• Columns upper Bridge – 100% • Slab Upper Bridge- 100% • Plastering & D/w- 100% • Columns / walls (Lifts) – 100% • Lower Bridge Structure – 100% • Flooring & Finishing (Buildings) – 40%	• Upper Bridge Structure – 100% • Lower Bridge Roofing – 100% • Flooring & Finishing (Buildings) – 100% • Upper Bridge Roofing – 100% • Flooring & Finishing (lower Bridge) – 80%	• Flooring & Finishing (lower Bridge) – 100% • Flooring & Finishing (lower Bridge) – 100% • Painting and finishes – 100% • Defects Repairs – 100%	**As per RFP**
	Lift / Travelators			Work order for Equipments	• Site receiving of materials • Installation of lifts and Travelators	• Installation of lifts and Travelators • Testing & commissioning	• Testing & commissioning • All Complete	
	Services			Conduitings- 40%	• Wirings & Joints – 100 % • Fixtures & fittings- 60%	• Fixtures & fittings- 100% • Connections -100%		
	Site Development- Electrical					• Pathway / approach road – 60% • Pathway / approach road – 100%	Site clearance	

Note: 5% of the value of work shall be released on the completion of DLP

Full Work will be completed in one year including Monsoon.

However, deviations, if any, from above phasing will be got duly approved by the Engineer-in-charge.

The program for completion of Work shall be a part of the Contract Document in the form of Bar Chart/GANTT Chart. The Contractor is supposed to carry out the work and keep the progress as per Bar Chart/GANTT Chart. The Contractor shall complete the work as per the Schedule given in the Contract and the program submitted by the Contractor.

16. **Contract Execution**

All required documents for execution of the contract shall be submitted within 30 days from the date of issue of Letter of Intent. If the documents are not submitted within the stipulated time a penalty of Rs5000/- per day will be applicable to the Contractor. All contract documents need to be duly affixed with stamp duty properly signed along with evidence/proof of payment of security/contract fdeposit/within 30 days from the date of Letter of Intent received by him.

If the amount of the Contract Deposit to be paid above is not paid within 30 days from the date of issue of Letter of Intent, the Tender/Contractor already accepted shall be considered as cancelled and legal steps be taken against the Contractor for recovery of the amounts.

The amount of Security Deposit retained by the RTDC shall be released after expiry of period up to which the Contractor has agreed to maintain the work in good order is over. In the event of the Contractor failing or neglecting to complete their citification work within the period up to which the Contractor has agreed to maintain the work in good order, the amount of security deposit retained by RTDC shall be adjusted towards the excess cost incurred by the Department on rectification work

17. Action when whole of security deposit / Retention Money is forfeited:

In any case in which under any Clause of this contract, the Contractor shall have rendered himself liable to pay compensation amounting to the whole of this security deposit whether paid in one lump sum or deducted by installments or in the case of abandonment of the work owning to serious illness or death of the Contractor or any other cause, the Engineer-in-Charge shall have power to adopt any of the following process, as he may deem best suited to the interest of RTDC –

a) To rescind the contract(for which recession notice in writing to the Contractor shall be conclusive evidence) and in that case, the security deposit of the contract shall stand forfeited and be absolutely at the disposal of RTDC .
b) To carry out the work or any part of the work departmentally debiting the Contractor with the cost of the work, expenditure incurred on tools and plant, and charges on additional supervisory staff including the cost of work-charged establishment employed forgetting the unexecuted part of the work completed and crediting him with the value of the work done

departmentally in all respects in the same manner and at the same rates as if it had been carried out by the Contractor under the terms of this contract. The certificate of the Engineer-i n-Charge as to the costs and other allied expenses incurred and as to the value of the work so done departmentally shall be final and conclusive against the Contractor.

c) To order that the work of the Contractor be measured up and to take such part there of as shall be un-executed out of his hands, and to give it to another contractor to complete, in which case all expenses incurred on advertisement for fixing a new contracting agency, additional supervisory staff including the cost of work charged establishment and the cost of the work executed by the new contract agency will be debited to the Contractor and the value of the work done or executed through the new contractor shall be credited to the Contractor in all respects and in the same manner and at the same rates as if it had been carried out by the Contractor under the terms of his contract. The certificate of the Engineer-in-Charge as to all the cost of the work and other expenses incurred as aforesaid for getting the un-executed work done by the new contractor and as to the value of the works done shall be final and conclusive against the Contractor. In case the contract shall be rescinded under Clause (a)above, the Contractor shall not be entitled to recover or be paid any sum for any work there for actually performed by him under this contract unless and until the Engineer-in-Charge shall have certified in writing the performance of such work and the amount payable to him in respect thereof and he shall only be entitled to be paid the amount so certified. In the event of either of the courses referred to in Clause (b) or (c) being adopted and the cost of the work executed departmentally or through a new contractor and other allied expenses exceeding the value of such work credited to the Contractor amount of excess shall be deducted from any money due to the Contractor, by RTDC under the contract or otherwise, howsoever, or from his security deposit or the sale proceeds thereof provided, however, the Contractor shall have no claim against RTDC even if the certified value of the work done departmentally or through a new contractor exceeds the certified cost of such work and allied expenses, provided always that whichever of the three courses mentioned in clauses (a), (b) or (c) is adopted by the Engineer-in-Chief, the Contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials rented into any engagements or made any advance on account of or with a view to the execution of the Work or the performance of the contract.

Contract may be rescinded and security deposit forfeited for bribing a public officer or if Contractor becomes insolvent

If the contractor assigns or sublets his contract or attempts to do, or become insolvent or commence any proceeding to get himself adjudicated and insolvent or make any composition with his creditors, or attempts to do or if bribe, gratuity, gift, loan, perquisite, reward or advantage, pecuniary or otherwise, shall either directly or indirectly be given promised or offered by the contractor or any of his servants or agents through any public officer, or person in the employ of RTDC/Govt. in any way relating to his office or employment, or if any such officer or person shall become in any way directly or indirectly interested in the contract, the Engineer In-charge may there upon, by notice in writing rescind the

contract and the Security Deposit of the Contractor shall there upon stand forfeited and be absolutely at the disposal of RTDC and the same consequences shall ensure as if the contract had been rescinded under above clause hereof; and in addition the Contractor shall not be entitled to recover or be paid for any work therefore actually performed.

SECTION-7

DRAFT TRIPARTITE AGREEMENT

[This Tripartite Agreement is to be executed on Non-Judicial Stamp Paper of Rs 200/-]

TRIPARTITE AGREEMENT

BETWEEN

SHIMLA SMART CITY LIMITED
(A STATE GOVERNMENT COMPANY)
AND
(NAME OF DEPARTMENT)
AND
THE SELECTED BIDDER

The Government of India launched Smart City Mission on 25 June 2015 with an aim to take up 100 cities in the country to be developed as Smart Cities (to be selected after competing in Smart City Challenge) during the period of 5 years i.e. 2015-2019. Shimla City competed in the Round 3 of Smart City Challenge and ranked 15th position amongst 30 winning cities.

Shimla Smart City Limited (A Government of Himachal Pradesh Company) has been constituted under Indian Companies Act, 2013 as SPV (Special Purpose Vehicle) as per Guidelines of the Smart City Mission for implementation of Smart City Projects to ensure operational independence and autonomy in decision making and commitment of all stakeholders, coordination of the line departments and community ownership of the projects. This tripartite memorandum seeks to lay our respective responsibilities and reciprocal commitments linked to fund flows to ensure effective and timely execution of all projects by all stakeholders.

This Tripartite Agreement made on this ……day of ……

BETWEEN

1. **SHIMLA SMART CITY LIMITED**, a **Company** incorporated under the Indian Companies Act, 2013 having its registered office at 2nd Floor, Community Centre Building, Sector-II, New Shimla, Shimla, Himachal Pradesh, India, 171009, represented by its authorized officer……, hereinafter referred to as the "**COMPANY"**(which expression shall, unless it be repugnant to the subject or context or meaning thereof be deemed to mean and include its successors or assigns) of the **FIRST PART.**

AND

2. **Ropeway and Rapid Transport System Development Corporation Limited (RTDC)** is a local self-government and runs its operations under …….having its registered office at U.S Club Shimla, represented by its authorized officer……., hereinafter referred to as the "**RTDC**" (which expression shall, unless it be repugnant to the subject or context or meaning thereof be deemed to mean and include its successors or assigns) of the **SECOND PART.**

AND

3. **THE SELECTED BIDDER**, M/S_____ hereinafter referred to as the "Contractor**"** (which expression shall, unless it be repugnant to the subject or context or meaning thereof be deemed to mean and include its successors or assigns) of the **THIRD PART.**

NOW, THEREFORE, IT IS HEREBY AGREED between the Parties as follows:

ARTICLE I

Obligations of the Shimla Smart City Limited (SSCL)

The Shimla Smart City Limited has agreed and affirmed that:-

(1) Funding support shall be made available for Construction of Lifts and Escalators in Shimla on EPC mode as per the provisions in Shimla Smart City Proposal.

(2) The payments shall be made directly by SSCL to the contractor/ firm on completion of each milestone as per the terms of the tender subject to the availability of funds with SSCL. There shall not be any transfer of funds from SSCL to RTDC.

(3) SSCL shall monitor and review the implementation of the funded project.

(4) No extra cost on account of O&M shall be borne by SSCL except the one as already included in the warranty/ maintenance period as mentioned and included

in the award letter. SSCL shall also not be a party to the losses suffered by the RTDC.

(5) The coordinating officer as appointed by SSCL shall coordinate for effective and timely implementation of the project.

(6) The accounts of the funds released and the expenditure incurred through these funds shall be maintained properly as per audit requirement and shall be open to inspection by the CAG/Statuary Audit/ local SSCL Audit. The same will have to be produced before Audit Authorities as and when required/ requisitioned by them. In case of construction / improvement works, photocopies of the measurement books (for the work which was executed from SSCL's funds) shall also be sent to SSCL/ concerned Audit officer.

(7) All procedural, codal and financial formalities shall be completed.

(8) The consultancy, if required by RTDC may be sought after observing codal formalities of RTDC. The expenditure on this account shall be borne by Shimla Smart City Ltd. as per advisories for Smart City Mission issued by MoHUA, Govt. of India from time to time.

(9) The supervision charges/departmental charges as applicable in RTDC shall be paid by Shimla Smart City Ltd. as per MoHUA Advisories issued from time to time.

ARTICLE II

Obligations of the *RTDC*

The RTDC has agreed and affirmed that:-

1. The projects/components shall be technically sanctioned by RTDC under its own delegated powers. However, the Administrative Approval/ Expenditure sanction shall be accorded by Shimla Smart City Ltd. as per its Delegation of Powers.

2. The project would be funded from Shimla Smart City Mission subject to availability of funds and as per the advisories for Smart City Mission issued by MoHUA, Govt. of India from time to time. The RTDC shall raise necessary demand/expenditure to SSCL for releasing the payment directly to the contractor/firm as per milestones, etc.

3. The RTDC shall ensure effective and efficient implementation of the project including supervisions, quality control arrangement & mechanism adhering to the rules of financial proprietary and schedule of powers and should submit monthly progress report to SSCL.

4. The RTDC shall obtain and arrange for the maintenance in full force and effect of all Government approvals, consent, licenses, authorizations, declarations, filings and registrations as may be necessary and advisable for the performance of the project.

5. Monthly progress report in respect of Construction of Lifts and Escalators in Shimla on EPC be supplied to SSCL on regular basis. A review of the project/ component would be taken by the Board of SSCL on quarterly basis, for which

purpose a quarterly progress report vis-à-vis the target dates be furnished to this SSCL as also the same shall be presented by the RTDC to the Board of Directors of SSCL.

6. The RTDC shall designate a responsible officer to facilitate regular contact with SSCL to discuss issues arising in relation to the above Project.

7. SSCL should, at all times, have the power to inspect, monitor and supervise implementation of the project in accordance with contract conditions and give such directions to RTDC as may be necessary for this purpose.

8. RTDC shall maintain complete records of works for the purpose of inspection of any agency authorised by SPV/ State Government / Government of India.

9. The records of all assets acquired out of the funds released by the SSCL to the Contractor, shall be made available for scrutiny of audit. Such assets shall not be, without the prior approval of SSCL be disposed off, encumbered or utilized for the purpose other than those for which the fund is approved and provided.

10. A statement showing the extracts of the assets created out of the funds released by SSCL shall be furnished to SSCL annually by 31st May of each year or as required by the SSCL from time to time.

11. RTDC shall maintain the created / developed assets during Defects Liability Period (DLP) or handover of possession to any agency designated by SSCL.

12. The RTDC shall share with SSCL the revenue of net profits from the SSCL funded project on mutually agreed terms and conditions. The O & M costs, losses, if any, in the project shall solely be borne by the RTDC. SSCL shall not be party to the losses suffered by the RTDC.

13. The project shall be under the name and banner of Shimla Smart City Limited. The display board shall be erected at site during construction and upon successful completion of work.

OR

The equipment shall be operated under the name and banner of Shimla Smart City Limited. The same shall be prominently painted on the equipment/ vehicle.

(as is applicable)

14. All procedural, codal and financial formalities shall be completed.

15. The Department shall be bound to adhere to the decisions of the Board of Directors of SSCL from time to time in respect of the project being implemented on behalf of SSCL.

16. The consultancy, if required by RTDC may be sought after observing codal formalities of RTDC. The expenditure on this account shall be borne by Shimla Smart City Ltd. as per advisories for Smart City Mission issued by MoHUA, Govt. of India from time to time.

17. The supervision charges/departmental charges as applicable in RTDC shall be paid by Shimla Smart City Ltd. as per MoHUA Advisories issued from time to time.

ARTICLE III

Obligations of the Contractor

The contractor, M/s …….. has agreed and affirmed that:-

1. The contractor shall follow all terms & conditions of bid documents & the agreement entered into with the RTDC and SSCL. It shall ensure timely execution of work as per scope and specifications, within all quality control measures.

2. The contractor/selected Bidder should keep and maintain site record and allow inspection by SSCL/ RTDC or their any authorized person/authority and provide full assistance during inspection.

3. SSCL and RTDC should, at all times, have the power to inspect, monitor and supervise implementation of the project in accordance with contract conditions and give such directions to the contractor as may be necessary for this purpose.

4. The project shall be under the name and banner of Shimla Smart City Limited. The display board shall be erected at site during construction and upon successful completion of work.

   OR

   The equipment shall be operated under the name and banner of Shimla Smart City Limited. The same shall be prominently painted on the equipment/ vehicle.

   (as is applicable)

5. All procedural, codal and financial formalities shall be completed.

6. Contractor shall repair and maintain the equipment /facilities/appurtenants etc. as per the conditions stipulated in the tender document/ Letter of Intent. The earnest money shall be released as per the conditions mentioned in the tender document/Letter of Intent.

ARTICLE IV

Consequences of non-observance of the terms of the Tripartite Agreement

(In case of non-observance of the terms of this agreement).

1. The payments/funding support under the Project would henceforth be stopped by SSCL.

2. Non observance of this agreement leading to loss of equipments and violation of provisions may lead to penal action on the defaulting party.

3. Any difference or dispute between Parties concerning the interpretation and/or implementation and/or application of any of the provisions of this Agreement shall be settled amicably through mutual consultation or negotiations between the Parties. In case the disputes are not still settled then all disputes arising under pursuant to and/or in connection with the Project shall be governed and construed in accordance with the laws of India including Arbitration Conciliation Act 1996 and Courts at Shimla.

4. This Agreement will come into effect on date of signature by all partners and will end after 5 years/successful completion of works/installation of equipments etc. upto the defect liability period, or the period as decided mutually, whichever is later.

5. This Agreement may be varied at any time by mutual agreement of the parties in writing. It shall be reviewed one month before the end of contract date or at a time mutually agreed by the parties for possible renewal.

6. Each Party might bring this Agreement to an end by giving a 30 days' notice to the other parties, via written notice of Government/ House Resolution to this effect.

7. Nothing contained in this Agreement shall be construed as establishing or creating between the Parties, a relationship of master and servant or principal and agent or Employer.

8. Any failure or delay on the part of any Party to exercise right or power under this Agreement shall not operate as waiver thereof.

9. The Contractor shall notify the SSCL and RTDC of any material change in their status, in particular, where such change would impact on performance of obligations under this Agreement.

10. The contractor shall at all times indemnify and keep indemnified the SSCL and RTDC against all claims/damages etc. for any infringement of any Intellectual Property Rights (IPR).

11. The contractor shall at all times indemnify and keep indemnified the SSCL & RTDC against any claims in respect of any damages or compensation payable in consequences of any accident or injury sustained or suffered by its employees or agents or by any other third Party resulting from or by any action, omission or operation conducted by or on behalf of the RTDC or the contractor.

12. The contractor shall at all times indemnify and keep indemnified the SSCL and RTDC against any and all claims by Employees, Workman, Consultants, Contractors, sub-contractors, suppliers, operators, agent(s), employed engaged or otherwise working for the contractor, in respect of wages, salaries, remuneration, compensation or the like.

13. All claims regarding indemnity shall survive the termination or expiry of the Contract.

14. It is acknowledged and agreed by all Parties that there is no representation of any type, implied or otherwise, of any absorption, regularization, continued engagement or concession or preference for employment of persons engaged by the contractor/RTDC for any engagement, service or employment in any capacity in any office or establishment of the Government of India/ State or the SSCL.

ARTICLE V

Taxes and Duties

1. Party of the 3rd Part i.e Contractor is requested to familiarize itself with the laws, rules and regulations prevailing in India and consider the same while developing and submitting their proposal.

2. All taxes i.e. GST, Income Tax, Labour Welfare Cess and other levies payable by contractor on goods, equipments, components, sub-assemblies, raw materials & any other items used for their consumption or dispatched directly to Shimla Smart City Limited by the contractor or their sub suppliers shall be included in the bid price & any such taxes, duties, levies additionally payable will be to contractor's account & no separate claim on this account will be entertained by Shimla Smart City Limited.

3. The Contractor shall be liable and pay all Non-Indian taxes, duties, levies, lawfully assessed against the party of 1st part i.e Shimla Smart City Limited in pursuance of the contract. Tax liability, if any, on contractor's personal income & property shall be borne by it and shall be its responsibility as per Tax Laws of India.

4. Shimla Smart City Limited shall be entitled to deduct applicable tax (if any) at source as per Indian Laws from all payments due to the Contractor under the contract.

5. As regards the Indian Income Tax, surcharge on Income Tax and any other Corporate Tax, Shimla Smart City Limited shall not bear any tax liability, whatsoever, irrespective of the mode of contracting. The Contractor shall be liable and responsible for payment of all such taxes, if attracted under the provisions of the law.

6. If any rates of taxes/duties/levies (hereinafter called 'Tax') are increased or decreased, a new Tax is introduced, an existing tax is abolished or any change in interpretation or application of any tax occurs in the course of the performance of contract, which was or will be assessed on the Contractor in connection with performance of the contract, an equitable adjustment of the contract price shall be made to fully take in to account any such change by addition to the contract price or deduction there from, as the case may be. However, these adjustments would be restricted to direct transactions between Shimla Smart City Limited and the Contractor and not on procurement of components/products/services etc. by the Contractor and shall also not be

applicable on the bought out items dispatched directly from sub vendor's works to site.

IN WITNESS WHEREOF, the representatives of the Parties to this Agreement being duly authorized have signed this Agreement as of the day, month and year first above written.

Signed for and on behalf of Shimla Smart City Limited 2nd Floor, Community Centre, New Shimla, Shimla-171009	**Signed for and on behalf of,** *(RTDC)*	**Signed for and on behalf the contractor**
Name & Designation (With Stamp) Dated:	**Name & Designation (With Stamp) Dated:**	**Name & Designation (With Stamp) Dated:**

SECTION-8

SCOPE OF WORK, EMPLOYER'S REQUIREMENT

AND

TECHNICAL SPECIFICATIONS

1. SCOPE OF WORK

The bidders will be responsible for:

1.1. **Designing, constructing / erecting / installing, operating and maintaining of 04 numbers of lifts and travelator along with interconnecting foot over pedestrian bridge and Ticket counter buildings as per the conceptual drawings through Lump sum contract with two years DLP (defect Liability Period). The operation and maintenance of the elevators and travelators shall be with the Bidder for 05 years.**

1.2. **Making Power connection to elevators and all electrical fittings up to the power meter; power connection & external electrification charges will be borne by the Bidder.**

1.3. **The entire Cost of Manufacturing, Installing, erecting and Operating of these elevators and travelators shall be borne by the Bidder.**

1.4. **Quality control and monitoring systems to be incorporated as per the relevant IS codes**

1.5. **Proper arrangement for the disposal of snow during winter season.**

1.6. **Making own arrangement during non-availability of electricity. RTDC is not liable to supply of electricity during such period, and nothing is payable by RTDC to the Bidder during such periods.**

1.7. **Any other related works/activities as may be necessary for its successful operation.**

1.8. **elevators will be constructed as per the layout approved by the RTDC.**

1.9. **elevators should be equipped with provision sensor based start and stop movements.**

1.10. **Area for the provision of Commercial advertisements.**

1.11. **Proper Illumination and LED signage to the entire area.**

1.12. **Option for smart ticketing system.**

2. GENERAL REQUIREMENTS

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2.1. **The Bidders advised to analyse the area on their own before quoting their rates in Financial Bid, Volume III. No extra claim will be entertained after the allotment of the work on this account.**

2.2. **The Bidder has to design supply, erect, install, commission, and maintain the elevators and travelator for five Years. The bidder will maintain a safe, clean and hygienic environment in and around the Elevator and travelator.**

2.3. **The design of structure shall be vetted by IIT/ PEC or NIT. The cost of design vetting shall be borne by the Bidder only**

2.4. **The Attendant of Bidder shall be available at the elevators during the operation time.**

2.5. **The maintenance of elevators and travelator, electrical services etc. shall be responsibility of bidder during the Contract Period.**

2.6. **Making connection suitable external electrical / illumination shall be the part of the contract. No extra claim shall be entertained under such heads**

2.7. **The vertical height of the elevators are 36 meters and 18 m respectively (excluding the height of machine room and lift pit). Variations shall be as per the clause mentioned herein this documents**

2.8. **The length of the travelator shall be of _____ meter (as per specification)**

2.9. **The building at 2185 level shall be double height (G +1) having are of appox 445.0 sqm.. The length of interconnecting foot over bride at level 2221 shall 0f appox 42.0 meter cover structure as indicated in the conceptual drawings. The building at exit level i.e at 2245.6 level shall be of appox area of 105 sqm.**

2.10. **The site development work shall be of 150 sqm as indicated in the conceptual drawings.**

2.11. **The Bidder shall install the required equipment and maintain the same for a period of 05 years from the date of commissioning of Elevators and travellator, as per the conditions prescribed in this document, and in the time frame prescribed at his own cost.**

2.12. **The Bidder shall perform all routine maintenance to ensure that all Elevators and travelator shall remain in working condition.**

2.13. **The Bidder will depute duly trained Operators at Elevators and travelator . The Bidder shall ensure routine inspection of the equipment by the equipment supplier.**

2.14. **[illegible]**

2.15. **The Bidder will be responsible for maintaining the service levels standards otherwise penalty will be levied as per penalty clause.**

2.16. **The Bidder shall provide trained manpower to maintain the Elevators and travelator to ensure the provision of quality services.**

2.17. **The Bidder shall provide and maintain the electrical and plumbing fittings of all types at the Elevators in good working condition.**

2.18. **Bidder should ensure that all the Elevators and travellator are working all the time and annual repair/maintenance etc. shall be carried out periodically at his own cost.**

2.19. **All expenses shall be borne by the Bidder.**

2.20. **Electric supplied through connection by the RTDC (if any), will be charged from Bidder on Commercial rates applicable from time to time.**

2.21. **Online information of daily report to RTDC.**

2.22. **RTDC has reserve the right to inspect any Elevator and travelator at any time during the working hours.**

2.23. **Bidder may propose a better alternative option with value engineering, maintaining the concept of the project, at his own cost. However, RTDC reserve the right of acceptance for such new innovative ideas**

3. INDICATIVE MILESTONE TO BE ACHIVED DURING EXECUTION

Entire work shall be completed as per time schedule mentioned in tender document. However, the same shall be finalized mutually after award of work based upon CLIENT's requirement and contractor shall furnish micro detailing including resource planning to achieve completion of the project. Such detailed schedule to be furnished by the contractor within 10 days of date of issue of Letter of Intent .

4. APPLICABLE PERMITS:

The Contractor shall obtain, as required under the Applicable Laws, the following Applicable Permits:

a) It shall be the Contractor's responsibility to arrange for inspection of elevators by the inspector or local authority. However, the actual deposited fees, if any for the inspection shall be borne by the contractor. The Contractor shall also be responsible for follow up action and obtain and deliver to the Owner/Employer the license/ permit required under the local/ provincial / national regulations/bye-laws free of cost. Nothing extra whatsoever on this account shall be paid to the contractor. Any other permits, clearances or approvals required under Applicable Laws.

b) License: - It is mandatory to obtain the licenses to install, operate and maintain the lifts/ Escalators from Lift/ Escalators Inspector (P.W.D.) Government of HIMACHAL, by paying necessary government charges. The Price quoted shall be inclusive of this.

5. SPECIFICATIONS:

5.1. This specification is the minimum requirement and should be read in conjunction with relevant latest CPWD / NBC specifications, requirements, rules and regulations of Lift/ Escalators Act of Himachal Pradesh, amended till date. Any additional requirements shall be offered by BIDDER as per CPWD/NBC specifications, requirements, rules and regulations and the same shall be indicated in the BID write up.

5.2. Materials of construction: The materials of construction to be used in the Work shall be governed by the provision of part V of the National Building Code of India, 1970 and relevant Indian Standard Specifications with amendments and revisions issued upto the date of issue of tender notice.

5.3. Workmanship: The Work shall be carried out according to the specifications referred to hereinafter and according to sound engineering practice. The decision of the Engineer in Charge in respect of workmanship shall be final.

5.4. Specifications: The contractor shall execute the work in conformity with the standards and procedure laid down in the National Building Code of India, 1983/CPWD/NBC/HPPWD Specification or special specification (whichever is applicable), Himachal Pradesh Lift Act/ Rules and in accordance with the approved drawings.

5.5. Maintenance of Roof: Subject to provision in the agreement, it will be responsibility of the contractor to see that the building does not leak for a period of not less than 10(Ten) years to be reckoned from the date of expiring of the Defect Liability period, prescribed in the contract . The Contractor will make good and replace all the defective work on this account at his own cost and risk.

5.6. Contradictions : In the event of contradiction, if any, between specifications and codes and practice, referred to above, the decision of the GM/CGM/RTDC shall be final and binding on the contractor.

5.7. All safety considerations in design, manufacturing and installation of equipments and systems for safe operation & maintenance by Contractor's personnel and safe practices during installation at site shall be in the scope of the BIDDER. Cost towards accomplishing the same shall be included in the BID price and no extra claim shall be entertained later.

6. LIST OF SUBMISSIONS

6.1. Submission of equipment/ system Detail Engineering drawings, Data sheets, sizing Calculations etc. for review and approval by CLIENT before execution/ procurement and manufacturing; and test reports, commissioning reports and performance reports of all electrical system/ equipment for review & acceptance by CLIENT.

6.2. Submission of all "As Built" drawings, Data sheets, Calculations etc. after execution and commissioning of the equipment and systems above.

6.3. Submission of relevant documents and drawings to the concerned statutory authorities/ agencies and getting clearance and approval for the supplied and installed equipment under this specification is solely the responsibility of the BIDDER.

6.4. All coordination for Liaison and obtaining required mandatory approvals/ NOCs from Electrical Inspector, Lift/ Escalators Inspector and any other Statutory Authority as applicable for drawings & documents, initiation of works, Load release, charging and commissioning of entire power distribution system within the scope of the Bidder.

7. LIST OF RECOMMENDED MAKES FOR VARIOUS COMPONENTS

7.1. All the equipment shall be of makes listed in the enclosed list of approved makes of equipment. BIDDER shall submit the offered make from the list along with the BID. For any deviation at any stage prior approval shall be taken from CLIENT. Highlighted makes are preferred makes. However, CLIENT reserves the right to select the makes of the following during approval stage.

7.2. List of makes of equipment and system are included in the respective specification section.

7.3. In case of absence of such lists, equipments should adhere to BIS, other relevant Indian codes/or from a manufacturer eligible as per the term and condition of this tender document

8. PERFORMANCE CRITERIA

The contractor shall carry out the work in accordance with the detailed design and Good for Construction drawings to be prepared by the Contractor. Preliminary Drawings, Specifications, data sheets and other documents shall form part of the Contract.

The contractor shall be fully responsible for the performance of the selected equipment (installed by him) at the specified parameters and for the efficiency of the installation to deliver the required end result.

The contractor shall guarantee that the system as installed shall perform to complete satisfaction and requirements of the Owner.

The contractor shall also guarantee that the performance of various equipments individually and integrated shall not be less than the quoted capacity; also actual power consumption shall not exceed the quoted rating, during testing and commissioning, handing over and guarantee period as mentioned in technical specification.

Rating of all items shall be appropriate for the conditions on the particular site on which the item will be used. All the equipment shall be fit for continuous work under the most severe weather conditions at site.

At the close of the work and before issue of final certificate of virtual completion, the contractor shall furnish written performance guarantee against defective materials and workman-ship for a period of five years from date of testing, commissioning and handing over.

The Contractor shall hold himself fully responsible for reinstallation or replacement free of cost to Owner the following:

a) Any defective work or material supplied by the Contractor.
b) Any material or equipment damaged or destroyed as a result of defective workmanship by the Contractor.

MANUFACTURERS

- All the equipments to be supplied under this contract have to be of reputed makes. The equipment of those manufacturers, who have sufficient proven experience of manufacturing the respective equipment of similar capacity, shall be considered. The respective equipment should have been manufactured, supplied, installed, commissioned successfully and should be running satisfactorily since at least last 5 years continuously. Certificates from end users, regarding their satisfactory Performances, shall have to be submitted in this regard.

- Where manufacturers have furnished specific instructions relating to the materials used in this job, covering points not specifically mentioned in these documents, these instructions shall be followed in all cases.

- Where manufacturer's names and/or catalogue numbers are given, this is an indication of the quality, standards and performance required.

- For items not covered under the List of Approved Makes', contractor shall offer items of first class quality, standards and performance and obtain the approval of Engineer-in-Charge before procuring them.

- Where interfacing occurs, all equipments shall be mutually compatible in all respects.

9. TECHNICAL SPECIFICATIONS

Technical Specifications mentioned are the minimum required specifications and bidder can offer the product meeting the minimum specifications or exceed the specifications. Bidder is required to provide the offered model and Make along with technical compliance and OEM's Datasheets in technical bid. The bid without technical compliance shall be considered non responsive and rejected.

10. OPERATION & MAINTENANCE

10.1. Operation and Maintenance

The Contractor shall also be required to operate and maintain the system Designed, Supplied, Installed, tested and commissioned by him, for the duration specified under contract document. The Operation and Maintenance Contract shall be comprehensive type. The Contractor shall take full responsibility for the care of the electrical, electro-mechanical services/ system and other allied systems during the contract period till it is handed over to the Owner at the end of O&M period. If any loss or damage occurs to the treatment works or to any other system, during the period for the contractor is responsible, the contractor shall rectify such loss or damage, at his cost, so that all the electrical, electro-mechanical services/ system conforms to its condition when the contractor took possession at the commencement of the contract.

10.2. O&M shall be initiated after completion of installation and commissioning of lifts & travelators system and issue of completion certificate by CLIENT after due inspection and testing.

10.3. The contractor shall be responsible for maintaining/ repair/ replacement, comprehensively during the tenure of the contract.

10.4. The Contractor shall be responsible for, but not limited to, the following:

a) Providing the required staff, but not less than the minimum specified numbers/ level, during operation and maintenance period and additional staff as per requirement during periodic maintenance and in emergencies.

b) The Contractor shall also acknowledge that the CLIENT/Owner and the CLIENT/Owner's Personnel and other contractors may be carrying out work at the

facilities and shall endeavor to fully co-operate and work in a manner so as not to cause any obstruction or hindrance to them.

c) Providing all required consumables such as spares, tools, tackles & equipment and consumables required for functioning of equipment.

d) Establish work control procedures including preventive and corrective maintenance so that the entire electrical, electro-mechanical services/ system shall work in automatic mode and/or semi automatic at all times.

e) Preventive maintenance shall be done as per manufacturer's O&M manuals.

f) Submission of monthly report.

g) The Contractor shall be solely responsible for the safety and security of the goods in the store and will be responsible for any loss or damages in stores for any reason.

h) Proper maintenance and housekeeping along with provision of all tools & equipment.

i) Insurance: The Contractor shall, without limiting his or the Owner`s obligations and responsibilities, undertake the following;

- **i.** The insurance shall be at the Contractor`s cost and shall cover the Owner and the Contractor against all losses or damages from whatsoever cause arising from the start of the O&M until the date of completion of O&M in respect of the facility or any section or part thereof as the case may be.
- **ii.** Insurance shall cover for all the Civil, mechanical, electrical and instrumentation works together with material to the full replacement cost.
- **iii.** Any amount not insured or not recovered from the insurer shall be borne by the Contractor.

- The Contractor shall comply with all Applicable Law relevant to the Contractor's Personnel, including Applicable Law relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights.
- The Contractor shall ensure his employees to obey all Applicable Laws, including those concerning safety at work.
- In the event Owner becomes liable to any Owner/Contractor's Personnel, any Governmental authority (including but not limited to any fines or penalties levied by or payable to such authority) or to any other third party under the provisions of any Applicable Law resulting from Contractor's failure to comply with such Applicable Law, Contractor shall reimburse Owner for all payments required to be made by Owner to such Owner/Contractor's Personnel, Governmental authority or any other third party, plus the actual expenses that Owner may incur in investigating, settling or defending any litigation or threatened litigation.
- The Contractor will not be entitled to sub-contract any part of his obligation under these conditions to any third party without prior approval of the Owner. Neither party may assign their rights and obligations under these conditions without the consent of the other Party. However, the Owner may assign any

rights under these conditions to any financial institution from whom any financial assistance/credit facilities have been availed by the Owner.

- In the event of an emergency the Contractor shall forthwith notify the Owner of the emergency, the expenditures made and the operating actions taken.
- In the event of an emergency endangering any life or property, the Contractor shall immediately take such action as may be necessary to prevent, avoid or mitigate injury, damage or loss and shall, as soon as possible, report any such incidents, including his response thereto to the Owner.
- The Contractor shall be solely and exclusively responsible for obtaining all necessary permits and consents required by Applicable Law or any Governmental authority for the Contractor to carry out the O & M Services.
- Owner/Client's representative can inspect the facility at any moment during the O& M period. The Contractor at its own cost shall provide any assistance required for such inspection of the building.
- Contractor shall carry out the following maintenance activities

a) Contractor should carry out Operation and Maintenance requirements as per O&M manual of each equipment.
b) Carry out Preventive & Predictive maintenance of the equipment and associated system to ensure the health of the network.
c) Carry out breakdown maintenance of equipment and systems including identifying the fault and its location; repairs with all required spares and tools; testing and regularize the operations with minimum downtime.
d) Maintain the Critical Spares required for emergency resolution of outages of Key equipments and systems.
e) Carry out Root Cause Analysis to find the reasons and taking measures to eliminate its reoccurrence.
f) Provide required all the necessary latest Tools and Tackles along with Test Equipments for carrying maintenance activities
g) Necessary Human Safety Norms as per the updated Indian Electricity Rules.

1. **LIFT/ELEVATOR**

Sl. No.	**Name of the activity**	**Frequency of Checks**	**Remarks**
1	Check and clean car door sill& landing door sill.	Every week	
2	Check and replace, if necessary, lights	Every 3 month	
3	Check operation of elevator control system.	Every 3 month	
4	Check proper operation of car operating panel & landing operating panel.	Every 3 month	

5	Check & if necessary, replace all limit switches, control interlock for safety operation.	Every 6 month	
6	Check condition of Hoist pulley, wire rope and other parts for wear & tear, if necessary, replace it.	Every Year	
7	Check operation of machine drive	Every Year	

2. **CABLES**

Maintenance tests can detect problems in cables that are approaching failure without accelerating the insulation deterioration process due to operational or environmental conditions. Except for infrared scanning, de-energize the cable circuit before maintenance.

Sl. No.	**Name of the activity**	**Frequency of checks**
1	Equipment Ratings	Every 5 year
2	Visual inspection of cables	Every month
3	Checking and recording or IR values of all cables with megger of suitable range.	Every month
4	Checking all cable terminals &joins for overhauling / loose connections and tightening, terminating, rejoining, if required	Every month

3. **EARTHING SYSTEM**

Sl. No.	**Name of the activity**	**Frequency of checks**
1	Checking of all earthing connections, joints and cleaning and tightening thereof	Every 3 month
2	Putting adequate quantity of water in earth pits.	Every 3 month
3	Checking and recording of earth resistance of all points, pits and taking corrective action to improve it, if required.	Every 3 month

Maintenance schedules listed in the manual are to be adhered by the Operation and Maintenance staff and observation so made during such inspections are required to be properly recorded giving complete details of the activity, observed parameters, remarks/views about the inspection carried out. Such observations are to be duly signed by the Maintenance Engineer in-charge and deviations with reference to acceptable norms/limits are to be approved by the competent authority having requisite

experience and expertise since this is considered very vital for providing reliable and quality power to the consumers.

4. Preventive maintenance:

4.1. The Contractor shall plan the day-to-day and the preventive maintenance shall be done as per manufacturer's O&M manuals.

4.2. Checks to be performed daily

a) Tightness
b) Working of gauges and other measuring devices.

4.3. Checks to be performed weekly

a) Pipeline leakages (IF APPLICABLE)
b) Tightness of all electrical connections
c) Tightness of all cable connections
d) Operation of all sluice and butterfly valves, scour and pressure relief valves, gates and air valves. (IF APPLICABLE)
e) Contractor shall be equipped with dewatering pump of required capacity of pumping sewage; the unit shall also consist of power generating set.
f) All parts of the machinery and electrical equipments liable to wear and tear shall be replaced by the contractor as per direction of Engineer in charge.
g) Current and voltages in all electrical equipments.

4.4. Checks to be performed monthly

a) Gl and packing (IF APPLICABLE)
b) Wear and tear of moving parts.
c) Maintenance of Battery, etc. shall be carried our as approved by the Engineer-in-charge.

4.5. Checks to be performed bi-annually

a) Battery and Battery charger

4.6. Checks to be performed annually

a) Overhauling requirement of all equipment
b) Testing and calibration of all instruments

5. Safety

5.1. The Contractor shall be responsible for safety of his staff during O & M of the Plant and shall procure, provide and maintain all safety equipment necessary for satisfactory O & M such as gasmasks, gloves, boots, mats, etc.

5.2. The Contractor shall utilize safety awareness procedures in every element of operation and maintenance.

5.3. The Contractor shall emphasize site safety including adoption of

a) Safe working procedures
b) Cleanliness and care of the plant as a whole
c) Accident and hazardous conditions prevention and reporting.
d) Safe practice while working near digester / gas holder areas

5.4. The Contractor shall impart safety training to all members at regular intervals, especially for new comers.

5.5. The Contractor shall provide Notice boards and display boards at appropriate locations detailing precautions to be taken by O & M personnel to work in conformity to regulations and procedures and by the visitors to the Plant.

5.6. The Contractor shall notify the Engineer in Charge's representative immediately if any accident occurs whether on-site or off site in which Contractor is directly involved and results in any injury to any person, whether directly concerned with the site or a third party. Such initial notification may be verbal and shall be followed comprehensive report within 24 hours of the accident.

6. Documents Records / Log Book

6.1. The contractor will be responsible for keeping up to date records of documents including History Card for equipment and maintaining every day log book relating to various analysis performed and to prepare and submit a daily report and also maintain complaints register.

6.2. The contractor shall maintain an updated log book and details of operational parameters like Voltage, Current, Power Factor, energy meter reading, pressure; daily consumption report, summary of operation and other reading required are recorded in every shift at regular interval as per Client's requirement.

6.3. Printing of log sheets, registers and all necessary stationery required for maintaining records of operations and maintenance has to be arranged by the Contractor at his cost.

7. Monthly Report:

7.1. Monthly statements on all the records, data maintenance schedules, spares available, manpower list available at site, routine test result, monthly consumable and repair maintenance during the month shall be furnished by the contractor.

8. Repair / Rectification of Defects And Deficiencies

- Resources - CONTRACTOR shall maintain O&M team, tools and calibrated measuring and verification instruments as specified above from the day one of the commencement of his Operation & Maintenance obligations under the contract. In case the required resources are not deployed on time, a penalty of Rs.5000 per day shall be imposed for the first week and the same shall be doubled in the subsequent weeks till adequate resources are deployed.

- System Uptime - CONTRACTOR shall maintain sufficient resources and achieve minimum uptime of 95% on yearly basis (year period to be decided by CLIENT) for the entire system, excluding the period of non-availability of power supply.

- At any given time the CONTRACTOR shall maintain mandatory spares. Failing to maintain spares and causing delay in resolution of the complaint shall be penalized as indicated above.

- The contractor shall maintain the elevator system in a first class and safe manner during for the duration specified under contract document. Such maintenance shall be for the entire elevator system except when failure occurs due to work performed by others. Responsibility entails daily inspection by the supervisor / technician and unlimited call back service including nights, weekends and holidays.

- Engineer's visits shall be not less than 1 per week with visit timings adjusted so as not to coincide with the busiest usage period. Call back service shall be responded within 2 Hours and service involving more than one stalled or erratic elevator shall be immediately provided regardless of the time of day or night. Emergency call back service for trapped passengers shall be responded to within 5 minutes. There shall be no compensation for call back service regardless of the hour/ day, etc.

- Contractor may maintain a service team/s with vehicle/ s to address the complaints/ accidents on SOS basis and take action immediately.

- The payment for the O&M shall be per agreed in the contract for the entire tenure.

- The manpower and accessories required for O&M shall be provided by contractor during relevant contract period. Minimum one 8 years experienced electrical mechanical technician and one assistant shall be provided for the building right at the beginning of the contract and shall be augmented if found insufficient during the course of the contract. Replacement for the teams shall be well planned during the scheduled offs and leaves.

- Availability of communication network through the selected mode shall be ensured by the contractor for data and BMS connectivity.

i. **Extension of time limit** Notwithstanding anything to the contrary as specified above, if the nature and extent of any Defect or deficiency justifies more time for its repair or rectification than the time specified herein, the Contractor shall be entitled to additional time in conformity with Good Industry Practice. Such additional time shall be determined by the Owner's Engineer and conveyed to the Contractor and the Owner with reasons thereof.

ii. **Emergency Repairs/Restoration** Notwithstanding anything as mentioned above, if any defect, deficiency or deterioration in the Project Components poses a hazard to safety

or risk of damage to property, the Contractor shall promptly take all reasonable measures for eliminating such danger.

9. All Inclusive Maintenance Contract

a) Scope.

The AMC shall cover all the items installed by the contractor including replacement of all switches, fittings etc. consumable like bulbs, tubes, oil etc. shall be excluded.

b) Routine Preventive Maintenance Schedule to be submitted

- **i.** Schedule to cover manufacturer's recommendation and/or common engineering practice (for all plant and machinery under contract).
- **ii.** Plant and machinery history card giving full details of equipment and frequency of checks and overhaul.
- **iii.** Monthly status report.
- **iv.** Entire Electrical installation to be repainted in fourth year (from commissioning) before the expiry of operation and maintenance contract.

c) Uptime during maintenance contract

- i. 99.9% uptime of all systems under contract.
- ii. Up time shall be assessed every month and in case of shortfall during any month the contract shall be extended by a month.
- iii. There shall be no reimbursement for the extended period.
- iv. Break-downs shall be rectified to within ten hours of reporting.

d) Manpower

- i. Adequate number of persons to the satisfaction of the Engineer In-charge shall be provided including relievers.
- ii. Statutory requirements of EPF, ESIC and other applicable labour legislations to be complied with and monthly certification to that effect to be submitted.
- iii. Duty allocation and Roaster control shall be contractor's responsibility.
- iv. No overtime shall be payable by Owner for any reason whatsoever.

e) Shut Downs

- i. Routine shut downs shall be permitted only as allowed by the Chief Engineer or equivalent.
- ii. Contractor shall be at liberty to carry out routine maintenance as and when required but with prior permission of the Owner.

10. HELPDESK SETUP

- The CONTRACTOR shall set up a centralized helpdesk to address the O&M for the project for entire Contract period with the following;
  - a) The help desk shall operate 24X7 to assist and guide the users.

b) The help desk will handle user queries and issues relating to implemented solution

c) The helpdesk shall ensure that users can log calls and complaints for any technical issues they face while accessing the system.

d) The helpdesk shall have Interactive Voice Response (IVR) system for first level of call segregation;

e) A Standard Operating Procedures (SOP) for O&M process shall be created by the CONTRACTOR from logging of request to closure of the request. The SOP shall address call prioritization guidelines, problem security codes and escalation procedures etc. in consultation with CLIENT;

f) It shall be also possible to log requests by user through other channels like email and web interface;

g) All the complaints and work carried out by the CONTRACTOR shall be logged in the system with a unique service request.

h) The application shall be accessible to all users including general public through the CLIENT portal for logging issues;

i) A Report containing the operational Status of each lift & travelator, complaints received and resolved; Preventive maintenance schedule and status, Stock of spares, man power update, etc shall be submitted to the CLIENT on a weekly basis.

j) The call statistics will be analyzed every quarter after Go-Live and the number of Customer Care Executives may be ramped up or down accordingly on a week's notice;

11. QUALITY CONTROL PLANS

- The quality control plan shall list and define in sequential order all process control activities, inspection and tests proposed to be performed on the equipment/ material starting from component procurement and from testing stages to product dispatch. The quality control plan shall indicate and identify the applicable standards, detailed description with diagram the procedure, acceptance criteria, extent of check and record to be generated.
- The contractor shall within fifteen (15) days of placement of order submit the following information to the CLIENT.
    a) Descriptive list of the raw material as well as bought out accessories and the names of sub suppliers selected from those furnished along with the Specification.
    b) Type test certificates of the raw material and bought out accessories.

c) Quality Assurance Plan (QAP) with holds points for CLIENT'S inspection. The QAP and hold points shall be discussed between the CLIENT and the CONTRACTOR before the QAP is finalized.

12. INSPECTION

- The inspection may be carried out by the CLIENT or his representative at any stage of Work. The successful contractor shall grant free access to the CLIENT/ its representative/s at a reasonable notice when the work is in progress. Inspection and acceptance of any equipment under this specification by the CLIENT shall not relieve the contractor of his obligation of furnishing equipment in accordance with the specification and shall not prevent subsequent rejection if the equipment is found to be defective.
- The contractor shall keep the CLIENT informed in advance regarding the time of starting and progress of Work in its various stages so that arrangements could be made for stage inspection, if desired by CLIENT.
- No material shall be dispatched from its point of manufacture unless the material has been satisfactorily inspected and tested and approved by CLIENT.
- Contractor shall, during inspection/ at any stage as sought by CLIENT, will furnish test certificates for all equipment including bought out items as included in this bid. However, the CLIENT reserves the right to insist for witnessing the acceptance/routine testing of bought out items.
- The contractor shall communicate to the CLIENT the details of all testing programme at least three (3) weeks in advance. CLIENT reserves the right to waive the inspection at any stage.
- Contractor shall keep all his testing instruments duly calibrated against standard meters at designated accredited laboratory not earlier than 6 months from the date of test of the equipment, covered under this specification. Calibration certificates shall be made available during inspection. The calibrating instruments used as standard shall be traceable to national/ international standards.
- A joint inspection of CLIENT authority; technical officer, project manager and team of contractor shall be carried out before commencing for operation.

SECTION - 9

TECHNICAL SPECIFICATIONS

GENERAL INSTRUCTIONS

1.0 **Scope of work**

1.1 The scope of work covers design, manufacture, testing at manufacturer works, delivery to site, erection, testing and commissioning of Elevators as detailed in this specification. The details of Passenger elevators and service elevator are clearly defined in the below chapters as well as the technical specifications annexure in the end of this section which needs to be duly filled in by bidders for conformance.

2.0 **Location**

2.1 The works are to be carried out for project – **SHIMLA**. All electrical equipment and gear shall be designed for temperatures of: performance under site conditions given below.

2.2 Site Conditions:

Environment : Moderately Polluted . heavy rainfall and Snow expected annually.

3.0 **Power Supply**

3.1 Power will be made available at 415/240V 3 Phase 4 wire 50 Hz, Solidly earthed system, with voltage variation of +/- 5% and frequency variation +/- 5%. Bidder shall derive any other voltage required for the equipment being supplied through suitably rated control transformers. Power during installation shall be to bidder's account. Commissioning power shall be provided at actual cost in the last stages.

3.2 Site Visit

Each potential bidder must visit and examine the mentioned site, and its surroundings to obtain all site-related information and fully understand the circumstances that may be necessary to prepare a bid and enter into a contract. It will be construed that the bid is submitted after fully checking on the site related conditions, lift well dimensions and floor heights, as no deviations later shall be accepted.

4.0 Local Conditions

4.1 It will be imperative on the part of each bidder to acquaint himself with all local laws, conditions and factors which may have any effect or bearing on the execution of works and supplies under the scope of this tender. In their own interest, the tenderers are required to familiarise themselves with (but not limited to) the Indian Income Tax Act, Indian Companies Act, Indian Customs Act, Factories and Boiler Act,

Contract Labour (regulation and abolition) Act, Arbitration Act, PF Act and other related Acts and Laws and Regulations of India with their latest amendments as applicable. The Employer shall not entertain any clarification from the bidder(s) regarding such local conditions.

4.2 It must be understood & agreed that above factors have been properly investigated and considered while submitting the offer. No claim for financial or any other adjustments to contract price or completion time on account of lack of clarity of such factors, shall be entertained.

5.0 **Drawings, Specifications & Deviations**

The drawings and specifications lay down minimum standards of equipment and workmanship. Should the tenderer wish to depart from the provisions of the specifications and drawings either on account of manufacturing practice or for any other reasons, he should clearly draw attention in his tender to the proposed points of departures and submit such complete information, drawings and specifications as will enable the relative merits of the deviations to be fully appreciated. In the absence of any deviations, it will be deemed that the tenderer is fully satisfied with the intents of the specifications and drawings and their compliance with the statutory provisions and local codes. All deviations shall need to mentioned separately and highlighted. Any deviations or departures not specifically mentioned shall be disregarded and shall not be binding on the contract.

5.1 In case of discrepancy between the drawings and specifications, the bidder shall assume the more stringent of the two and furnish his rates accordingly . Within two weeks of the receipt of the letter of acceptance of this offer, the Bidder shall furnish to the Employer, free of cost, with the copies of all the shop drawings including all accompanying descriptive pamphlets and illustrative literature for approval of the Employer. These drawings shall demonstrate fully that the equipment to be supplied shall conform to the provisions and intents of the annexed specification.

5.2 The drawings shall be accurately drawn to scale and shall be clear to read with all information in English language. Subsequent revisions of these drawings, if any, shall also be submitted for approval of the Employer in a similar manner by fabrication, manufacture or assembly is commenced.

5.3 After approval of the drawings by the Employer, the bidder shall, furnish seven sets of approved drawings free of cost.

5.4 Approval by the Employer of the bidder's drawings shall not relieve the Bidder of any part of his obligation to meet all of the requirements of the annexed specifications, or of the responsibility for the correctness of drawings.

5.5 All dimensions and levels shown on the layout drawing shall be verified by the bidder on the site.

5.6 The work described on any shop drawings submitted shall be carefully checked by the bidder for all clearance, field conditions, maintenance of architectural features in proper coordination with all trades on the job. To this end, the bidder, during the production drawing state, shall ensure that he coordinates with all other relevant trades that might interfere with the proper installation of his work. No payment shall be made for any variations or alterations on site due to lack of knowledge of other trades. Any unresolved conflict between trades shall be referred to the Employer.

5.7 The bidder shall prepare schedules and drawings showing precise details of holes in concrete/brickwork, metal works to be provided including trap door, ladder, beams and plates etc. in conformity with the drawings and within the requirements of Architectural. Structural and other specialized services, drawings. The schedules shall show in detail the builder's work required to be performed for all other service installations. The approved form for approval of Employer before any structural work with provision of holes or other modifications is constructed.

5.8 The bidder shall submit all manufacturer's drawings and catalogues, installation details, in original with equipment characteristics data or performance charts as required by the Employer.

5.9 On Demand during technical negotiations the bidder shall produce samples of the fixtures, finishes and any other elevator related part demanded by owner for review and acceptance. The sample sizes should be good enough for review.

5.9.1 The bidder shall make capability review presentation on demand during technical negotiations.

6.0 BASIC DESIGN PHILOSOPHY AND REQUIREMENTS

PROVEN DESIGN

The bidder shall develop the design based on the specifications and on proven and reliable Engineering Practices. The design details shall be submitted with technical data and calculations to the Owner's Representative for review.

The System, including all Sub-systems and Equipment shall be of proven design.

The Elevator Sub-systems and Equipment proposed by the bidder shall have been previously installed in Multi Story Buildings and have established their performance reliability over a period of at least Five Years. Documents to establish the same including copies of work orders, completion certificates and performance certificates shall be submitted.

Where similar equipment or sub-systems of a different rating are already proven in service, then the design shall be based on such equipment. In case these stipulations are not fulfilled, the Biddershall furnish sufficient information to prove the basic soundness and reliability of the offered sub-system.

The design philosophy should meet the following criteria:

(i) Application of state-of-the-art Technology
(ii) Service proven design
(iii) Design life 30 years
(iv) Minimum life cycle cost
(v) Low maintenance cost
(vi) Use of interchangeable, modular components
(vii) Extensive and prominent labelling of parts, cables and wires
(viii) Use of unique serial numbers for traceability of components
(ix) High reliability
(x) Low energy consumption
(xi) System safety
(xii) Adequate redundancy and factor of safety.
(xiii) Fire and smoke protection
(xiv) Use of fire retardant materials
(xv) Environment friendly
(xvi) Adherence to operational performance requirements

Adequate margin shall be built into the design particularly to take care of the higher ambient temperatures, dusty conditions, and high seasonal humidity, etc.

6.1 Detailed Equipment data shall be submitted and bidders not submitting data in full will do so at the risk of their tenders being evaluated with such information as may be available with the Consultants.

7.0 **Time of Completion**

7.1 The work shall be completed as per the General Condition and Special Condition of Contract specified elsewhere in the tender and the completion shall be in line with Employer's requirement.

8.0 **Tools and Spares**

8.1 All tools, tackle, steel scaffolding and staging required for erection and assembly of the equipment and installation covered by the contract shall be obtained by the bidder himself. All other materials such as foundation bolts, nuts, steel inserts etc. required for the installation of the plant shall also be supplied and included in the contract.

Start-Up Spares required if any shall be made good by the bidder and shall be deemed to have been included in the offer. Existing material hoists can be used at chargeable basis.

Bidders shall quote separately for Essential Spares and Recommended Spares for three years operation of each type of equipment covered by this specification. These rates shall be valid for acceptance for a period of 90 Days.

9.0 **Testing & Handing Over**

9.1 The bidder shall carry out tests on different equipment as specified in various sections in the presence of Consultant / Architects and Consulting Engineers in order to enable them to determine whether the plant, equipment and installation in general comply with the specifications.

9.2 All equipment shall be tested after carrying out the necessary adjustments and balancing to establish equipment ratings and all other design conditions. The test data shall be submitted in the Acceptance Test Forms supplied by the Consultants. At least four sets of readings shall be taken for each item tested and submitted. Instruments required for testing shall be organized by Bidder for testing with initial requirements of all consumables.

9.3 The bidder shall bear costs of factory inspections by Employer/Employer's representative in India or abroad as per source of supply if required including all travel, boarding and other related expenses.

10.0 **Performance guarantee**

10.1 All equipment and the entire installation shall be guaranteed to yield the specified ratings and design conditions plus/minus 3% tolerance. Any equipment found short of the specified ratings by more than the allowable tolerance as determined by the test readings shall be rejected.

11.0 **Defects Liability**

11.1 All equipment and the entire installation shall be guaranteed against defective materials and workmanship for a period minimum 24 months from the date of hand over of all lifts after the lifts are commissioned and handed over to the Employer along with the 4 sets of completion documents and in case the testing of the plant is delayed for any reason, the defects liability shall extend for a minimum period of 6(six) months from the date the test readings are accepted. During the defects liability period, the bidder shall rectify, repair or replace defective parts and components free of cost except in the case of those which are due to normal wear & tear.

12.0 **Force Majure**

12.1 Under no circumstances shall owner be responsible for any loss, damage or delay due to any cause beyond your reasonable control, including but not limited to lack of shipping space, embargoes, acts of any Government, strikes, lockouts, fire, accident, explosion, flood, riots, civil commotion, war, malicious mischief, delays in supplies of raw materials and components at our Works due to any or all of the reasons, such as energy crisis, electricity cut, rail/road transporter's strike, goslow, bandhs, non-availability of essential raw materials (iron and steel, pig iron, aluminium, copper, silver, brass, stainless steel, various alloys, electrical grade steel, etc.), act of God or of the State's enemies, or act of third partyAny dispute arising out of force majure conditions shall be mutually discussed and Employer shall take the final decision as the case may be.

13.0 **Statutory Inspections**

13.1 The bidder shall be fully responsible for meeting all the statutory obligations & local inspectorates wherever applicable to the works carried out by them. The bidder should prepare all working drawings and obtain approval of competent authorities and also have the equipment and installation inspected and got approved. Cost of Enlistment &Obtaining license for Operating shall be part of Quoted prices & without the license, it is not considered as handing over & consider as Virtual Completion.

13.2 Liability due to malfunctioning of the installation of bidder which may damage any plant machinery of the Employer during testing or during defects liability period.

13.3 Any increase in quantity over and above tender quantity, has to be brought to the notice of the Consultant and upon written confirmation only the Bidder shall proceed further. In the absence of obtaining written permission as given above, the owner shall not assume liability for any of the works carried out.

14.0 Bidder Organization chart and Project office team

14.1 The bidder shall furnish the complete organization chart with names and contact details of all concerned at Head office, Factory, Regional and local offices and shall update the same with owner as and when necessary. The site team deployed for the project shall be interviewed by the consultants and project director to understand the experience and proficiency and the resumes of persons deployed shall be furnished..

14.2 The project site shall have exclusive project Manager -1 no and project engineers-2 no's present daily at Bidder site office during installation, commissioning and hand over stages apart from adequate, trained crew for timely completion of the project.

14.3 As the project is a high end project weightage would be given if specialized and the best teams are available for this project which details needs to be furnished by bidder.

15.0 **Safety Precautions**

15.1 Competent, qualified and authorised project team as per 14.2 shall be on the site. The Supervisor should ensure that all plant and machinery used on the site are rendered safe for working and meets with the Indian or International safety standards applicable for the use and operation of such machinery. The supervisor should also ensure that the workmen are supplied with and made to use safety appliances such as safety belts, lifelines, helmets etc. The Supervisor shall not leave the work site without permission from Project Management Consultant or their nominee. The Bidder shall provide organisation chart of the personnel to be deployed at site for the execution of the contract.

ANNEXURE

SAFETY OF LIFTS IN PUBLIC BUILDINGS - CVC REPORT

A Technical Committee of professionals under the Chairmanship of Chief Technical Examiner, Central Vigilance Commission having members from CVC and other departments including Bureau of Indian Standards was constituted by the Government to go into depth regarding all the related issues of safety of lifts in public buildings who gave following recommendations for ensuring hundred percent safety of lifts in public buildings. These recommendations were circulated for information, guidance and compliance by Ministry of Urban Development & Poverty Alleviation vide A.V. series circular No.822 dt.25.10.2001.

a While examining the possible causes of accidents in lifts, it was found that in case the lift car stops away from the floor level, there is a possibility of wide gap left between the sill and the lower edge of the toe guard due to smaller length of toe guards provided in the lifts. In order to reduce the gap between the landing sill and lower edge of toe guard so as to prevent any accidental fall through the gap, it is recommended that the minimum length of toe guard should be 700mm for lifts with speeds of 1.5 mps and 1000mm for lifts with speeds above 1.5 mps.

b Another potential cause of accidents could be the attempts made to open the landing door lock of lower floor in case the car stops away from floor level due to power failure. Since the car door can be opened in case of power failure so as to improve the ventilation and avoid claustrophobic situations etc. as outlined in IS 14665 (part 2/sec 1): 2000 para 10.9.1, there is a tendency among trapped passengers to make attempts to open any accessible landing door which can be opened by a electromechanical latch in the landing doors as the lock is accessible through open car doors. This attempt in panic may result in accidental fall into the lift pit. In order to ensure that the trapped passenger do not attempt opening the landing door, the electromechanical latch should be so designed that it is inaccessible or invisible to the passengers in the car.

c Though para 8.4.3 of IS 14665 (Para 2/sec 1):2000 recommends for provision of either an emergency signal or a telephone inside the car but as a general experience, it is seen that over a period of time these devices become inoperative due to one reasons or the other. Therefore, in order to have at least one device of communication functioning at all the times, as an alternative arrangement, it is recommended that the provision of both i.e. telephone with

minimum two connections one at the operator's room and other at guard room and the emergency signal with re-chargeable batteries as source of supply be made in the lift cars.

d The device used for emergency signals should incorporate a feature that gives a immediate feed back to the car passengers that the device has worked properly and the signal has been passed on to the intended agency.

e The Automatic Rescue Devices (ARD) meant for the purpose of bringing the lift car to the nearest landing doors, are being used selectively and is generally restricted to commercial building having heavy traffic. However, frequent power failures being the common phenomenon, it is recommended that provision of ARD should be made mandatory in all the lifts in public buildings.

f Frequent power failure from regular sources of supply has been a major cause of concern for the equipments and machinery driven by electric power. Therefore, standby source of supply has become indispensable. Though in commercial building the standby supply is generally provided but in residential buildings, the provision of standby supply is still a lower priority. In order to avoid any accidental trapping because of power failure, in residential buildings, DG sets of suitable capacity with AMF panel should be provided as back up for the lifts.

g In order to avoid accidental closure of doors while boarding or alighting the car, normally infrared cells are provided in the doors. But it has been experienced that there is a possibility of tampering with the devices by blocking the holes etc. to keep the doors open for longer time. To avoid this, it is recommended that a tamper proof infrared curtain covering the entire height of the door should be provided in the lift doors.

h It is seen generally, that though the instruction on DO's and Don'ts , as per provision of the relevant IS, are displayed in lift cars but the same are either displayed in inconspicuous location, or are very small in size or are in one language only. To make these instructions serve the intended purpose, and not a mere compliance of relevant IS clause; it is suggested that these instructions should be displayed at a conspicuous location with larger and understandable script and should be written in Hindi, English and regional language.

i The name, purpose and numbering of the push buttons / phone/ alarm should be displayed clearly and in the same sequence as indicated in the instructions shown against point (8) above, it is worthwhile to mention here that due to long and continuous use of buttons, the numbering and indications on the buttons get faded over a period of time. Necessary preventive arrangement may be made to make the same as fade-proof.

j Apart from the written instructions in the lift cars as suggested against point (8) and (9) above possibility of providing recorded audio clipping in the passenger cars may be considered. The clippings may run continuously and sequentially in Hindi, English and regional language giving instructions on DO's and Don'ts for safety of the passengers.

Capacity load plate along with overload alarm, giving the rated load and permissible maximum number of passengers should be filled in each lift car in a conspicuous position.

For the purpose of identification, the lift number should be displayed outside the landing door, inside the car and in the machine room. This numbering may be used as reference for the purpose of routine / preventive maintenance, for operating from machine rooms and reporting of any incidents etc.

m All the electrical supply lines and apparatus in connection with the lift installation should be so constructed, installed, protected, worked and maintained that there may be no danger to persons there from. To do that, all the exposed parts should be duly insulated, equipments should be securely earthed in accordance with the recommendations made in IS: 3043 and also in a conformity with the latest provisions of Indian Electricity rules.

n The machine rooms and all other rooms containing lift equipment should be provided with adequate illumination. The lux level should be at least 200 lux. Provision of adequate lighting in the entire lift shaft should be made mandatory.

O The provision of fireman's control / switch for the purpose of using the lift for carrying out fire control exercise as per provisions of relevant IS specifications should be made mandatory.

p There have been quite a few instances, wherein the accidents do occur due to machinery failure which in turn is attributed to the human failure occurred in one or the other form like deploying of unskilled personnel or due to mishandling of the equipments etc. The reasons for such occurrences are the inherent shortcomings and adhocism in the award of the work of maintenance / operations to inexperienced and less reputed firms. The task of maintenance and operation should be entrusted to reputed and experienced agencies, who deploy only skilled persons. As far as possible the manufacturer of the lift should be considered for undertaking maintenance and operation so as to make the system more accountable.

q There are some cases in which serious fatal accidents happened during rescue operation for taking out the trapped passengers. Such accidents occur due to improper handling of rescue operation or inadequate accessories required for rescue purpose. In order to avoid such

occurrences, it is strongly recommended that personnel engaged for rescue operation should be fully equipped and trained in handling the rescue operation. It is essential to carryout the rescue exercise in accordance with the instruction contained in para 10.10 IS-14665 (par12)/sec1):2000.

r It is felt necessary to maintain a log book containing all the details Viz. Lift number, names and addresses of the operators / maintenance personnel, details of the agency undertaking maintenance and operation and details of Routine / Preventive maintenance of lifts etc. The logbook should be duly authenticated by a competent authority.

s The mock drill exercise for all the lifts should be made mandatory and should form part of Annual Maintenance Contracts. The responsibility of conducting mock-drills on regular pre-decided periodicity should lie with the agency undertaking the AMC.

t All the suggestions brought out in the above para should be considered in addition to and for in conjunction with the relevant IS Specifications and may not be deemed to have superseded any IS specification relevant to the lifts. In case of any clash the more stringent measure should be considered for implementation purpose.

15.2 Smoking shall not be encouraged on the site but altogether strictly prohibited in areas where combustible and inflammable goods / materials are stored or lying about.

15.3 Any hot job such as welding, soldering, gas cutting shall not be carried out without the permission of the Employer representing the Project Management Consultant. Such jobs shall not be carried out where inflammable materials are stored or lying about. All electric connections shall be through adequately sized mechanically protected cables without any joints and with proper and adequate terminals. All power supplies shall be through properly rated fuses with isolating devices. No such hot jobs shall be carried out on holidays and without the presence of the bidder's Engineer.

15.4 It is entirely the responsibility of the Bidder to practice the principles of 'Safety First' during the entire tenure of work with adequate insurance covering injury of death to workmen, loss by theft or damage to materials and property in position or not and third party liability stipulated. Employer shall in no way be responsible for any mishap at site and Bidder shall take complete responsibility in such eventuality. Bidder safety in charge will be deployed and inspect at regular intervals till project completion.

15.5 The bidder should clear the site of all debris every day to avoid accidents. In case this is not done, the employer may engage necessary labour to maintain the cleanliness of the premises and removal of debris, and debit all or part of the expenditure so incurred from the Bidder/s.

15.6 **Safety Barricades to all the landings** –Upon hand over of site, bidder shall duly barricade all landings with full length lockable barricades and same shall not be removed till landing doors are fixed. No breaking of any concrete structure, without permission of the Employer / Consultant. Rebar locator shall be used to locate steel reinforcement before any pocket / cut out opening.

16.0 **Minor builders works** - Auxiliary works such as Hall button grouting, pocket cutting, grouting of bolts, and making good the surface in the lift shaft ,landing, fixing of sills, which are required for installing the lifts and such other civil works has to be included in the offer and it is the responsibility of the bidder to do the same. Grouting and closing of civil works shall be as per approved method statement.

17.0 **Scaffolding** – Steel Scaffolding as per IS standards in the shaft as required for completion of work to be included in the offer. Bidder scaffolding should be in place for hoistway lighting and whitewashing of hoistway.

17.1 The bidderlater may proceed with scaffoldless installation if the product installation is faster and safer which is encouraged by owner.

18.0 **Hoistway lighting** – Hoistway lighting with bulk head throughout the lift shafts shall be arranged.

19.0 **Power and Water -** The construction power at the time of erection shall be provided by Owner/Owner representative at lift bidder's cost and bidder has to pay the power and water costs as per the demand raised. Bidder shall have own infrastructure for drawing of power from the source.

20.0 **Storage of Materials and site office** - You shall at your cost shall be permitted to install temporary lockable material stores at site for storing your material during Erection, Testing and Commissioning of the lifts. Only space shall be provided by us. Such temporary shed shall be removed after completion of the work. All the waste generated should be disposed on a day to day basis. You shall be responsible for safety, security for, all your materials being brought to site and the employer shall not be responsible or accountable for the theft / damages etc of your materials. The responsibility of materials against Theft, floods in basement & rat biting shall be in bidder's scope & part of quote prices.Space for the site office shall be provided by the Development manager. All the costs and security for the same to be borne by the bidder.

21.0 **Structural Steel items**

The bidder has to arrange at their own cost including supply, fabricate and erect in position structural steel required for support of machine, brackets for guide rails, facia plates at all landings, hoisting beams/hooks, pit ladder etc., including three coats of anticorrosive paint of approved make and connected Civil works such as cutting of holes, chases etc., in brick work, concrete etc., including scaffolding of walls, floors on partitions together and making good holes for fixing brackets in lift walls, grouting of all bolts, sills, brackets / control board/button boxes, limit switches etc., all in position for all lifts together.

22.0 **Codes & Standards**

22.1 Design of elevator components, their installation and operation shall meet with:

a) IS 1860 :1968 Code of practice for installation, operation and maintenance of electric passenger and goods Lifts.

b) IS 14665(PART 1-5):2000 Specification for electric passenger and goods lifts

c) Indian Electricity Act 1910 and Indian Electricity Rules 1956.

e) Schedule of Requirements.

f) Any Amendment or Revision to Codes mentioned above

22.2 All codes and standards referred herein mean the latest and any work to alternate codes or practice shall be specifically stipulated by the tenderer citing the variations for acceptance by Architects/consultants.

CODES AND REGULATIONS

LOCAL CODES, REGULATIONS AND STANDARDS

Unless otherwise stated herein, the design, installation, testing and commissioning shall comply with the latest edition of all applicable standards issued by the Bureau of Indian Standards and other relevant local regulations
applicable.

Sl. No.	IS NO. / DOC DESCRIPTION	TITLE
	IS 4591: 1968 (2007)	Code of practice for installation and maintenance of lifts

	IS 8216: 1976 (2007)	Guide for inspection of lift wire ropes
	IS 14665: Part 1: 2000 (2005)	All parts – latest version
	IS 14671: 1999 (2004)	Code of practice for installation and maintenance of hydraulic lifts
	IS 15259: 2002 (2007)	Installation and maintenance of home lifts – Code of practice
0	IS 15330: 2003	Installation and maintenance of lifts for handicapped persons – Code of practice
1	IS 15785: 2007	Installation and maintenance of lift without conventional machine rooms – Code of practice
2	IS 2365 : 1977 (2006)	Specification for Steel Wire Suspension Ropes for Lifts, Elevators and Hoists
3	IS 1030 : 1998 (2004)	IS 1030 : 1998 Carbon steel castings for general engineering purposes
4	National Building Code of India 2016, Part 8, Section 5A	Installation of Lifts.
5	Bombay Lift Rules with all Amendments.	Latest version

23.0 ACCEPTANCE TEST & TEST DATA

Tests shall be done as required by the Lift Inspectorate and on the basis of section "Commissioning and testing" and in line with the local statutory norms and requirements

24.0FIRE SAFETY REQUIREMENTS

General requirements of lifts shall be as follows :

Landing doors in lift enclosures shall have a fire resistance of not less than one hour.

Grounding switch (es), at ground floor level or main exit level, shall be provided on all the lifts to enable the fire services to ground the lifts.

3 way Telephone or other communication facilities shall be provided on all the lift cars. Communication system for lift shall be connected to BMS Control Room, Machine Room & Security Control for the building.

Signage is to be provided by Lift bidder on every floor at or near the lift indicating that in case of fire, occupants shall use the stairs unless instructed otherwise. There will be a signage which will contain a plan for each floor showing the location of Fire Exit Staircase. This will be provided by Lift bidder. Alternate source of power supply shall be provided for all the lifts through a changeover switch.

Fire Elevators - All lifts shall be provided with fire man's switch. In case of fire, only fireman shall operate 'Fire Elevator'. In normal course, it may be used by other persons.

24.1 Emergency Operation of Elevators in the Event of fire

In the Event of fire , When any fire detection device is activated , all elevators are automatically brought to the evacuation floor (Main exit floor) . All elevators are removed from Normal Service. Car & Hall calls are cancelled . Hall position indicators and direction arrows are active . The essential Items such as 'Door Open" button, Intercom & alarm etc. on Car Operating Panel shall remain functional and illuminated.

If the car is traveling away from the evacuation floor, it will stop at the nearest possible floor with doors closed and then return to the evacuation Floor. When car arrives at the evacuation floor, the car will wait with doors open. Then the car is available for the use of fireman.

25.0Earthing

An earthing system should be designed to assure personnel safety and protection of installations against damage. It should also serve as a common voltage reference and to contribute to the mitigation of disturbances.

To achieve the primary goal of assuring personnel safety and damage control, a low impedance path must be made available to large currents generated due to lightning or power system fault. The potential differences (touch and step voltages) between any two points must be as low as possible. Safety considerations also require the chassis or enclosure to be earthed to minimise shock hazards to passengers and the maintenance staff.

To achieve the secondary goal of providing protection for sensitive and interconnected electronic and electrical systems, earthing should be designed to minimise the noise voltage generated by currents from two or more circuits flowing through a common earth impedance and to avoid creating earth loops susceptible to magnetic fields and differences in earth potentials.

Earthing shall also be designed to accomplish the following minimum requirements:

1.Protect personnel and equipment from electrical hazards, including lightning, where practical.

2.Reduce potential to system neutrals.

3.Reduce or eliminate the effects of electrostatic interference and electromagnetic interference arising from within the system.

4.Provide a single-point earthing method for all equipment enclosures, cabinets, drawers, assemblies and sub-assemblies.

5.Provide a clean zero-volt reference point for signals in computer and related equipment.

26.0 Noise Generation

The whole of the elevator assembly, including the opening and closing of the car and landing doors shall be quiet in operation and shall be free of rattling or squeaking noises. Elevator door operation shall be smooth to avoid the transmission of impact noise to the surrounding structure.

Noise levels resulting from the operation of the elevator, including direct sound transmission, breakout noise and re-radiation of structure borne noise shall not exceed 55dB(A) (fast response) at 1.5m from the elevator shaft and 1.5m above the floor.

Machinery noise level under normal operating conditions shall not exceed 70 dB(A) at 1m from the equipment in free field.

The total noise level in a moving elevator car shall not exceed 55dB(A) with ventilation fan operating.

Additional requirements imposed by statutory or government authorities not listed above shall be complied with.

	General Technical Requirements
A1	The Design, Manufacture, assembling, testing and commissioning of all units shall be as specified in the Configuration and Specifications. In any case the complete equipment shall meet the requirements laid out by the latest version of the applicable Indian Standard and codes as well as local statutory requirements.
A2	The equipment and the work shall be in line with the best available International standards of Engineering, Design and Workmanship for the particular category of equipment. All materials, tools and tackles incorporated in the Works shall be suitable for the duty concerned and shall be new and of best commercial quality, free from imperfections, and selected for long life and minimum maintenance under the local and installation site conditions.
A3	Power Supply Conditions: The Bidder shall verify the power supply company and assess the quality of power. Any voltage stabilizer / UPS required shall be provided by the Bidder. Free Service costs and maintenance contract quote shall cover this requirement.
A4	Weather / Temperature / Humidity: As prevalent at the Location detailed above.
A5	Modifications to structure: Modification of already constructed structures by cutting, chipping or welding shall not be permissible without written approval from the Employer's representative. Such modifications shall be done only after the Bidder has exhausted all other remedies. All costs of such modification and consequence shall be debited to the party responsible for the lapse.
A6	Layout Drawings: The drawings on a minimum shall provide the following data: a) Owner's requirements b) Maximum bracket spacing, c) Forces acting on the guide rails on application of the safety or other retarding device, d) All forces on the building structure including the machine room e) Static and impact loads imposed on machinery, sheave beams, supports, floors or foundations, f) Impact loads on buffer supports and the pit, g) All electrical requirements stating the current ratings. Three copies of as-built drawing shall be submitted at the time of handover of the units out of which 1 copy is to be Laminated
A7	Materials: All materials incorporated in the Works shall be suitable for the duty concerned and shall be new and of best commercial quality, free from imperfections, and selected for long life and minimum maintenance under the local and installation site conditions.

A8	Aesthetics: All aesthetic requirements including and not restricted to claddings, false ceilings, floorings, colour, fixtures, lighting arrangements, grills etc shall have to be approved in writing by the Employer. All equipment visible from the lobbies, corridors shall be aesthetically integrated with the surrounding finishes to the Employer's satisfaction. All signage / notices shall be aesthetically acceptable to the Employer.
A9	All equipment provided shall be energy efficient including provision for regeneration of powerwith regenerative drives.

MACHINE ROOM EQUIPMENT

1.0 **Elevator Machine**

1.1 Machine shall be gearless traction type with PMSM motor(Permanent magnet synchronous), brake assembly, shaft sheave, all mounted on a common base. Motor shall be heavy duty, reversible type particularly designed for elevator service. Drive motors shall be selected for high starting torque and low starting current. All drive motors shall be rated for not less than 150 starts per hour. Bidder may offer higher no. of starts per hour separately.

1.2 The drive system shall operate on electronically computed acceleration and deceleration references through a microprocessor for achieving maximum interfloor speeds while providing consistently smooth ride and accurate stopping. The starting current shall be not more than 2.5 times the normal current. The processor shall control the drive motor speed through pre-calculated acceleration and deceleration references for achieving smooth rides. Levelling shall be through distance dependent speed reference to achieve the specified levelling criteria. The controller should achieve maximum interfloor speeds.

1.3 A spring applied and electrically released brake assembly with non-asbestos lining shall be provided on the drive shaft. A cranking device for manual operation of elevator car shall also be provided to meet emergencies together with manual break release. The manual break release and cranking device upon application shall automatically interrupt power supply.

1.4 A micro-levelling feature shall be incorporated. Micro levelling shall correct for over-travel, under travel and rope stretch, within its zone independently of the operating device. Car levelling at each landing shall not exceed +/- 5 mm with or without load and down or upward travel.

1.5 The machine bearings shall be amply proportioned, dust proof and provided with adequate means of lubrication. Bearings shall be either of anti-friction metal sleave type with oil reservoirs, self-lubrication, oil gauges, capped filler openings and drains of the ball roller or sintered type subject to oil flood lubrication or grease lubrication. Grease lubricated bearings shall have grease gun connections and drain plugs. The bearings and lubricant reservoirs shall be dust tight and shall incorporate effective seals to prevent leakage. The outer end of the bearings shall be closed with a removable oil tight plate. Thrust bearings shall be of the ball or roller type and shall have two sets of balls or rollers arranged to minimize backlash for efficient working. Bearings shall not Leak Oil & shall be Dust-Tight, & Self Lubricating.

2.0 **Controller**

2.1 The lift controller shall be vertical, totally enclosed cubicle constructed of sheet steel with hinged doors on the front and screwed panels or hinged doors on the back, giving easy access to all components inside the controller. The cubicle enclosure shall be minimum of IP 42.

2.2 The controller shall have a microprocessor with solid state switching devices sequenced and interlocked. All operations shall be software controlled with facility for interfacing with the building Fire Alarm System and Building Management System. All necessary protocols shall be made available for integration into the Building Management System. The controller shall operate within the supply voltage fluctuations specified and shall incorporate necessary input voltage stabilisers. The system shall have proven reliability.

2.3 The controllers shall be properly earthed for protection.

2.4 The controller shall provide protection against the following:

i) No-voltage or sustained under voltage
ii) Over current in any component
iii) Phase reversal of the power supply
iv) Overload
v) Single phasing

2.5 The controller shall be arranged to cut-off the power supply, apply the brake and bring the car to rest at the nearest landing in the event any of the above failures occur.

2.6 Remote car position indicating panel shall be provided wherever required.

2.7 Energy efficient regenerative drives to be provided for all elevators to reduce energy usage by feeding energy generated during “empty car up” or full load car down” to the building internal electrical grid with clean power.

2.8 Bidder needs to ensure proper positioning of Emergency &Inspection panels(E&I) in the top terminal landing and to blend in the lobby aesthetics.

3.0 **Safety Devices**

3.1 An automatic stopping device shall stop the car at the terminal landing independent of the regular operating device. In the event the car travels beyond the zone of the above stopping device, the final limit switches in the hoistway should arrange to stop the car and also prevent normal operation until reset.

3.2 A mechanical safety shall be mounted on the car frame and should actuate the fly ball governor gear which shall cause the following:

a) Disconnect power to elevator machine
b) Apply the main brake
c) Apply the guide rail safety jaws

The safety gear shall be manually reset.

3.3 Retractable safety shoes shall be provided on the car &hoistway doors together with an infrared scanner.

3.4 Emergency stop switches in the elevator pit shall be provided to stop the car.

3.5 The machine, drive and related control accessories shall be placed with in the overhead area of the Hoistway. The Emergency and Inspection panel(E&I panel) shall be located either with in your door jamb or next to the landing, in the last landing floor. Bidder shall ensure that the design of E&I panel is sleek and blending with lift lobby landing interiors. All moving parts shall be duly guarded well to avoid accidental contact.

ELECTRIC CABLING

1.0 Scope of work

1.1 Power will be supplied in the machine room with a switch fuse unit/circuit breaker for each of the elevators. All further wiring to motors and controllers, wiring to hall buttons, alarm bell, car position indicators, and emergency selector switch shall be provided by the elevator Bidder. Necessary auxiliary switches and fuses for separating lighting & control circuit from main power feeder shall be provided as shown on drawings.

2.0 Standards & Codes

2.1 All electrical work carried out shall conform to the IS 732 -1989 and all equipment, drive motors etc. shall meet with the relevant Indian Standards.

2.2 All electrically operated equipment shall be so designed that it will continue to function without damage to itself or otherwise if the voltage and frequency vary within the following tolerances:

Voltage : Plus or minus 10 percent
Frequency : Plus or minus 3 percent
Unbalance : 2 percent

3.0 AUTOMATIC RESCUE DEVICE (ARD)

3.1 The automatic rescue devices (ARD) meant for the purpose of bringing the lift car to the nearest landing doors. The ARD shall have the following specifications:

a. ARD should move the elevator to the nearest landing in case of power failure during normal operation of elevator.

b. ARD should monitor the normal power supply in the main controller and shall activate rescue operation within the time period as per manufacturer's standard subject to approval of Lift Inspector. It should bring the elevator to the nearest floor at a slower speed than the normal run. While proceeding to the nearest floor the elevator will detect the zone and stop. After the elevator has stopped, it automatically opens the doors and parks with door open. After the operation is completed by the ARD the elevator is automatically switched over to normal operation as soon as normal power supply resumes.

c. In case the normal supply resumes during ARD in operation the elevator will continue to run in ARD mode until it reaches the nearest landing and the doors are fully opened. If normal power supply resumes when the elevator is at the landing, it will automatically be switched to normal power operation.

d. All the lift safeties / safety devices shall remain active during the ARD mode of operation.

e. The battery capacity should be adequate so as to operate the ARD at least seven times a day provided in duration between usage is at least 30 minutes.

The battery capacity should be adequate so as to operate the ARD at least three times without recharging of Battery. The Rescue time of the device from the time of power failure to the time the doors fully open shall not exceed 60 seconds. The Landing accuracy shall be + 12 mm.

The Battery shall be housed in a cabinet /Rake with a Corrosion Proof Finish. The Device shall immediately stop the Elevator and prevent further movement immediately, if there is a short circuit or open circuit in the Inverter Output.

This Device shall be an additional accessory to the Elevator and shall in no way affect the Performance of the Elevator. The Performance of the Battery Charger shall be equivalent to that of the UPS Unit. Maintenance Free Batteries VRLA type conforming to relevant Indian or International standard shall be provided.

f. Emergency light and fans in the car should be working during ARD operation mode.

4.0 BMS compatibility and potential free contacts

Lift Bidder shall provide the following facility for monitoring system in BMS.

The quoted rate inclusive of providing auxiliary contact as per the below list.

						FUNCTION	

Sl. No	DISCRIPTION	DI	AI	DO	AO	Status	Alarm	Control	Location
1	Monitor alarm bell status of lifts					*			
2	Monitor Fireman's emergency operation status under fire drive					*		-	
3	Monitor operation of elevator in 'Attendant mode'					*		-	
4	Monitor lift under inspection/test drive					*		-	
5	Trip Alarm					*		-	
6	ON/OFF Status					*			
7	FLOOR LEVEL Status.					*			

DI: Digital Input

AI: Analog Input

DO:Digital output

AO:Analog output

	Machine - Base Technical Requirements
B1	Machine: All machines shall be energy efficient permanent magnet gearless traction machines with ACVVVF drives and shall be full control closed loop. Every machine shall have the provision of manual rescue operation in addition to any electrical / battery back-up arrangement. Alternatively the battery back-up device shall have a battery monitor that gives adequate audio / visual warning in case of inadequate charge.
B2	Drive system: It shall be ACVVVF with converter / inverter drives with regenerative technology. Design unit to limit current, suppress noise and vibration transmission. The units shall be provided with internal heat sink cooling fans for the power drive portion of the converter panels

B3	Controller: The Controller shall be Microprocessor based. The controller shall be designed specifically for elevator application and shall be designed and manufactured by the Bidder in his premises. It shall on minimum operate with at least 3 feedback parameters of distance, speed and load. The controller shall have a dispatch system capable of ensuring traffic management. Controllers shall be equipped to handle grouping requirements and when specified up-peak and down peak requirements. The controller shall on a minimum provide protection against a) Phase sequence reversal of the power supply b) Overload c) Leakage current d) Earth leakage e) Short circuit f) Failure of one or two phases. The Control system shall be such that the lifts can be divided into as many groups as risers without any additional cost. The controller shall have self-diagnostic capabilities. It should also have event logging capabilities with a memory to store data of at least 3 months duration. Controllers should be programmable at site for changing running sequence/grouping/zoning of lifts if required
B4	Attendant control: All lifts shall be provided with attendant control. This shall allow semi-automatic operation with manual control.
B5	Anti Nuisance: All lifts shall be provided with anti-nuisance features. This option shall avoid unwanted elevator operation caused by mischievously or mistakenly registered calls. It shall prevent the car from answering car calls when no one is in the car.
B6	Overload: All lifts shall be provided with overload detector, warning indicator and buzzer. In case an overload is detected the car shall remain rest with the doors open. The elevator operation shall resume only upon removal of overload.
B7	Automatic Rescue Device: Each lift shall be provided with its own battery operated automatic rescue device. The automatic rescue device shall facilitate rescue on power failure. The equipment shall be so designed to execute at least 3 rescue operations between the floors with the maximum travel in a 60-minute period without recharging irrespective of load condition. The automatic rescue device shall execute a rescue operation if one, two or all phases of supply fail.

HOISTWAY&CAR TOP

3.0 **Hoistway**

3.1 No additional structural supports, members shall be provided in the hoistway for mounting of the traction motor in the case of machine room less elevators. The Bidder shall use shear-type fasteners of adequate size to derive supports for all his requirements. Elevator supplier shall periodically inspect the hoistway during construction to ensure plumbness of the hoistway and any other provisions required for elevator installation .Reduction channels required if any,shall be included in suppliers scope.

3.2 In the case of elevators without machine room, the traction motor shall be mounted within the hoistway with necessary mounting frame.

3.3 Car and counter weight buffers shall be of hydraulic type with necessary supporting channels and struts. The buffers shall be capable of with-standing twice the fully-loaded car and two times the counter weight at contract speed + 15% and the fully compressed buffer top shall be not less than 1.2 meter from the bottom.

3.4 Car and counter weight guides shall be machine rolled mild steel T-section with smooth, sliding, tongued and grooved joints. The guide rails shall be continuous throughout the travel. The brackets for fixing the guide rails shall be of steel and spaced so that the deflection shall not exceed 5mm under normal operation. Brackets shall be designed to suit the clear hoistway with necessary supporting structures.

3.5 Counter weight shall be made up of cast iron enclosed in a steel frame. Counterweight shall be car-weight plus 40% of contract load or any other value providing smooth and economic operation. Counterweight shall be provided with necessary guard mesh at the bottom of the hoistway for at least 1.8 m.

3.6 The car frame shall consist of suitable structural shapes, properly braced and securely fastened together. The safety shall be mounted on the bottom members of the frame and shall be operated by an overspeed governor located over the hoistway. The safety shall be arranged to stop the car whenever excessive descending speed is attained and means shall be provided to cut off power from the motor and apply the brake prior to application of the safety.

3.7 The counter weight shall consist of cast iron filler weights contained in structural steel frame, and shall be equal to the weight of the complete Elevator car plus approximately 50% of the contract load. The counter weight for lift cars shall be in accordance with clause 6 of IS 14665 (Part 4-Sec-3) : 2001 and shall be designed to balance the weight of empty lift car plus approximately 50 percent of the rated load. It shall consist of cast sections firmly secured in relative movement by at least two numbers steel tie rods having lock nuts/split pins at each end and passing through each section and Housed in a rigid steel frame work. Cracked and broken sub weights shall not be accepted. Counter Weights shall be of Uniform density and Physical Dimensions.

3.8 ELECTRIC WIRING

All necessary insulated wiring and conduit or tubing, together with necessary fittings, metal boxes, troughs and ducts, shall be provided by the Bidder.All hoistway materials shall be non-flammable and Travelling cables shall be rendered (FRLSH)flame resistant with suitable cladding. All data cable details have to be clearly specified in your specifications with proper process for wiring and bunching the same.

3.9 **Ropes & Sheaves**

The suspension ropes shall be of special acid proof quality steel or high grade traction steel of suitable size, construction and number specially designed for lift duty, having a factor of safety atleast equal to that specified in IS: 2365: 1977 or approved equivalent standard.

4.0 **Governor ropes shall be of steel**

4.1 Tests shall be carried out at the manufacturer's works to ascertain that the ropes comply with the appropriate code or standard and test certificates shall be submitted to the Consultants for approval prior to shipment.

4.2 The traction sheave shall be made from close grained cast iron of the proper hardness accurately grooved for the proper number and size of hoisting ropes and shall be designed to give constant traction and long rope life. All deflector sheaves necessary to obtain proper lead of the ropes shall be provided and shall have similar construction to the traction sheaves.

4.3 A guard extending below the machine level shall be provided underneath the deflector and secondary sheaves.

4.4 Wiring

4.4.1 All cables shall be 1100 Volt grade PVC insulated, sheathed with or without steel armouring as specified and with an outer PVC protective sheath. All cables shall have Flame Retardant, Low Smoke Sheath (FRLSH) and meet ASTM norms for the smoke density and Oxygen Index norms. Cables shall have high conductivity stranded aluminium or copper conductors and cores colour coded to the Indian Standards.

4.4.2 All cables shall be new without any kinks or visible damage. The manufacturers name, insulating material, conductor size and voltage class shall be marked on the surface of the cable at every 600mm centres.

4.4.3 Conductors shall be stranded copper for travelling cable only.

4.5 Power and control circuits shall be in separate cables or run inside separate heavy gauge rigid galvanised conduits. Wires and cables subject to movement and abrasion shall be protected by flexible galvanised steel conduit.

4.6 Trailing cables shall be best grades for the service, and shall originate at steel junction boxes in hoistway and end at steel junction boxes on the car, hung so that the proper size loop may be obtained. They shall have a fire and moisture resistant outer covering and contain a steel supporting strand. Travelling cables shall be suitably suspended to relieve strains in individual conductors. Travelling cables shall be provided for telephone, signals, controls, lights and fans of lifts.

4.7 Earthing – The entire equipment shall be individually and properly earthed to the desired parameters for complete protection.

	Hoistway & Car top – Basic technical requirements
B1	Counterweight: All counterweight blocks shall be in cast iron or iron ore. Suitable metallic counterweight guard of required height and width shall be provided at the bottom of hoistway. Counterweights shall be provided with safety gear for the lifts with the floating pit.
B2	Guide rails: The guide rails shall be cold drawn steel or machined steel T- sections, with a sectional area sufficient to withstand the compressive forces resulting from the application of the car or counterweight safety device. The guide rails surfaces used for guiding a car or counterweight shall be sufficiently smooth and true to operate properly with the guiding member. The face of the car guide rail shall not be less than 9 mm. The fixing arrangement of the rails shall be such that vibrations shall not be transferred to walls of adjoining rooms.
B3	Guide rail brackets: The bracket shall be designed such that it can safely withstand the application of the car or counterweight safety when stopping the car and its rated load or the counterweight and shall be capable of resisting the horizontal forces imposed by the class of loading with a total deflection not exceeding 3 mm. Guide rails shall be secured to their brackets by clips specifically designed for the application. The distance between adjacent 2 brackets of a guide rail shall not exceed 2.5m.Guide rail bracketsshall be secured to their supporting at a minimum of 2 points and shall be square with the rail. Slotted guide rail brackets having a single bolt fastening shall be provided with an additional means to prevent lateral movement of the rail bracket.
B4	Wire ropes: Car and Counterweights shall be suspended from steel wire ropes of best quality, the size and the number. The number and size of the ropes shall be selected to ensure proper factor of safety as mentioned in IS codes and adequate traction of the lift. The ropes shall be procured from a reputed manufacturer of wire ropes specific for elevators. Test certificates shall be made available when requested. Ropes shall be selected such that it ensures proper traction and minimum sheave wear. The minimum diameter of ropes shall be 8mm and number of ropes shall not be less than 3.

B5	Elastomeric coated steel belts: When elastomeric coated steel belts are used, continuous operating monitoring system shall be provided and installed with each lift. The criteria for replacement of the belts shall be defined and adhered to as part of the maintenance cycle and indicated in the maintenance manual. Each lift shall have at least 3 belts.
B6	Compensating chain / rope: The chain / ropes when provided shall be procured from a reputed manufacturer of chain / ropes specific for elevators. The design of the chain / ropes shall ensure noiseless operation. Elevators with travel of over 30 meters shall be provided with compensating chains. Elevators with travel over 100 meters shall be provided with compensating ropes. Test certificates shall be made available when requested.
B7	All moving parts and high voltage contacts shall be adequately guarded against accidental contact. All car tops shall be provided with sturdy and well anchored barricades. The arrangement of equipment, troughs, trunking etc. shall be such that tripping hazards are minimized.
B8	Wiring and cabling shall be carried out in a neat and systematic manner and secured. Identification ferrules shall be fitted on all wires at both ends as identified on the appropriate wiring diagram.

4.8 Overload warning feature with audio-visual indication (Visual indication shall show "OVER LOADED") with stainless steel face plate matching with other signal and operating features shall be installed in the car, so that when there is over load in the car, the signal shall lit up a flashing light indicating "OVER LOADED" and a buzzer shall operate during this period and the elevator door shall remain open until the over load is removed.

4.9Number & Size of Ropes

The Bidder must indicate the number and size of lift ropes and governor ropes proposed to be used, their origin, type, ultimate Tensile strength and factor of safety. The Bidder should furnish certificate or ropes from the rope manufacturers issued by competent authority. Type Test & Routine Test Certificates shall be furnished.

A Plate giving the Number, Size & Ultimate Tensile Strength of the Rope used shall be permanently fixed to the Cross Head.

Before Installation, Manufacturer's Certificate shall be supplied for each set of Hoisting Ropes with the following data:

Type of Wire Rope
The Diameter in MM
The Manufacturer's Rated
Braking Strength
The Month & the Year
Ropes were manufactured.
The Manufacturer's Name

The Factor of Safety based on Maximum Static Load for Car & Counter weight ropes shall be at least 12.

The Ropes shall be attached to dead end Hitch assemblies, fitting to supporting beams, car Frames, Counterweights by means of suitable Rope Termination. A Locking Device or Anti-Twist Rope Device shall be fitted to the Roping System.

5.0 Door Locks

Electro-mechanical door lock shall be provided for all the landing doors and they shall be such that the doors cannot open unless the car is at rest at the particular landing. It shall not be possible to move the car unless all the landing doors and the car door are closed and locked.

Car door interlock shall be provided.

All the locks and contacts shall conform to IS : 14665 (Part 1/Sec 6)-2001 shall be positive and pass the prescribed endurance and reliability test from a recognised testing laboratory. They shall be so located as to be inaccessible to un-authorised personnel. The electromechanical latch should be so designed that it is inaccessible or invisible to the passengers in the car.

Each Landing Door shall be provided with an accepted Locking & Interlocking device to prevent the Operation of the Elevator Unless all Landing Doors are Closed & Locked. It shall not be possible to open the Landing Door from the Landing Side without a Landing Door Key.

5.1 Top and Bottom Clearance

The clearance between the top of the car and the soffit of the lift shaft roof, bottom of the car and the pit floor, the buffers etc., and the clearance between the car and the lift well, between the car and the landing sill, between two lift cars in the same shaft etc. shall be provided as per IS 14665 (Part 1, 2 & 4) and relevant lift rules mentioned in Appendix-I.

When the Car rests on its fully Compressed Buffer, no part of the car or any equipment attached thereto shall come into contact with any part of the Pit or any Part of the equipment located therein.

When the car rests on fully Compressed Buffer, there shall be a vertical clearance of at least 600 mm between the Pit Floor and the Lowest structured/ Mechanical Part, equipment or device installed beneath the car platform except Guide Shoes or Rollers, safety - assemblies & platform apron, guards or other equipment. The clearance between the Car/Counter weight & the hoist way enclosure shall be at least 20 mm except on the side for Loading & Unloading. The Clearance between the counter weight & counter weight screen shall be at least 20 mm. The Clearance between Car & Counter weight shall be at least 25 mm.

5.2 The Car & Counterweight are to be statically balanced following fitting of all its equipment and finishes prior to fitting the guide shoes.

LANDINGS

1.0 **Elevator Entrances**

1.1 Entrances shall be complete with necessary frames, doors, sills, facia, toe guards, dust covers, headers, hanger tracks, cover plates and all other hardware.

1.2 In case of providing 2 speed side opening doors for service lifts same shall be duly notified for review.

1.3 Architraves shall be outside the scope of the elevator supplier if so shown in the Schedule of Requirements and these will be provided through Interior Designs.

1.4 Landing doors and car doors for elevators shall consist of hollow metal panels pressed out sheet stainless steel of grade SS 304 only, adequately reinforced to form a rigid assembly and acoustically treated, so that noise transmission to corridors is not more than 20 dB on all octave bands. Doors shall have safety retracting shoes and full length infra red door sensors . Doors shall be of stainless steel grade SS304.

1.5 Each door shall have integral hangers with balanced point of suspension. Main and up-thrust rollers shall have neoprene or any other suitable tyres and be mounted on factory lubricated ball bearings for smooth and noiseless operation. Roller tracks shall preferably be integral with the header assembly. Each door leaf shall be fitted with bottom Teflon /nylon stabilizers.

1.6 Frames, facia, hanger and dust covers and toe guards shall be of not less than 12 mm sheet steel. Sills shall be of extruded aluminium with necessary non-slip grooves. The entire door assembly shall be fire-resistant for not less than 1 hrs.

1.7 Frames, doors and other exposed parts shall have a baked enamel finish of approved colour. All sheet steel members shall receive a suitable treatment for rust inhibition before receiving the after-coats of primer, filler and paint. Unexposed structural members shall be provided with necessary shop coats and one field coat of paint

2.0 Displays &Indicators

2.1 Signals shall be provided as shown in Schedule of Requirements.

2.2 The displays should be positioned to be seen clearly in lobby and lift cabin.

2.3 All lifts shall also be equipped with Hall position and direction indicators also in at all floors.

7.3 Car position indicator at each landing shall be incorporated for each elevator in the display. These should be alpha-numeric electronic display with up-down arrows and a gong.

7.4 All fixtures shall be of stainless steel and be approved by the Architects.

7.5 Door operation -An VVVF electric door operator for opening and closing the door and the Hoistway door shall be provided which shall consist of a machine on the elevator car operating the car door when the car is stopping at a landing. The car door and hoistway door shall be mechanically connected and shall move simultaneously in opening and closing. The opening of car and hoistway doors shall be such that door shall start open just before the elevator approaches the landing meant for, so that by the time the elevator stops completely the car and hoistway doors be fully open with advance door operation (ADO) feature.

7.6 Necessary switches shall be provided in the elevator machine room, to control the operation of the floors. The car door and the hoistway doors shall open automatically as the car is stopping and landing. The closing of the car door and the hoistway doors must occur before the car can be started. Doors can be stopped and reversed during their closing motion.

7.7. Door Frames

Door frames shall be of at least 1.5 mm thick of Vandal Resistant stainless steel of GradeSS 304 and shall comprise head & jamb sections of the same material. The door frames shall be suitably braced and reinforced.

The frames shall be provided with adjustable wall anchors or comparable devices to permit bonding of these anchors or devices into the walls after the frames are in place. All frames shall be securely fastened to sills and hanger supports, and shall be returned to the hoist way side to present a neat appearance.

7.8 Door Sills

All door sills shall be of at least 3.0 mm thick extruded aluminium /stainless steel section with a non-slip wearing surfaces. Grooves for the guides shall have sufficient clearance for movement of the guides. The sills shall be supported on steel anchor plates securely fastened to the landing door sill supports. The costs for providing all the necessary steel support for the door sills shall be deemed to have been included in the Contract.

Toe guards similar to those provided to the car door sill shall be provided beneath each landing door sill.

7.9 Supports and Covers

Structural steel angles shall be furnished and of sufficient size to accommodate thedoorclosing equipment. The angles shall be continuous and securely bolted to the sills and the building structure.

Hanger cover plates shall be made of galvanized steel, removable, and so arranged to ensure hanger accessibility from within the Elevator car for maintenance purposes.

8.0 Fascia

Where the gap between the car door sill and surface of the Elevator shaft wall exceed 125 mm, galvanized sheet steel fascia plates of not less than 1.5 mm thick shall be provided. These shall be fixed between the undersides of landing entrance sills and the top of the door hanger case to form a flush surface in the path of travel at the car entrance. The plates shall cover the whole width of the landing door and extend by 150 mm on each side of the door. It shall be rigid and properly reinforced. The fascia plate shall be painted in a accepted colour.

8.1 Corrosion Protection-IP 21

The Bidder shall take into consideration, the corrosive effect of the atmosphere in the Elevator design.

All steel components shall be hot dipped galvanised in accordance with BS 729.

All mechanical and cast iron assemblies shall be cleaned and painted. Therunning surfaces of car guides shall be treated with an accepted rust preventive compound.

All parts constructed in sheet steel shall be either galvanised by the hot-dippedprocess or fabricated from hot dipped galvanised sheet steel.

All hardware, fastenings, screws and shims shall be galvanised. However, all visible screws and fastenings shall be of stainless steel.

8.2 Car door interlock should be operational during ARD mode.

	LIFT LANDINGS –BASIC TECHNICAL REQUIREMENTS
B1	Car Arrival chime: All lifts shall be provided with arrival chimes notifying passengers visually and audibly of the arrival of an elevator in advance. The international norms shall be adhered to.
B2	Fireman operation: Fireman's operation shall be as defined by NBC 2005 or as required by the local fire authority. The system shall ensure that all lifts are grounded on operation of the fire man switch / input. The designated fire lift(s) shall then operate under fire man operation.
B3	Disability access: All lifts shall be "disabled friendly" and shall comply with IS15330:2003 or the latest available amendment. The minimum requirements shall ensure braille (engraved) buttons, gong / chime, car annunciators, handrails etc.
B4	All lifts shall also be equipped with Hall position and direction indicators also in at all floors.
B5	Unless otherwise specified commonality of all buttons and fixtures used in a building shall be ensured. The position of all hall fixtures shall be approved by Employer. While establishing positions adequate care shall be taken to avoid puncturing or cutting any concrete.

CAR

1.0 **Car**

1.1 Car frame supporting the car platform and enclosure shall be made of structural steel with isolating rubber cushion. Platform deflection shall not exceed 3 mm under maximum loading conditions. Car shall be complete with:

a) Wiring for lighting should be adequately designed to take upto 150 lux.
b) Centrifugal Blower fans 2nos per lift car selected specially for noiseless operation.
c) Stainless steel car operating panel in the front return panels of the lift cabin shall be provided. Please also suggest disabled friendly car operating panels.
d) Non-slip extruded aluminium threshold plate.
e) Provision for 3 way interphone with an air set microphone and speaker and the trailing cables shall be included.
f) Emergency lighting with necessary battery for 30 minutes complete with battery, charger etc.
g) An overload feature which defeats the operating circuit when the car load reaches 110% of contract load.
h) Adequate ventilation shall be provided in the car for proper and comfortable air circulation.

All wiring for (e) (f) & (g) shall be provided as part of the travelling cables.

1.2 Car size shall be not less than the size indicated. The car interior shall be according to the Interior design and the car shall be designed to take a marble or granite flooring as per Architects requirement. Architraves shall be designed and provided by others or as shown in the Schedule of Requirements.

1.3 The car operating panel(Lockable in case of DCS) shall be stainless steel flush type and shall have the following features:

a) Floor position display corresponding to the landings serviced.
b) Up and down direction indicators
c) Emergency stop switch
d) Alarm button connected to an alarm bell situated on the ground floor complete with wiring.
e) Key-operated selector switch for 'Attendant' and 'Automatic' operation.
f) Door 'open' and 'close' buttons
g) Fan switches
h) Key operated non-stop emergency switch

1.4 An alpha-numeric car position indicator shall be provided in each car.

1.5 Car doors shall be centre opening hollow metal doors as specified in the Schedule of Requirements. Door construction, suspension etc. shall be as specified for entrance doors.

1.6 A key operated switch with up-down buttons and a 100W lamp shall be provided for testing on top of the car.

1.7 The car enclosure with rear and two sides along with front and return panels of special stainless steel sheets as mentioned in annexure specification sheets for passenger lifts and stainless steel in plain finish for service lifts.

1.8 The car platform shall be of all steel construction covered by steel plate welded or bolted to the platform members. The platform shall be equipped with a extruded aluminium threshold plate. The platform shall rest on rubber pads. This arrangement shall be designed to form an isolating rubber cushion between the car and the steel car frame. The platform shall be provided with asbestos vinyl flooring, or latest flooring of choice as decided by the Owner.

The car platform shall be of framed construction and designed on the basis of rated load evenly distributed. The dimensions shall conform to IS:14665 (Part-1) 2000 unless otherwise specified. The flooring shall be smooth and of anti-skid surface. The flooring for passenger cum service lift shall be strong enough to take the rated load without any deformation or damage.

A load plate along with overload alarm, giving the rated load and permissible maximum number of passengers should be fitted in each lift car in a conspicuous position. The Car Platform shall be constructed from Hot Dipped or Spray Galvanized Cold Rolled Steel. Minimum Safety Factor not be less than 5.

Car Platform shall be insulated to prevent the transmission of Noise and Vibration from the Car Frame to the Platform.

1.9 Door operator shall have the following safety interlocks:

a) Only the door at the landing where the car is stopping can be opened and no other hoist way door.
b) Car cannot move when the car or hoistway door is open.
c) During emergencies, car and hoistway doors shall be capable of being opened from outside.

2.0 The traditional infra-red light curtain is to be coupled with coloured indicators that should operate on door movement. The detector should illuminate green if doors are opening, flash red as they start to close, & stay red as the doors move together.

- This system should comply with EN81-70 legislation-Disability Discrimination ACT.
- Only improved fire performance cables FR-LSH are to be used for the lifts.
- Earthing shall be provided as per clause 7.4.4 of Section 5-Part 8 of NBC 2005 & IS
- 3043
- No form of 'No Volt Trip Relay' should be included anywhere in the power supply scheme of the lifts

Doors shall not also open from the inside face during the mechanical jams.

2.1 BATTERY OPERATED EMERGENCY ALARM

There shall be provided an alarm (solid state – siren type) unit operated by 7.2 Volts power pack consisting of rechargeable nickel – cadmium pencil cells which are trickle charged by a specified charging circuit. The unit gives a waxing and waning siren when alarm button in the car is pressed momentarily. The unit has a faceplate to match with the other car fixtures.

2.2 BATTERY OPERATED EMERGENCY LIGHT

There shall be provided an emergency light unit using 7.2 volts power pack consisting of rechargeable nickel – cadmium pencil cells which are trickle charged by a special charger unit batter and miniature with a rectifier lamp. It will operate automatically in case of power failure. The unit is mounted in a metal box located above the car operating panel and will have a stainless steel faceplate. A toggle switch is provided to put off the emergency light when main switch is put off to prevent discharge of cells. Also the charger circuit is so designed that after one hour of discharge, the discharge rate is drastically reduced to prevent complete discharge of the cells.

2.3 MOTION CONTROL SYSTEM

The Elevator shall have closed loop continually monitored Elevator motion control system and electronically controlled dynamic braking system. Uniform smooth ride for passengers during accelerations, operation at rated speed and deceleration resulting to no jerks regardless of passenger load variations is essential.

2.4 OPERATION CONTROL SYSTEM

A technologically advanced microprocessor based control system shall be provided for sufficient handling of passengers and ensure precision floor leveling using feedback data.

Operation Control shall include following features:-

Auto Light and Fan 'ON-OFF': If the car is not used for a predetermined time, the light and fan inside the car shall automatically switch off. They shall be 'on' automatically when someone calls car from any landing.

Fireman's Service: There shall be provided a switch with glass cover at the ground floor which shall permit a fireman to break the glass cover and call the Elevator to ground floor by cancelling all can and landing calls. The Elevator shall then stop at the ground floor with the doors open to permit the fireman to have exclusive use of the Elevator without any interference from the landing calls.

Detection of stuck hall button: If the car arrives at a floor and the hall button is jammed or kept pressed continuously for more than a predetermined time, then the car shall proceed to attend the pending calls.

Home Landing: Car shall automatically return to the designated home landing after answering the last pending call.

Load Non Stop: Upon detection of 80% and upto 100% of duty load, the car shall ignore the registered hall calls and attend only to the car calls until the load inside the car reduces to less than 80% of the duty load.

Anti-Nuisance: If the load inside the car is less than 150 kg. And if there are more than 4 car calls registered then all the car calls get cancelled.

Top of Car & In Controller Inspection Operation: An inspection 'U' & 'D' buttons shall be provided on top of car and in controller. The Elevator shall be put in inspection mode by operating a toggle switch. Upon continuously pressing the 'U' or 'D' button the Elevator runs in inspection speed lower than normal speed i.e. 0.5 mps.

Door Open Button in Car Operating Panel: Actuation of Do button in COP shall cause the door to open when at landing. The doors shall close automatically after remaining open for a predetermined time.

Emergency Stop Button: Actuation of STOP (Red colour) button in car operating shall stop the car immediately (by application of brake in machine) as long as the button is pressed. Upon releasing the button the car shall proceed to answer the pending calls.

Terminal Floor Protection: Unless the car starts decelerating normally near the terminal landing, operation of the limit switch in the hoistway shall force the car to decelerate.

Motor Failure Protection: If abnormal temperature in the Elevator motor is detected by the thermostat embedded in the motor winding, the car shall be forced to stop at the nearest floor and the door shall remain open. The Elevator shall automatically revert to normal operation as soon as the motor has cooled.

With Attendant Service shall permit an attendant to have full control of the registration of car calls, the starting, stopping and direction of car travel.

Automatic Micro Self-leveling: The elevator shall be provided with a self-leveling feature that will automatically stop the car at the level with the floor landings. This self-leveling shall, within its zone, be entirely automatic and independent of the opening device and shall correct for over-travel or under-travel and rope stretch.

Hand winding wheel or handle: At times of lift stoppage due to any reasons, it shall be possible to move the lift car to the nearest landing manually. The manual operation shall be by means of winding wheel or handle mounted on the end of the motor shaft. The up or down direction of the movement of the car should be clearly marked on the motor or at suitable location. A wearing plate written in bold signal red colour advising the maintenance staff to switch off the mains supply before releasing the brake and operating the wheel is to be prominently displayed.

Alignment

The Brake Plunger, Sheaves and all Bearings shall be mounted & assembled so that Proper Alignment of these parts is maintained.

Anti-Vibration Supports

The Whole Traction Machine shall be mounted on appropriate Anti -Vibration supports to minimize noise and vibration

A switch shall be provided in the car operating panel which allows that car to be removed from group service and be operated by an attendant in response to car buttons only.

Car operating panel

The car operating panel shall be flush mounted in the car enclosure and shall contain the following:

i) A bank of buttons to correspond to the various landing level served.
ii) An emergency stop switch for stopping the car independently of the regular operating device.
iii) An alarm push button connected to an alarm bell located at the main floor landing outside of and adjacent to the hoistway.
iv) A switch for car fan.
v) A door open button for reversing the doors while closing.
vi) Provision for secure access control shall be in flush with the panel and protruding type

With Attendant Operation

i) With Attendant Operation shall be furnished in connection with Selective Collective Automatic Operation specified.
ii) The attendant shall press buttons in the car operating panel corresponding to the floors desired. The hall buttons shall stop the car as previously described.
iii) For the use of the attendant the following additional equipment shall be added to the car operating panel.
iv) Key operated switch for cutting in and out the additional equipment for with Attendant Operation.
v) A buzzer for notifying the attendant when an up strip should be made in answer to hall calls.
vi) A key operated independent service switch
vii) A non-stop button for the purpose of by-passing landing calls, but these landing calls shall remain registered however, until they are answered.
viii) Up and down light jewels for indicating the direction the car is set to travel.

Full Selective Collective Automatic Operation

The operation shall be selective collective automatic type with one button in the car for each landing level served, and up and down buttons at the intermediate landings and a single button at each terminal landing. All stops registered by the momentary pressure of the car button shall be made in the order in which the landings are reached after the buttons have been pressed but irrespective of the sequence in which the calls were registered. Stops registered by the momentary pressure of the button at the landings shall be made in the order in which the landings are reached in each direction of travel after the buttons have been pressed. All up landing calls shall be answered when the car is travelling in the up direction and all down landing

calls shall be answered when the car is travelling in the down direction, except in the case of the uppermost or lowermost calls which shall be answered as soon as it is reached.

2.5 Toe Guard Aprons

The toe guard apron of gauge not less than 1.6mm of Galvanized sheet steel may be provided extending at least 15mm beyond entrance jambs at each side. The guards shall have a straight vertical face extending below the level of the finished car floor and not less than the depth of the levelling zone plus 7.5mmIt shall be seemed to car platform construction and be reinforced and braced. The Depth of the Toe Guard shall be sufficient to prevent any object from being trapped between the Underside of the Car Platform and the Landing during Re-Levelling Operation.

2.6 Lift numbering

For the purpose of identification, the lift number should be displayed outside the landing door, inside the car and in the machine room. This numbering may be used as reference for the purpose of routine/ preventive maintenance, for operating from machine rooms and reporting of any incidents etc.

2.7 Instructions

Detailed instructions for Lift Operations & Passenger Safety including Do's & Don'ts specified for guidance of passengers of shall be prominently displayed inside and outside the car at all landings.

B1	Car ventilation: Two nos. Blowers / Fans shall be provided for every lift. The arrangement shall ensure at least 15 air changes every hour to the satisfaction of the Employer.
B2	Car lighting: The car lighting shall be commercially available energy efficient, low heat emitting and long life integrated LED type. The combined lighting available in the car measured at a meter above the floor shall not be less than 150 lux.
B3	Door detectors: All lifts shall be provided with door detectors and shall be of full height light curtain type with at least 100 beams.
B4	Emergency alarm, Light , Fan : The emergency alarm, light and fan shall be operational for a minimum period of 60 minutes. The emergency car lighting provided shall be a minimum of 50 lux at lift car floor level.
B5	3 wayIntercom: Intercoms shall always be provided for every unit. The intercoms shall be hands free 3 way communicator capable of connecting to building emergency room(Fire command centre at ground floor) and machine room. All wiring within machine room and hoist way shall be by the Bidder.
B6	Access Control Interface: Secure access can be card readers, keypad readers or biometric fingerprint readers and shall be confirmed by employer. The supplier shall readily interface with the Access Control Bidder at no extra cost.
B7	Building Management System: The Bidder shall provide dry contacts of the following output signals for each elevator installation future connection by others: 1. Status - Normal / Maintenance / Fireman operation 2. Direction of travel 3. Status of door - open / close 4. Car position 5. Passenger trapped alarm / intercom and

	more requirements shall be notified later
B8	All Aesthetics - Final decision on all Finishes, buttons etc shall be by the Architect / Employer. It shall be the responsibility of the Bidder to interface with the Architect and the Employer to obtain written approval of aesthetics, finishes, fixtures etc. The written approval and samples shall be submitted to the Employer's representative.
B9	Position Indicators in the car or the lobby shall be at least 2.5 cm high indicating car position and direction of travel. The indicators shall be capable of indicating alpha-numeric signage depending on the floor designations selected for the particular building.
B10	Service lifts shall be rugged and the finishes shall be easy to clean and repair. The flooring of the service lift shall be replaceable. When specified the flooring shall be of patterned 'chequered plate' steel. These lifts shall also be provided with wall protection pads and bumpers as a measure for protection of walls. The bumpers shall be mounted at a suitable height to absorb the impact of trolleys, loading pallets etc.
B11	Car Size: The relation between the Net car area and the Car rated capacity shall be in accordance with the Indian Standards. A reduction of up to 100mm in one dimension (either in width or in depth, not both) is acceptable to accommodate the bidders' standard product line provided it does not hinder any special requirement of the Employer. In any case a deviation of more than 5% in the net car area is not permissible. Unless a deep car has been specified the width of the car shall be greater than the depth.

PIT

1.0 BUFFERS (IS 14665 (Part 4/Sec 1) - 2001)

1.1 Buffers shall be of hydraulic type buffers. Buffers shall be suitable for installation in the space available. Buffer anchorage at pit floors shall be installed avoiding puncturing of water proofing. The partial compression of spring return oil buffers when the car is in level with terminal landing will not be acceptable.

1.2 All buffers shall be tested at manufacturer's works and a copy of the test report shall be submitted.

1.3 When the lift car rests on fully compressed buffers there shall be at least 60 cms clearance between the lowest point in its car frame and any obstruction in the pit exclusive of buffers and their supports. Similarly when the lift carcross head is 60 cm from the nearest obstruction above it, no projection on the car shall strike any part of the overhead structure.

1.4 TheBidder must indicate the name of buffer manufacturers, buffer stroke & certified maximum loads.

1.5 Emergency pit stop switches in the elevator pit shall be provided to stop the car.

1.6 Pit ladders shall be provided for all elevators

ERECTION, TESTING & COMMISSIONING

1.0 CIVIL WORK TO BE DONE BY ELEVATOR BIDDER

Elevator Bidder shall provide / carryout the following work at his own cost.

a) Necessary scaffolding in the hoist way required during installation of hoistway lighting and whitewashing and during the erection of the elevators (scaffolding materials will remain elevator Bidder's property and they should take away after commissioning handing over lifts).Scaffoldless installation for faster and smoother installation is encouraged.

b) Minor building work comprising of cutting holes in the walls / floor and making good for car and counter weight rail brackets, hall buttons and indicators including laying of steel in position.

c) Steel items such as machine bears, bearing plates, buffer support channels, ladder in pit, stretches / separator angle in lift wall etc.

d) Hoisting beam, if required, foundation for control panels and equipment's in the lift machine room.

e) Temporary arrangement / blockade at hoist way entrance on each and every floor and protection before dismantling of lifts.

2.0 NOTICE OF OPERATION

2.1 No important operation shall be commenced nor shall work outside the usual working hours be carried out without the consent in writing of the Engineer-in-Charge or without full and complete notice.

3.0 SEQUENCE OF WORKS

3.1 The sequence in which the works are to be carried out shall be to the approval of the Engineer-in-Charge and shall be such as to suit the detailed method of construction adopted by the Bidder.The project work break down structure for each block shall be separately prepared and submitted for approval prior to the start of installation.

4.0 SETTING OUT THE WORKS

4.1 The Bidder shall, set out and measure up all the works in accordance with the Contract documents and for this purpose he shall appoint technical and other category staff and also provided for all necessary assistants needed. Organization chart shall be provided and updated on regular basis.

4.2 The Bidder shall be entirely responsible for the accurate and perfect setting out of all works, whether such setting out be executed by his own staff or not, and, notwithstanding that the Engineer-in-Charge may furnish bench marks and set out or give the necessary directions for setting out the work, the Bidder must satisfy himself as to the accuracy of these and he shall, at his own cost rectify and make good any and all defects which may arise from errors in the lines and levels, and no inaccuracy in the setting out and in the construction of the works shall be

founded on by the Bidder as a reason for any claim against the Engineer-in-Charge by the Bidder.

4.3 Datum for Contract Levels

The levels, dimensions and general construction of the work shown on the drawings are supposed to be correct and in agreement with one another, but the Bidder must verify the same before ordering any materials or commencing the work.

4.4 Instrument for Setting Out and Measurement, Testing of Works

4.4.1 The Bidder shall also provide and maintain at his own cost and keep in good order all the measuring and testing equipment as required by and for the use of Engineer-in-Charge for the duration of the Contract.

4.4.2 The work shall be carried out strictly in accordance with the Time Schedule and other instructions given by the Engineer-in-Charge. Bidder shall provide at all time adequate portable fire extinguishers in his work area and take all adequate precautions against fire hazard.

4.4.3 All reports, statements, returns, diagrams or drawings, etc., which the Bidder is required to submit during the progress of the works to the Engineer-in-Charge or to the Engineer-in-Charge's Representative shall unless otherwise directed, to be furnished in triplicate and at expense of the Bidder.

5.0 RESPONSIBILITY FOR CARRYING OUT WORKS

The responsibility for carrying out the works and the methods to be adopted under this Contract shall rest solely with the Bidder subject always to the approval by the Engineer-in-Charge of the Bidder's proposals. Such approvals shall not, however, relieve the Bidder in any way of his responsibility for the proper execution of works in accordance with the Contract.

6.0 ERECTION EQUIPMENT, WORKS, MATERIALS ETC.

6.1 The Bidder's attention is specially directed to the fact that the requirements of the specification are general and applicable to all the works.

6.2 In addition, the following general requirements given,Bidder shall also be held to apply to every part of the works where applicable as follows.

(i) Use Plant, Materials etc. for safe construction

All the labour, erection plant, machinery, tools, instruments, tackle and equipment, temporary offices, workmen's sanitary and welfare arrangements and other buildings, temporary structures, works, services and operations, materials, stores and things of whatever description necessary to construct, complete and maintain the whole of the works, temporary or permanent, or to fulfil the requirements specified in the Contract shall be provided and used by the Bidder, and the constructional plant, equipment, materials, temporary buildings, works,

services etc., shall be of a type, capacity, power or quantity, strength, design and construction and erected in such position or used or executed at such times and in such manner as are specified in the Contract and as are most efficient and suitable for the proper and safe execution of the work to be undertaken under this Contract.

(ii) Adaption of Safety Measures for Plant & Materials

The Bidder shall be solely responsible for the provision, sufficiency, stability, safety, protection, demolition, transport, maintenance and insurance against all risks of all the aforesaid constructional plant, tools, equipment, structures, works, services and operations, materials, stores and things, etc., and shall except where otherwise stated in the Contract, replace or reconstruct them or re-execute them in the event of their being lost or damaged or inaccurate and on completion of the Contract, the Bidder shall remove from the site all constructional plant, temporary offices and structures and unused material and stores and debris and shall leave the site in a tidy condition all to the approval of the Engineer-in-Charge.

(iii) Utilities to be provided by Bidder

The Bidder shall make his own arrangements and except where otherwise indicated, shall at all points where they are required such supplies of water, fuel, light and power as he may require for all the operations under the Contract, and shall also provide and use all the necessary applications, works, services and other things necessary to distribute the supplies to the various parts of the works.

(iv) Proper Access to Site

The Bidder shall be deemed to have satisfied himself as to means of access to the site of the works and transport of labour, materials and plant to and from and over the works, the relative positions lines and levels of any existing tracks, roads, sewers, drains, pipes, wires, cables, buildings and all other works and other relative contingencies, and he shall, where necessary provide and maintain all requisite temporary gangway, ladders, staging, roads and foot-paths to and about the site of the works, as may be necessary or the construction of the works or transport of labour, plant and materials.

(v) Use of Services etc. by Engineer-in-Charge

All of the before mentioned works which shall be constructed and in use for the works generally shall be available for the reasonable use of the Engineer-in-Charge, the Engineer-in-Charge without charge and the Bidder shall carry out the instructions of the Engineer-in-Charge in this matter.

(vi) Furnishing Information to Engineer-in-Charge

The Bidder shall when required by the Engineer-in-Charge furnish all information as to quality, weight, constituent substances, dimensions, levels, strength and description of the materials and works and give the Engineer-in-Charge such other particulars as may be required.

(vii) Arrangement for Testing Materials at Site

All testing of equipment and materials, labour and everything necessary for the testing shall be at the Bidder's own expense as shall include the cost of retesting any materials or works to replace those which have failed to pass the special requirements. All such testing shall be carried out at the site, unless specifically agreed by Engineer-in-Charge to be tested in approved laboratories, in case of emergencies.

(v(x) Testing

All types of routine and type tests shall be carried out at the works of the Bidder or the manufacturers of components. The Engineer-in-Charge shall be free to witness any or all tests if he so desires.

On the completion of the installation, the Bidder shall arrange to carry out various initial tests as detailed below in the presence of and to the complete satisfaction of the Engineer-in-Charge, and their representatives. Any defects or shortcomings found during the tests shall be speedily rectified or made good by the Bidder at his own expenses.

The following tests shall be carried out as per latest edition and other relevant standards up-to-date:

A. Shop Tests

All raw materials, casting, forgings, etc. used for the equipment shall be of tested quality in accordance with the specification requirements/applicable codes, test certificates co-related with the material to be used shall be submitted to the Owner for acceptance.

All the equipment shall be rested during the various stages of manufacturing and prior to dispatch in accordance with the quality plans applicable codes and standards for meeting the performance requirements. In absence of any standard, these shall be tested as per mutually agreed procedure between the Bidder and the Owner.

All welding shall be carried out as per welding procedure qualified as per ISME Sec. IX welding procedures shall be forwarded to Engineer-in-Charge for approval. Only welders qualified as per ASME Sec. IX shall be employed for welding.

Steel wire ropes shall be subjected to all the tests including material tests as per relevant standard. Breaking load test shall be carried out as per relevant national/international standards. Coated steel belt latest technology is preferred.

Buffer springs shall be subjected to load test as per relevant specifications. Material certificate for spring shall also be furnished.

All components prior to assembly shall be checked for dimensions. All rotating components shall be shop tested for dynamic balancing. Car sling and car body in assembled condition shall be checked for position of all major components i.e. car sling, inside depth, width, height position of push button box, indicator box, lights, fans.

Vibration level shall be measured at site also.

Site Tests

After installation, necessary trial run and tests shall be carried out by the Bidder in the presence of Engineer-in-Charge to determine if the equipment supplied is satisfactorily installed and commissioned. The tests shall be as per relevant standards.

7.0 TEST CERTIFICATES

All manufacturer's certificates of test showing that the materials have been tested in accordance with the requirements of the appropriate Indian Standard, other relevant standard specification or this specification, are to be supplied free of charge on request.

INSTALLATION

The Bidder shall be responsible for the timely and proper setting out of the Works which shall include verifying the positions, levels, dimensions and alignment of elevator pits, supports, shaft, walls and floor openings, etc. Any error in the civil construction in so far as they relate to the Works shall be immediately brought to the attention of the Employer's Representative and the Designated Bidder to allow prompt rectification by the Designated Bidder so as to avoid delays to the Works.

The Bidder shall not be entitled to claim for any additional costs incurred by him arising out of such errors in the civil construction, if such additional costs could reasonably have been avoided had the Bidder carried out timely and proper setting out of the Works.

The Bidder shall be responsible for all aspects of the Work required to install the equipment, including the provision of all lifting facilities such as frames where the provision of hooks is not possible. The Bidder shall co-ordinate with the Designated Bidders on the necessary precautions to be taken by the both parties to prevent damage to any part of the civil works during installation. The Bidder shall take all necessary pre-cautions including transportation of various part of elevators on rubber typed wheel and handling these with proper equipment so that floor finishes are not damaged by the Bidder during erection of Elevators at the stations. In case any floor finish is damaged by the Bidder the same shall be made good by the Bidder in full panel / area at his cost, so as to maintain uniformity.

The Bidder shall provide protection, such as plywood box-up etc., to protect the door, the jamb, decking, from being damaged until the work is handed over at no additional cost.

All Elevator landing door gaps shall be less than 4 mm.

The Bidder shall be responsible for the installation of all guide rail brackets, separator, sill supports, hanger brackets including drilling and all related materials.

All equipment shall be fully protected against the ingress of grit, dust and moisture during delivery, storage and installation.

The equipment shall be delivered to Site in accordance with an accepted installation programme with a minimum temporary storage period to avoid damage.

The Bidder shall design the equipment to comply with the Site access restrictions and shall ensure that the largest piece of equipment can be brought into the site through the access opening/entrances and passage ways.

Where the structure does not permit the provision of lifting points, the Bidder shall make his own arrangements to provide the required lifting facilities such as "A" frames or similar to carry out installation work at no extra cost.

Once the elevator shaft is handed over to the Bidder to commence installation, he shall be responsible for providing fencing and barricades to protect his working areas during the installation period for the safety of his workers and other personnel working in the station until the elevator entrance doors are in position and are closed.

Service elevators –internal cladding till hand over – Please note that the service elevators shall be used to carry materials and goods before the final take over of flats and the necessary full height panel cladding in the lifts and maintenance of the same shall be under Bidder's scope.

TESTING AND COMMISSIONING OF ELEVATORS

Testing & Inspection

General

As part of the design submission, the Bidder shall submit to the Employer's Representative for acceptance a schedule of tests giving full details of all tests to be carried out. Tests at places of manufacture to be witnessed by the Owner's Representative shall be grouped together so far as can be arranged so that as many tests as possible can be witnessed on each visit.

The Bidder shall prepare and forward to the Owner's Representative an original and 5 copies of all Test Reports as soon as practicable after completion of each test whether witnessed by the Employer's Representative or not. All test data shall be certified by the Bidder's Professional Engineer.

General Requirements for Type Tests and Acceptance Tests

The Tenderer shall provide details of any type and acceptance tests, which have been carried out on equipment offered, or any additional tests he recommends.

In general, certificates of previous type tests may be accepted at the discretion of the Owner's Representative, provided that they are for identical equipment and conditions. Where appropriate, new and/or modified components to meet the requirements of this Specification shall be made available for type testing.

Type tests on equipment shall be carried out strictly as specified in the Specification.

The Owners Representative shall have right to witness tests and inspections on individual materials, components, or sub-assemblies, and details of these shall be agreed between the Bidder and the Employer's Representative. At the conclusion of all type tests, the Bidder shall compile all the test data together with any observations made during the tests, file them into a type test binder and submit it to the Owner's Representative for acceptance and record.

The Bidder shall carry out tests during manufacture as specified and propose any additional tests to be carried out. These tests shall be subject to the acceptance of the Owner's Representative. Routine

tests shall be integrated with the programme. The Owner's Representative will, at his discretion, witness the routine tests during the period of manufacture, or accept the records of the Bidder's in-house quality control scheme, where appropriate, as sufficient evidence for the execution of the routine tests. Routine tests shall be carried out strictly as specified in the test specification.On completion of the manufacture of items or sub-assemblies, and following completion of the manufacturer's own tests and inspection, the Employer's Representative shall be invited to witness such tests as he deems appropriate.

The Bidder shall schedule the routine tests to meet the manufacturing programme, whether or not the Owner's Representative will be present at the tests, provided advance notice has been served to the Employer's Representative .

The Owner's Representative will determine and advise the Bidder of those tests where certification by the manufacturer may be acceptable in lieu of witnessed tests. Before equipment is dispatched, the Owner's Representative will signify his acceptance by signing certificates releasing such equipment from the place of manufacture or test.

Test Specification

The Bidder shall submit for acceptance by the Owner's Representative test specifications for type tests, routine tests, tests on site, final acceptance tests and commissioning. The specifications shall detail the methods of conducting the tests, the tools and instruments used. Reference to the accepted documents anddrawings shall be included in these specifications. The records/results shall be tabulated in a prescribed format applicable to this Contract.

Nothing in this Specification shall prevent the Owner's Representative from calling for extra tests.
These test specification shall include the design values of all quantities to be verified, with allowable tolerance or limits. Summary drawings or diagrams shall be included with the test specifications to show the dimensions and tolerances of all structural assemblies and sub-assemblies. In the case of welded fabrications, key diagrams giving all weld data shall be provided to enable systematic inspection to take place.

Verification of accuracy shall be required for all tools, apparatus, testing jigs, measuring instruments and 'go' or 'no go' gauges used for the purpose of routine tests.

All test instruments shall be calibrated not more than one year prior to their use. The Bidder shall submit calibration certificate or other documents for proof of Compliance.

a)Controller

Frequency of Test

One of each type of controller shall be type tested.

Scope of Tests

Physical Construction Checking

The construction of the control cubicle shall be checked against the approved drawings. Facilities to padlock incoming fused isolator shall be checked. Verification of the protection classification shall be

conducted and/or provided.

Pressure Test

Earth leakage circuit breakers shall be tested on both poles. The current and time required to trip shall be recorded. Similarly, the dc earth leakage unit shall be tested and values to be recorded.

Pressure testing at 2000V ac r.m.s. for 60 seconds between phase to phase and phase to earth.
Control wiring itself shall be pressure tested at 1,500V ac r.m.s. for 60 seconds between control / auxiliary wiring and frame. Insulation tests shall be carried out before and after the above tests by a 1000V insulation tester. The insulation resistance thus measured shall not be less than 200M ohm.

All protection on electronic circuits shall be tested by a 500 V installation tester.
Wiring to all electronic components shall be meggered. Meggersetting shall be at the discretion of the Employer's Representative.

Verification of the protection circuit shall be carried out in accordance with the approved procedures.
Temperature rise during the tests shall be recorded and verified.

b)Braking System

Frequency of Test

One of each type of brake provided shall be required to undergo type testing.

Scope of Test

A full dimensional check shall be carried out to verify compliance with the manufacturing drawings and a full functional test shall be carried out. A demonstration of brake adjustment and setting shall be carried out.

Elevators Inter-communication System

Two of each type of Elevator-Inter-Communication Systems shall be type tested. A full functional test shall be carried out to verify compliance with the specification.

Elevator Routine Tests

The following are the minimum requirements of the routine tests.

c)Driving Machines

Random Check:

Verification of the insulation resistance of the windings using a 1000 Volts megger test. A high voltage test to 2000 Volts r.m.s. for one minute of the stator winding shall be conducted.

A dynamic test for every driving machine shall be conducted for a period of 4 hours continuously without

stopping, except for changing of direction, 2 hours in each direction, at contract speed and 25% load conditions. The test is to ensure no undue vibration or abnormal temperature rise occurs in any component.

d)Power units

100% check:

The assembled power unit shall be checked in accordance with the accepted test specification.

e)Main Control Cubicle

100% Check:

The complete control cubicle shall be checked with a simulator to verify correct wiring connection and function of the electrical/ electronic devices.

Verification of the insulation resistance of the control wiring and electronic components shall be conducted in accordance with the accepted test specifications.

f)Call Button and Fixtures

Random Check:

The call button shall be checked at random to confirm the manufacturing quality.

The assembled fixtures shall be inspected and functionally tested accordance with the accepted test specifications.

g)Hoist Ropes
A manufacturer's certificate or sample test will be acceptable to the Employer's Representative.

h)Safety Gear
Manufacturer's certificate or test report on the assembly will be accepted by the Employer's Representative.

i)Car Enclosure and Door Assembly

Random Check:
The assemblies shall be checked at random to ensure the correct dimensions and layout. Quality of the finishing shall be inspected to ensure the correct type of materials have been used for fabrication.

Protection of the finished assembly shall be inspected in accordance with the accepted test specifications.

8.0 Elevator Site Checking and Inspection

A test and inspection specification shall be prepared for each of the following critical phases of work. Forty-eight hours' notice is required prior to completing these phases to enable the Employer's Representative to carry out any checks he deems necessary. The following are the minimum requirements:

a) Setting out the plumb lines;

b) Erection and alignment of guide rails; rail brackets
c)Erection and alignment of landing doors; jamb, sills, header etc.
d)Erection of Elevator shaft and Elevator pit equipment;
e)Erection of car enclosures;
f)Positioning of Machine Room equipment and control cubicles;
g)Installation of the hoist ropes; and governor rope
h)Erection of landing fixtures and car fixtures;
i)Installation of hoistway and machine room trunking prior to installation of wiring;
j)Installation of wiring and cabling
k)Installation of car fixture and car top equipment
l)Earthing and bonding checks

9.0 Elevator Commissioning and Acceptance Tests

Tests shall be carried out on each Elevator in accordance with the relevant portions of BS 5655/IS 14665, which shall include but not be limited to the following:-

Readings on starting current, running current and supply voltage shall be taken at the rated speed of each Elevator in both directions of operation under no load, 20%, 40%, 60%, 80% and full load conditions.

Both power and control wiring of the controller shall be tested between lines connected together and earth at 1000V 50Hz. This voltage shall be applied and maintained for one minute. The control wiring shall be separately tested between poles and earth. Immediately following each test a 1000 Vdc. Insulation tester shall show an insulation resistance of not less than 3 M ohms. All field wiring shall withstand a 1000 V megger test on site and each conductor shall show an insulation resistance to earth of not less than 3 M ohms.

The overspeed governor shall be tested to ensure that it will activate when the speed exceeds 40% of the nominal speed. Functional tests on the safety gear with no load at rated speed by manually tripping the governor. The Elevator car shall be operated up and down several times including tests to demonstrate the levelling operation.

10.0 Test on the car and landing doors system

Checking of the condition of the landing and car door for smooth operation,

Functional tests on the door closing time, door speed, re-opening, safety edge, proximity detection landing and car door contacts of the door lock.

Functional tests on all the landing call buttons, indicators and all function provided in key-switch operated cabinet mounted below the car operating panels.

Functional tests on the emergency call buttons.

Functional tests on the final limit switches, terminal slow down and
terminal over travel limit switches.

Functional tests on the following safety switches and devices:-

(i) Overload device.
(ii) Phase protection device.
(iii)Anti-creep system.
(iv)Emergency lowering and raising devices.
(v)Pipe rupture device.
(vi)Over current protection device.
(vii)Counter weight safety (if applicable)
(i)Functional tests on the UPS unit and 2 hours duration test.
(j)Functional test on the car top maintenance panel.
(k)Testing of the Intercom system.
(l)Compress buffer test.
(m)Running clearance tests.
(n)Functioning test of Elevator management, monitoring and fault diagnostic system.
(o)Noise/ sound level test of equipment and installation.
(p)Functional tests of battery backup device.
(q)Complete function testson track machine, motor brake and control equipment.
(r)Floor levelling accuracy and re-levelling at different loads.
(s)Tests on Emergency Power and Fire operation.

Temperature readings of elevator controller and equipment shall be taken every fifteen minutes for at least 2 hours or the duration of test whichever is longer.

Functional tests of all features and functions not included in the above but required in the Contract.

11.0 Twelve Hour Run

Each Elevator shall be subject to a 12-hour duty cycle test, during which the Elevator shall run continuously with the contract load for 12 hours and shall travel up and down with intermediate stops such that the number of starts complied with the specification.

12.0 TESTING OF LIFT INSTALLATION (As per IS/IEC Standard)

These Tests are in addition to Tests already mentioned:

TESTS AT SITE:

Levelling Test:

Accuracy of the floor levelling shall be tested with the lift empty, fully loaded. The lift shall be run to each floor while travelling both in upward and downward directions and the actual distance of car floor above/ below landing floor shall be measured. In each case there shall not be any appreciable difference in these measurements for levelling at the floors when the car is empty and when it is fully loaded. The tolerances for levelling shall be as + 5mm accuracy.

Safety Gear Test:

Instantaneous safety gear controlled by a governor, should be tested with contract load and a +contract speed, governor being operated by hand. Two tests should be made, however, with wedge clamps or flexible clamp safeties, one with contract load in the car and the other with 68 kg (equivalent to one person) in the car. The stopping distance obtained should be compared with specified figures and the guides, car platform, and safety gear should be carefully examined afterwards for signs of permanent distortion.

Counterweight safety gear should be tripped by the counterweight governor and the stopping distance noted. In this case, however the governor tripping speed should exceed that of the car safety governor but by not more than 10 percent.

During the safety gear test, car speed (from the governor or the main sheave) should be determined at the instant or tripping speed as stated in IS Code. The governor jaws and rope should be examined for any undue wear.

Contract Speed:

This should be measured with contract load in the car, with half load with no load, and should not vary from the contract speed by more than 10 percent. The convenient method is by counting the number of revolutions, made by the sheave or drum in a known time. Chalk mark on the sheave or drum and a stop switch will facilitate timing but care must be exercised to ensure that no acceleration or retardation periods are included. If the roping is 2 to 1 the sheave speed is twice the car speed. Alternatively, the speed can be measured by a tachometer applied directly to shaft immediately below the sheave.

Lift Balance:

After the above test, some of the weight shall be removed until the remaining weights represent the figures specified by the tenderer. With this condition car at half way travel the effort required to move the lift car in either direction with the help of winding wheel shall be as nearly as can be judged by the same.

Car and landing doors interlocks:

The lift shall not move with any door open. The car door relay contact and the retiring release cam must be tested. The working of the door operation and the safety edges and light equipment if any provided shall also be examined.

Controllers:

The operation of the contactors and interlocks shall be examined and it shall be ascertained whether all requirements laid down in the specifications have been met.

Normal Terminal Stopping Switches:

This shall be tested by letting the car run to each terminal landing in turn, first with no load and then with contract load and by taking measurements, top and bottom over travels can be ascertained.

Final Terminal Stopping Switches:

The normal terminal stopping switches shall be disconnected for this test. It shall be ensured that these

switches operate before the buffers are engaged.

Insulation Resistance:

This shall be measured (after removing the electronic PCB's and their connection) between power and control lines and earth and shall not be less than 5 mega-ohms when measured with D.C. voltage of 500 V. The test shall be carried out with contactors so connected together as to ensure that all parts of every circuit are simultaneously tested.

Earthing:

All conduits, switches, casing and similar metal work shall have Earth continuity.

Ropes:

The size, number construction and fastenings of the ropes should be carefully examined and recorded.

Buffers:

The car should be run on to its buffers at contract speed and with contract load in the car to test whether there is any permanent distortion of the car or buffers. The counterweight buffers should be tested similarly.

13.0 Handing over of the lifts

Please note that the hand over date of lifts completion shall be the hand over date of final lift. i.e., the handover date shall be one as a whole for the total lifts completion. The lift Bidder upon handing over shall submit 3 sets of lift drawings, wiringdiagrams,Program manuals for Group control or DCS system and maintenance manuals(2 no's).

MAINTENANCE - AFTER HANDOVER

MAINTENANCE

1.0 **Scope**

1.1 The scope of work covers the maintenance chores to be attended to by the elevator Bidder during the Defects liability period. Thereafter under the Annual Maintenance Contract if desired by the Owner.

2.0 **Defects Liability Period**

2.1 The Bidder shall furnish services of inspection and maintenance for the equipment installed under this contract for period as mentioned in the General Condition and Special Condition of Contract. The maintenance during the above period shall be free of cost and shall cover inspection of equipment, carrying out necessary adjustments, oiling, greasing except replacement of parts due to misuse or accidents or negligence of others. The periodicity of such inspection maintenance service shall be not less than once a month. The above maintenance schedule is over and above break-down calls. A record of such maintenance shall be maintained.

3.0 **Annual Maintenance Contract**

3.1 At the end of the above defects liability period, an annual maintenance service for the equipment furnished may be provided. This service shall include regular examination of the installation during regular working hours by trained employees and shall include all necessary adjustments, greasing, oiling, cleaning, supplies of genuine standard parts to keep the equipment in proper operation, except by misuse, accidents or neglect caused by others. Alternatively, an ALL-IN maintenance service may be provided. The contract for this additional maintenance will be effective after expiry of the defects liability period. The charges for 3years comprehensive AMC shall be quoted separately for each year post defect liability period.

MAINTENANCE REQUIREMENTS

Maintenance

In addition to his obligations under the Conditions of Contract, the Biddershall provide maintenance services throughout the Defects Liability Period (DLP) and also for the specified period for all the elevators supplied under the Contract. Maintenance work shall include attendance to all service calls, work described in approved Maintenance Schedule, and the followings:

All defects shall be remedied either when observed on a service call or on an attendance to a service call. Service shall include all work necessary to maintain the entire elevator system in good working order at all times.

The Bidder shall maintain adequate quantity of consumable and contingent spare parts as per agreed list in his custody at site in order to minimize the shut down time due to repairs and maintenance. All parts rendered defective, including replacement of indicator lamps and programmable circuit board, shall be replaced by the Bidder. The list of these consumable and contingent spares should be submitted for Approval at the same time as the submission of the

The Bidder shall dispatch competent personnel to rectify stoppages at any time during the day or night when being called on by the Employer within a time of half an hour (maximum). Repairs shall be carried out on a 24 hours per day, 7 days per week basis until the faulty unit is put back in service.

The Bidder shall carry out periodic testing and examination of equipment safety devices as may be required by the provisions of any enactment in force relating thereto or of any enactment, regulations or by-laws of any local or other duly constituted authority which may be applicable to such tests and to provide such copies of the test certificates, duly signed by a Registered Elevator Employer's Representative and Registered Elevator Bidder, as may be required. A master schedule of such planned tests shall be submitted to the Employer at least one month before commencement of the DLP.

The Bidder shall provide monthly, quarterly and half-yearly reports on the condition of the equipment in an agreed format. Such reports shall include event logs and performance data collected from the associated indicative panel stored on diskettes or other agreed medium, over the reporting period. Such data shall enable off-line individual and fleet statistical analysis to be performed on a Personal Computer.

A report in duplicate shall be sent to the Employer immediately following every call out, indicating the time of call out visit, cause, remedial action taken and the time that the service was restored.

Reports on routine visits are not required except where necessary to draw attention to defects of a minor nature which could not be rectified during the routine visit. Records of each routine visit and call-out visit, together with details of the work done or action taken, shall be entered on a log book which shall be provided by the Bidder and retained in the location as decided by the Owner's Representative.

Before the expiry of the Defects Liability Period, the Bidder shall perform a loading test for each elevator to re-confirm that the function of the system is being met and shall undertake corrective adjustment if necessary. This test may be incorporated into the half-yearly equipment survey maintenance works.

The Bidder shall provide a maintenance plan and a major component replacement programme for review and acceptance by the Employer's Representative 90 days before the programmed commencement of the Defects Liability Period.

The Maintenance service shall include all Preventive/Scheduled & Corrective Maintenance. In this context, the Bidder shall submit a PM Schedule and CM procedure for Approval, 3 months before the commencement of the DLP.

In order to ensure that the system will meet the Reliability, Availability &Maintainability targets and Customer Service requirements using the minimum resources, the Bidder shall conduct a detailed Maintenance Requirement Analysis to derive a complete list of preventive maintenance schedules and procedures under the Contract. The Maintenance Requirement Analysis shall identify for each system function the potential functional failures, the failure consequences and the appropriate maintenance approach.

Based on the Maintenance Requirement Analysis, the Bidder shall indicate in the Maintenance Plan, the final preventive maintenance programme, the proposed skill and manning level, spares level and special tools require. The proposal shall be fully traceable to the maintenance Requirement Analysis output. The Maintenance Requirement Analysis shall be submitted as part of the maintenance plan.

OWNERS'S MAINTENANCE STRATEGY

MAINTENANCE STRATEGY

The Bidder shall ensure that the system designed, installed and commissioned is supportable throughout the service life of the System to address, as a minimum, the following:

Design errors in the System;
Operational changes;
Environment changes; and
Changes in infrastructure.

According to the maintenance strategy, all equipment and infrastructure supplied for the 'Project' must be designed for minimum or no maintenance. Maintenance activities required must be capable of being performed with little or no impact on the train service. In addition, the maintenance work systems shall ensure safety of personnel and equipment.

The Bidder, upon noticing any defects, deficiency in quality and quantity of spares and materials shall without delay, arrange for alternative source of supply and submit his proposal to the Employer's Representative for review.

MAINTENANCE DURING DEFECT LIABILITY PERIOD

During the DLP period, the Bidder shall carry out all type of preventive and breakdown maintenance. The preventive maintenance would be done during non-Operational hours whereas breakdown maintenance would be done whenever breakdown occurs. The Bidder should post his supervisor and maintenance staff at a key place in Delhi.

The acceptable response & attention time also needs to be mentioned for minor & major breakdowns.

COMPETENCY OF PERSONNEL

During the DLP the Bidder shall depute sufficient trained and competent personnel for maintenance purpose.

Such persons shall have their generic competence established and must demonstrate their specific competence and knowledge in the particular systems, environment and procedures.

The Bidder shall provide evidence of specific competence and knowledge, which shall include:

Assessment and certified training in particular applications and operations;

Recording of competence and work in the license holders logbook; and

Receiving or in receipt of sufficient and current exposure to the area of work that the holder is licensed for.

Routine spot checks on licensing may be carried out from time to time by the Employer's Representative's qualified personnel on the proficiency of the Bidder staff.

In the event of a failure, the Bidder shall undertake the management and investigation necessary to identify and rectify the cause.

TESTING AND RE-COMMISSIONING OF SYSTEM AND EQUIPMENT

In the event of a failure requiring modifications to the System, the Bidder shall undertake any testing and re-commissioning required. Any such modification shall be submitted for review by the Owner's Representative.

Temporary Alterations to Restore Service

The Bidder shall undertake any temporary modifications necessary to maintain service. Any such modification shall be submitted for review by the Owner's Representative.

Location of Staff

The Bidder shall be responsible for locating staff such that the Biddermeets its obligations.

Maintenance Regimes

The Bidder shall produce a maintenance regime for the equipment that shall comprise two constituent parts, corrective and routine/preventative maintenance.

Corrective maintenance shall be available 24 hours per day, able to respond to all foreseeable circumstances.

The maintenance regime shall cover all parts and equipment of the system designed, installed and commissioned by the Bidder.

The Bidder shall take into account the requirements of the operations and maintenance when determining and proposing its maintenance regime.

Scope and Hours of Coverage

The regime and structure of corrective maintenance shall be robust in design.

The Bidder shall provide full 24 hour On-Call coverage and shall be such that initial response and rectification of failure are in accordance with the following:

- To start first line corrective maintenance within 60 minutes, from reporting
- 4 hours from notification for second line maintenance where spare parts replacement is involved

(Minor corrective Maintenance)

- Within3days including transportation time for third line maintenance where replacement or repair of component from factory is involved. Any extension to this time shall be agreed with the Employer's Representative and a replacement provided.
- All elements of First Line preventative maintenance shall be carried out and completed during non-operational hours. Similarly, all elements of second line & third line maintenance also need to be completed during non-operational hours.

EXTENSION OF DEFECTS LIABILITY PERIOD

The Defects Liability Period of any item(Component/Assembly/Sub Assembly / Equipment / PCBs) etc. which fails during Defects Liability Period shall deemed to be extended from the Date of failure of such item for the full Defects Liability Period.

The Bidder shall keep sufficient spare parts & Consumables during the maintenance period to ensure that replacement work for defect can be carried out immediately

A competent engineer shall be provided to investigate the fundamental cause of a fault & Remedial actions are taken accordingly. Temporary quick fix solution will not be accepted.

The employer shall at his discretion, take action to recover all losses incurred rising from the failure of the Bidder to perform the duties either wholly or in part as detailed in this section.

Special Tools, Commissioning Spares & DLP Spares

Special Tools & Keys

Bidder shall supply one set of Tools for Each elevators for Normal as well as Emergency Rescue Operation & for Preventive & Breakdown Maintenance purposes including Tools such as Brake Releasing Devices and Hand Winding Devices after Completion of Service Trials.

Bidder shall handover three set of Keys for each Elevator to the Employer's Representative after completion of service Trials.

Commissioning Spares

Bidder shall submit a List of commissioning spares with sufficient Quantities to ensure the successful completion of the Testing &Commissioning Activities. The Bidder shall ensure availability of adequate consumables and contingent spares required to maintain all the equipment supplied for the Works in good working order at all times.

BRIEF INTRODUCTION ON TRAVELATOR (moving walks) TECHNOLOGIES PROPOSED

1.0 SCOPE

1.1 This specification covers design, manufacture and supply at site, installation, testing & commissioning of heavy-duty, reversible travelators to be provided. Department shall provide adequate shade on the top and extended on the sides of the travelators, to prevent it from rain /snow etc.
1.2 The travelators shall be of State-of-the-art technology, having nominal step width of 1000mm with appropriate numbers of horizontal Steps on top & bottom, with maximum carrying capacity calculated as per EN115-1:2008 of 100 passengers per minute at nominal speed of 0.5 m/sec in normal operation complete with all safety features and shall comply with International Standards EN-115 with latest version.

1.3 travelators shall be heavy duty, reversible type and capable of operating safely, smoothly and continuously for a period of not less than 20 hours a day, seven (7) days a week with a alternating passenger load reaching 100% of Load (120 kgs per step) for 6 hours and 50% load for the remaining hours, both distributed over two-thirds of the number of steps provided, within the environmental conditions as stated in the specification and at the location where the travelators are to be installed.

1.4 The vertical-heights of travelators differ from location to location in Shimla as per floor levels.
1.5 The angle of inclination travelators shall be 10° and as per the requirement of EN 115.

1.6 The purchaser/ user shall furnish the exact information by filling all the entries, as per the formats given.

1.7 The scope of work shall include but not be limited to the following works:-

a) Provision of lifts and travelators for passenger movements.
b) All associated civil works

2.0 SYSTEM DETAILS & SCHEMATICS (CONSTRUCTION)

The complete travelators shall comprise of all parts and accessories, which are necessary for its efficient operation, whether specifically mentioned or not. The key parts and accessories along with their functions and features are listed below:

2.1 Drive Unit

2.1.1 Each travelators shall be independently driven by a geared type driving machine (or traction machine), comprising mainly of the driving motor, a coupled Gear Box unit (for Speed reduction) and an electrically released & mechanically applied Brake (for stopping the travelators). A VVVF converter shall control the Driving Motor.

2.1.2 Each traction machine shall be mounted within the truss or the machine pit and shall be removable en-bloc from the truss for repair or maintenance.

2.1.3 travelators driving machine shall be suitable for operation on 3-phase, 415Volt ±10%, 50Hz ± 3% AC supply and it shall comply with IS: 325/IEC 60034.

2.1.4 The 3-phase Induction Motor shall be totally enclosed with external cooling fins having minimum IP-55 Protection and class F Insulation level.

2.1.5 Sound level of the system shall not be more than 65 dBA at 1 meter from the balustrade. The required acoustic treatment shall be provided as necessary, to meet this requirement.

2.2 Controller

2.2.1 The travelators s motion, travel-direction, speed and stopping etc. shall be controlled by a compact and reliable PLC/microprocessor-based controller that is specifically designed for the travelator operation. 2.2.2 The controller shall be of a proven design and would ensure continuous operation of the travelator over its Service-Life. The controller shall have microprocessor based diagnostic system with self-checking feature and meant for indicating/ displaying common Faults (that may occur during the travelator's operation) by a fault-code or fault's brief description, on an on-board and easily-visible LED/ LCD based display-unit. This would enable the maintenance' people to pinpoint specific fault(s) and rectify them quite quickly, thus ensuring minimum downtime of the travelator. The diagnostic system shall be capable of recording at-least 50 latest faults that have caused the travelator to Stop and display them sequentially on last-in first-out basis.

2.2.3 The controller shall have the facility for interfacing (through suitable ports, viz RS-232/ RS-485/ USB/ Ethernet etc.) with a PC based Remote Monitoring system (RMS) that may be planned by the Department to be housed in the station building control room.

2.3 VVVF Converter

2.3.1 The travelators shall comprise of a VVVF converter (variable speed control), integrated with the travelator controller to control the driving motor. On installation, this shall ensure the travelator's movement & speed control, viz - starting and normal speed of the travelator on detecting the incoming passenger(s) as well as its crawling speed and/or stoppage, in the absence of passengers.

2.3.2 The VVVF Converter shall also control the acceleration/ de-acceleration during the motor starting/ stopping, for reducing/ limiting the starting current and the frictional wear & tear of the brake liner, respectively.

2.4 Truss

2.4.1 The travelators shall be provided with Structural steel truss or girder, which shall be designed to support the Travelator's Dead weight and additionally, the peak passenger-load at travelators full capacity operation.

2.4.2 The truss design shall also ensure required safety to sustain the Steps and running Gear in operation. In the event of failure of the track system, it shall retain the running gear in its guides.

2.4.3 The construction design of the truss shall be such that it allows for easy inspection of the interiors of the travelator.

2.4.4 Truss should have maximum deflection value of 1 in 1000.

2.4.5 Cladding of the truss shall be done with SS 304. 2.4.6 The truss of travelator shall be hot dip galvanized. Other parts inside the truss such as return station, shaft etc. shall be given suitable anti-corrosive treatment with zinc painting or similar process.

2.5 Balustrade

2.5.1 They shall be provided with a solid inclined balustrade on its each side, having adequate mechanical strength and rigidity.

2.5.2 The Interior and Exterior Panels shall be fixed in a manner to withstand the stresses and impacts expected during operation and use of the travelator at its full capacity. The balustrade height shall be minimum 1000mm or more.

2.5.3 Material of the skirting shall be SS 304 having thickness of 1.5mm

2.6 Hand Rail

2.6.1 The travelators balustrades top shall be provided with black-colour hand rails made of a special, high-quality and water-repellant synthetic rubber material, having long-durability.

2.6.2 The hand rails shall move in the same direction and at substantially the same speed, as that of the steps.

2.6.3 The handrail drive system shall be provided with guides immediately before and after the drive wheel. The returning portion of the handrail shall be supported by guide rollers at not more than 2 m interval. Adequate provisions shall be provided to maintain proper tensioning throughout the service life of the handrail and prevent tightening/loosening and excessive heating up of the handrail during operation. The temperature rise of the handrail during operation shall not exceed 6ºC above station ambient temperature.

2.6.4 The handrail shall overlap sufficiently with the handrail decking (top deck), to prevent pinching and trapping fingers or hands due to running clearance. The lips at the handrail shall be of sufficient rigidity to prevent the handrail being easily removed from the handrail guides by a force of 300 N.

2.6.5 The material of hand rail guide shall be SS 304.

2.7 Pallet Tread

2.7.1 The travelators pallets shall be made of corrosion-proof Casting-grade Aluminum Alloy, having sufficient mechanical strength and good construction to fully satisfy the intended purpose of their use; that-is, carrying the peak load of passengers without distortion.

2.7.2 Each Pallet shall be supported on four wheels, two of which shall be the step chain, wheels and shall be capable of carrying the basic load with the safety factor as per 2.7.3. Individual step loading shall be assumed as 6000N/m². The design of the mounting of all wheels on the step shall ensure that the centre line of the wheel shall remain perpendicular to the running track under all the load conditions. 2.7.3 Safety factors used in the design shall, as a minimum, conform to the following, As per EN 115-1:2008 (as applicable for Public Service travelators),

 For all driving elements viz. shafts, gear wheels, driving gear chains - 5. Pallet Chains – 5. Any other item (if not specified elsewhere) – As per BS EN 115-1:2008 (as applicable for Public Service Travelators). 2.7.4 The pallet shall be one piece, pressure die cast, high wear and corrosion resistant aluminum alloy. The step casting shall bear a marking, which clearly indicates the month and the year of manufacture.

2.7.5 The pallet shall be type tested according to EN 115 (Latest version).

2.7.6 The tread surface of each pallet shall be slotted in parallel-direction to the travel of the pallets.

2.8 Main and Pallet Chains

The drive unit shall be connected to the main chain wheel (attached to the main shaft) with a duplex chain. The Main Shaft shall further drive the Step Chain Bands. The pallet Chain Band shall be of endless roller type located on both sides of the moving steps and having step chain strength value of 260kN or

more. Each pallet Chain shall be provided with an integrated Tension Device to ensure its proper tension under varying load conditions.

2.9 Automatic Lubrication Device

The travelators shall comprise of an in-built automatic lubrication device, to lubricate the main driving-chain and step-chain automatically, which can ensure their smooth-operation for a long period and thus shorten the maintenance downtime.

2.10 Comb Plate

The travelators comb plates in the entrance/ exit areas must have easily replaceable comb segments, having teeth that interlock deep into the steps. All comb segments must be identical & easily inter-changeable. In the event of some foreign body's penetration into the comb segments, safety contacts must bring the travelator to a halt. To activate the safety contacts, the comb plate must be able to slide horizontally.

2.11 Landing Plate

The landing plate of the travelators meant to provide a secure foothold, must be preferably made of etched Stainless Steel ASTM - SS316 grade and shall have an Anti-slip Pattern.

2.12 Key Operated Start Function

travelators operation shall be started/ switched-off by a special key provided along with the travelator.

2.13 Traffic Direction Light

The travelators shall have traffic direction light of distinct color at highly-visible location(s) near the travelator, to indicate the direction of its movement to the approaching passengers and thus, prevent their wrong-way Entry.

2.14 Electrical Works / Items

2.14.1 All electrical works and switch gear for the travelator installation shall conform to the Indian Electricity Rules 1956 (with latest amendments).

2.14.2 All power cables and wiring shall be fire resistant low smoke copper cables of 1.1 kV grade conforming to IS:694 and IS:1554. No bare Conductor shall be used in any Travelator as it may cause electrocution danger to the personnel.

2.14.3 The control switchgear must be mounted in sealed enclosure corresponding to IP-55 protection. Railways shall bring the power supply cable to this switchgear.

2.14.4 All screws, nuts, fasteners and washers shall be of stainless steel

2.15 Grease/ Oil/ Dirt and Water (separate) Collector & Drainage Sumps

Separate collector & drainage sumps for loose/ falling/ accumulated - grease/ oil/ dirt and water shall be provided in the travelators, at its lower return station, to ensure the travelator's cleanliness w.r.t. these elements and thus, preventing the happening of any likely hazard due to them.

Tibetan Bazar Bus Station – Ridge

TENDER TECHNICAL SPECIFICATIONS			
TIBETAN MARKET BUS STAND TO RIDGE LEVEL			
	REAR SIDE FULL GLASS PASSENGER LIFTS	**BIDDER TO TICK MARK CONFIRMING ADHERENCE**	**REMARKS**
	P1-P2(ZONE 1) & P3-P4 (ZONE 2)		
UNITS	4 (2+2)		
LOAD(KG)	1600		
CAPACITY(PERSONS)	24		
SPEED(MPS)	2.5		
TRAVEL(M)	**ZONE 1-33 ZONE 2-27**		
STOPS & OPENINGS	**2 STOPS/ 2 OPNS**		
G-	**G- BUS STATION LEVEL 1-INTERMEDIATE DECK 2- RIDGE LEVEL**		
FLOOR MARKINGS	**ZONE 1(G,1) & ZONE 2(1,2)**		
CONTROL	ACVVVF		

OPERATION	DUPLEX FULL COLLECTIVE		
MACHINE TYPE	GEARLESS		
MODEL	WITH LIFT MACHINE ROOM		
HOISTWAY REQUIRED(Incl plumb tolerance)	2850 mm W x 2650 mm D		
OVER HEAD(MM)	5500		
PIT DEPTH(MM)	2500		
CAR SIZE (PROVIDE MAX CAR SIZE AS PER MFR.DESIGN)	2000mm W X1800 mm D		
LIFT CAR FINISHES	**SS HAIR LINE FINISH -SS 304-WITH REAR SIDE FULL LENGTH SEAMLESS GLASS**		
HAND RAILS(800MM ABOVE FINISHED FLOOR LEVEL)	SS HANDRAIL ON REAR SIDE PANEL		
FALSE CEILING	SS DESIGNER FALSE CEILING WITH PROTECTED LED LIGHT DIFFUSERS/INDIRECT LIGHTING AND TWO HORIZONTAL BLOWER FANS WITH OVERHEAD VENTILATION GRIDS FOR OPTIMUM AIR FLOW		
FLOORING	GRANITE FLOORING		
CAR DOOR	SS HAIR LINE FINISH -SS 304		
CAR & LANDING DOOR SILLS(ALUMINIUM)	TO BE PROVIDED		
LANDING SILL SUPPORTS/ANGLES	TO BE PROVIDED		
INSIDE CAR HEIGHT(UPTO CEILING-MM)	2700		
LANDING DOORS	SS HAIR LINE FINISH -SS 304		
ENTRANCE FRAMES	SS HAIRLINE FINISH		
CAR & LANDING DOOR OPENINGS(CENTRE OPENING)	1100 mm W x2400mm HT(CO)		
DOOR OPERATION	VF DOOR OPERATION		
HALL BUTTONS WITH POSITION AND DIRECTION INDICATORS WITH BRAILLE FEATURE	LATEST AS PER MFR.DESIGN		

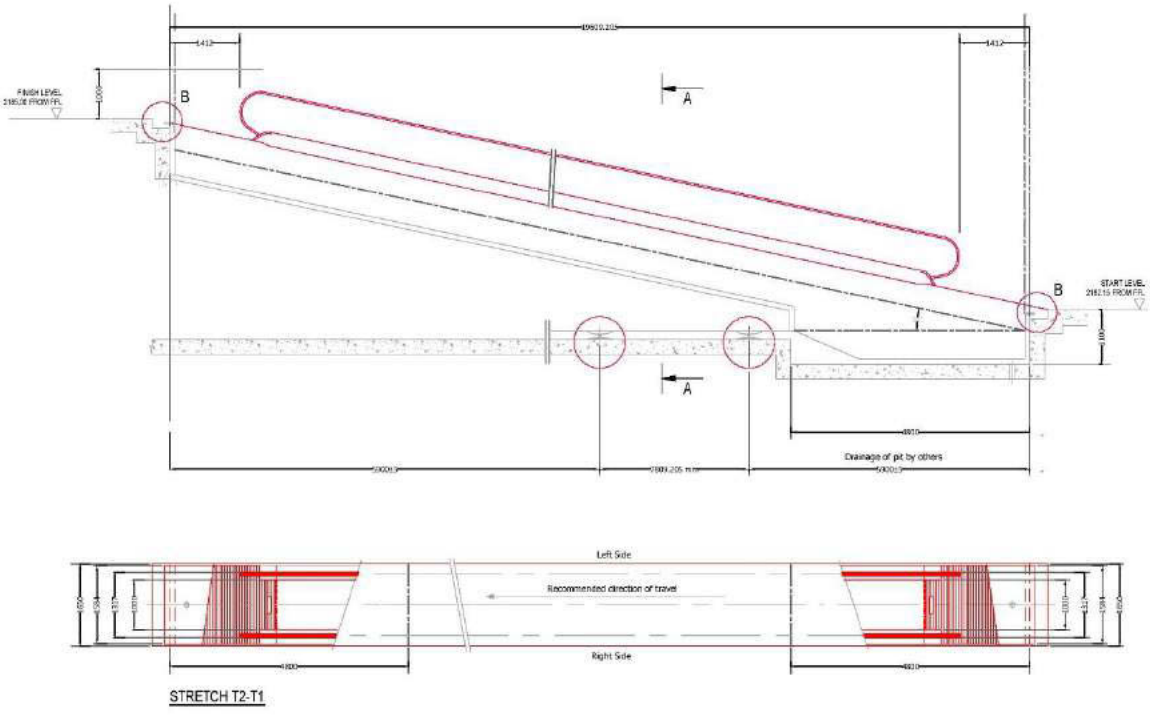
HALL BUTTON PANEL HEIGHT (POSITION) MIN.1200MM ABOVE FINISHED FLOOR	TO BE PROVIDED		
CAR OPERATING PANEL WITH POSITION AND DIRECTION INDICATORS WITH BRAILLE FEATURE	2 COP PER LIFT CAR LATEST AS PER MFR.DESIGN		
EMERGENCY ALARM	TO BE PROVIDED		
EMERGENCY LIGHT	TO BE PROVIDED		
VOICE ANN SYSTEM WITH MUSIC	TO BE PROVIDED		
PA/MUSIC SYSTEM INTERFACE	TO BE PROVIDED		
CCTV INTERFACE	TO BE PROVIDED		
BAS INTERFACE WITH POTENTIAL FREE CONTACTS	TO BE PROVIDED		
FULL LENGTH INFRA RED DOOR PROTECTION	TO BE PROVIDED		
FIREMAN SWITCH/FIRE ALARM OPERATION	TO BE PROVIDED		
3 WAY INTERCOM(CABLING IN BIDDER'S SCOPE)	TO BE PROVIDED		
FIRE RATING (FOR LANDING DOORS)	2 HOURS		
OVERLOAD DEVICE WITH AUDIO VISUAL INDICATION	TO BE PROVIDED		
HOME LANDING	TO BE PROVIDED		
DOOR NUDGING FEATURE	TO BE PROVIDED		
AUTOMATIC RESCUE DEVICE	REQUIRED WITH VOICE ANNOUNCEMENT OF OPERATION		
UPS SYSTEM TO SUIT THE CAPACITY OF LIFT	REQUIRED		
AUTO FAN CUT OFF	TO BE PROVIDED		
CAR CHIME	REQUIRED		
LEVELLING ACCURACY +-5MM	REQUIRED		

TIBETAN MARKET BUS STAND TO RIDGE LEVEL - TRAVOLATOR SPECIFICATIONS			
Description	**As per Tender**	**BIDDER TO TICK MARK CONFIRMING ADHERENCE**	**REMARKS**
Quantity (nos)	2		
Type	heavy duty, out door		
Speed (mps)	0.50 MPS		
FLOORS	lvl 2182.15 till lvl 2185		
Pallet width	1000 mm		
Angle of inclination	10 degrees from horizontal		
Rise (mm)	2850		
Operating system	Up/ Down Travel arrangement		
power supply	415 Volts, 3 Phase, 50 Hz, Alternating current		
Truss	Contains Mechanical and Electrical parts		
Controller	Located inside truss-upper landing		
Balustrade			
Interior panel	Clear self supporting safety glass panels 10 mm thick.		
Skirt Panels and inner & outer deck board	SS Hairline.		
Handrail	Made of Polyurethane. Colour will be selected by the architect.		
Pallet	One piece die cast Aluminium with yellow demarcation on 2 sides.		
Pallet chain	Required		
Comb	Grooved Aluminium		
Comb Plate + Floor Plate	Stainless Steel		
Other Features	1) Auto start / stop with traffic flow light		
	2) Comb Lights at each landing		
	3) Electromagnetic Brake		
	4) Traffic Flow Lights		
	5) Fault Operation panel		

Auto Start Stop Sensor posts or peizo mats start and stop the travalator depending on the passenger entry. If no load is detected, the travalator stops and enters stand by mode after a pre determined time.	to be provided		
Safety Devices			
Emergency stop button at both landings	to be provided		
Operational Brake	to be provided		
Main circuit breaker	to be provided		
Handrail entry device	to be provided		
Comb plate safety device at both landings	to be provided		
Broken Pallet chain device	to be provided		
Pallet monitoring device for chain roller, broken pallet and complete pallet fastening system	to be provided		
Manual inspection Control device.	to be provided		
Socket for manual inspection (one per landing)	to be provided		
Circuit Breaker lower landing	to be provided		
Ground Contract	to be provided		
Asymmetric relay with phase sequence control	to be provided		
Hand lamp with cable & sockets in both landings (one per Travalator)	to be provided		
Non reversing device at the drive machine	to be provided		
Motor thermic protection	to be provided		
Overspeed governor	to be provided		

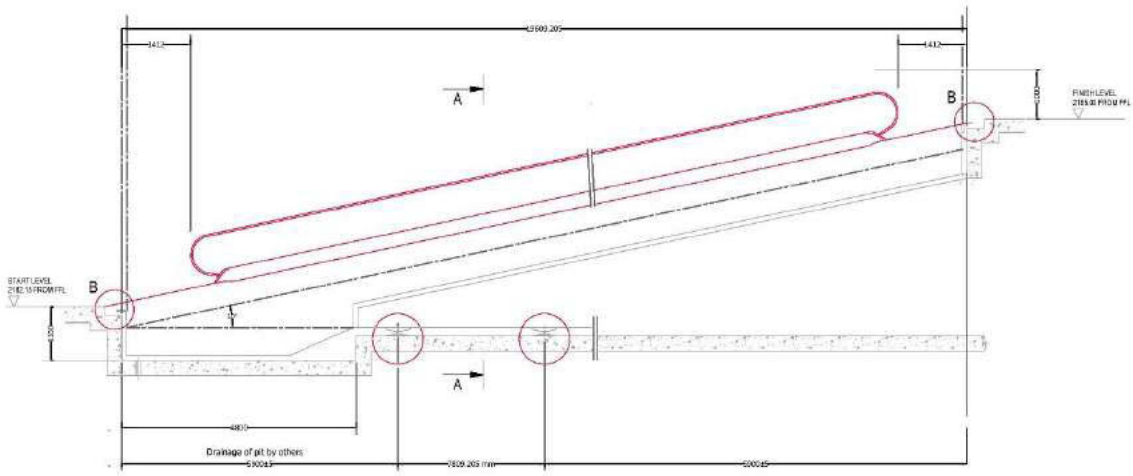
Brush Guards (Deflector Devices)	to be provided		
Skirt lighting	to be provided		
Skirt Panel Safety device.	to be provided		
Antislip floor plates	to be provided		
Potential free contacts	to be provided		
Handrail Decking	Extruded Aluminium		

TRAVOLATOR - STRETCH T2-T1



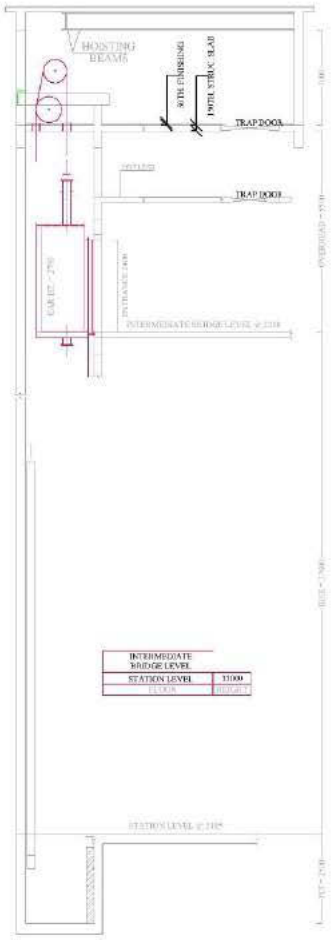
STRETCH T2-T1

TRAVOLATOR - STRETCH T1-T2

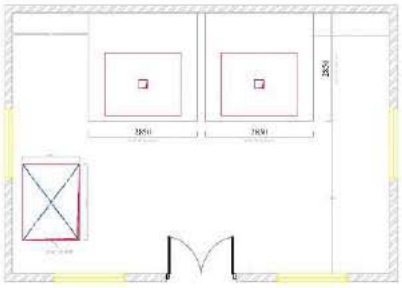


STRETCH T1-T2

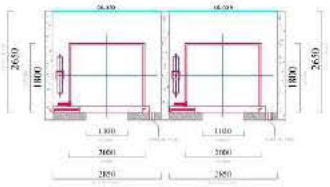
PASSENGER ELEVATOR - ZONE I
(STATION LEVEL TO INTERMEDIATE BRIDGE LEVEL)



ELEVATION
ZONE I

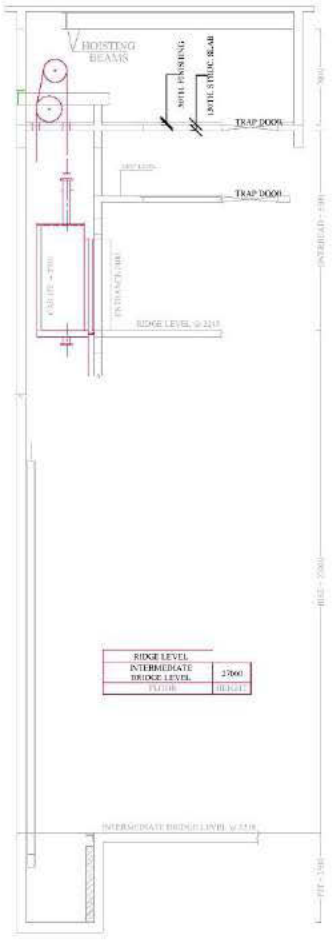


MACHINE-ROOM PLAN

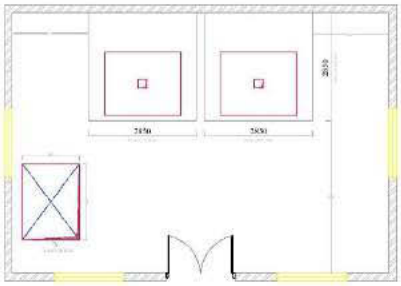


HOISTWAY PLAN

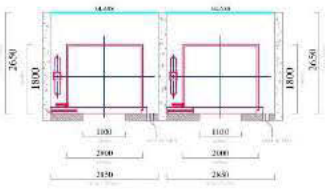
PASSENGER ELEVATOR - ZONE II
(INTERMEDIATE BRIDGE LEVEL TO RIDGE LEVEL)



ELEVATION
ZONE II



MACHINE-ROOM PLAN



HOISTWAY PLAN

DETAILED EQUIPMENT DATA (to be submitted by Bidder)

PROJECT - SHIMLA

S. No	Details	Tibetan Market Bus Stand To Ridge Level - Rear Side Full Glass Passenger Lifts	Travelators		
1	Manufacturer				
2	Capacity (Kg)				
3	Max. Passengers (No)				
4	Speed (m/s)				
5	**Traction Motor**				
A	Type				
B	Rating (HP)				

C	Voltage (V)				
D	Speed (rpm)				
E	Insulation class				
F	Starting torque (kgm)				
G	Geared/Gearless				
H	Gear ratio				
6	**Roping**				
A	Number of ropes				
B	Size				
C	Roping ratio				
7	**Factor of safety**				
8	**Guide rail size**				

9	**Car weight**				
10	**Counter weight (Kg)**				
11	**Buffers**				
12	**Elevator Drive**				
13	**Drive Motor**				
A	Make/Type Designation				
B	Rating				
C	Kw				
D	Voltage with allowable variation				
E	Frequency with allowable variation				
F	No. of Phases				
	Speed ft/min or mtrs/sec				
G	- Maximum				
H	- Minimum				

I	No. of Start/stop operations permitted per min				
	Motor current at full load				
J	During Start				
K	During Run				
L	Class of Insulation with permitted temp. raise				
M	Staring Torque (p.uT_{fl})				
N	Type of break				
	Motor starter / Controller				
O	Make / Type designation				
P	Method for start / control				
Q	Speed choice provided if any				

TECHNICAL SPECIFICATIONS

SECTION – A (CIVIL WORKS)

1. GENERAL SPECIFICATIONS

1.1. The work shall be carried out in accordance with the Indicative Architectural Drawings, Structural Drawing, all services drawings and shop drawings are to be prepared and submitted after due vetting from PEC/ IIT. The Contractor is required to co-ordinate and co- relate all drawings and in case of any differences noticed the contractor shall immediately bring to the notice of the Engineer-in-Charge and shall obtain his final decision before proceeding with the concerned work.

1.2. In case of any discrepancy in the item description given in the schedule of quantities and the drawings to the relevant items, the former shall prevail unless and otherwise given in writing by the Engineer-in-Charge.

1.3. Wherever any reference is made to any Indian Standard, it shall be inclusive of all amendments issued there to till the date of receipt of the tender.

1.4. Unless otherwise specified in the schedule of quantities, the rates for all items of work shall be considered inclusive of pumping out or bailing out water through out the construction period. This shall include all water encountered due to causes what so ever.

1.5. The work shall be executed and measured in metric dimensions given in the schedule of quantities, drawings, etc., (FPS unit wherever given is for guidance only).

1.6. The following additional specification shall apply:

All stone aggregate and stone ballast shall be hard stone variety to obtained from sources and quarries to be got approved from the Engineer-in-Charge.

Coarse sand shall be obtained from sources to be got approved from the Engineer-in-Charge. Whenever required, the coarse sand shall be screened and washed to the satisfaction of the requirement of the specification. Nothing extra shall be payable on this account.

1.7. The rates for all items, unless clearly otherwise specified shall include all inputs of materials, labour, T & P, taxes, duties, scaffolding, wastages, watch & wards and all other incidental charges.

1.8. The masonry work for the position of the external wall of WC, through which pipes are taken, shall be done after the pipes are fixed as far as possible. All cutting of masonry, concrete and finishing shall be avoided. In case it is necessary for taking any services, the same area shall be made good during finishing without any extra payment.

1.9. **Delivery, Storage And Handling Of Chemicals**

1.9.1. All the chemicals (Anti- termite, Epoxy, Polymer, Water Proofing Compound, Plasticizers, etc.) shall be procured in convenient packing in sealed containers and to be stored in a condition as recommended by the manufacturer.

1.9.2. All such material shall be got approved and documents deposited with the Engineer-in-Charge. However, the material shall be in the custody of the contractor. Day-to-day account of receipt, issue and balance shall be regulated by the Contractor and proper account shall be maintained at site of work in the prescribed from and shall be submitted to the Engineer-in-Charge. The original copies of challan/cash memos towards the quantity of

various chemical procured shall be made available to the Engineer-in-Charge on demand and a copy deposited.

1.9.3. Empty container should not be removed from site till the completion of the project and without the written permission of the Engineer-in-Charge.

1.9.4. Contractor shall suitably advice his Engineer to follow all safety norms pertaining to handling/storage and application of chemicals. Necessary protective and safety equipments, hand gloves, goggles, etc. shall be provided to all the concerned worker/ staff.

1.9.5. All chemicals shall be tested from an independent laboratory, if required, as approved by the Engineer-in-Charge.

1.10. Stone Work

1.10.1. The Engineer-in-Charge or his representative may, if required, visit to site / source of stone to assess the quality and availability of the required quantity of stone. The contractor shall bear the cost of such visit.

1.10.2. For measurement of flooring in curved profile, only area actually contained in the flooring shall be measured for payment. Nothing extra shall be paid against wastage, extra labour or any other incidental.

1.10.3. For skirting in curvilinear profile, the stones / tiles are to be cut in sizes and shape as shown in Architectural drawing. Similarly, the skirting shall be fixed / embedded in a manner so as to flush / project from the wall as shown in drawing and as directed by the Engineer-in-Charge. Any chasing, etc. required for such fixing is deemed to be included in the cost of skirting / masonry and nothing extra shall be paid on this account.

1.11. Environment Protection

The following provisions shall be maintained by the contractor at site and no separate payment shall be made on these accounts unless otherwise provided for in the BOQ

1.11.1. Provide sufficient level of sanitation / safety facilities for construction workers to ensure the health and safety of the workers during construction, with effective provisions for the basic facilities such as sanitation, drinking water and safety equipments or machinery.

1.11.2. Adopt measures to prevent air pollution in the vicinity of the site due to construction activities. There is no standard reference for this. The best practices should be followed (as adopted from international best practice documents and codes).

1.11.3. The contractor will undertake the responsibility to prevent air pollution (dust and smoke), ensure that there will be adequate water supply/storage for dust suppression, devise and arrange methods of working and carrying out the work in such a manner so as to minimize the impact of dust on the surrounding environment and provide experienced personnel with suitable training to ensure that these methods are implemented. Prior to the commencement of any work, the method of working, plant equipment and air pollution control system to be used on-site should be made available for the inspection and approval of the Engineer-in-Charge to ensure that these are suitable for the project.

All dangerous parts of machinery are well guarded and all precautions for working on machinery are taken.

Maintain hoists and lifts, lifting machines, chains, ropes and other lifting tackles in good condition.

Use of durable and reusable formwork systems to replace timber formwork and ensure that formwork where used is properly maintained.

Ensure that walking surfaces or boards at height are of sound construction and are provided with safety rails and belts. Provide protective equipments such as helmets.

Provide measure to prevent fire. Fire extinguisher and buckets of sand to be provided in fire-prone area and elsewhere.

Provide sufficient and suitable light for working during night.

Ensure that measures to protect workers from materials of construction, transportation, storage and other dangers and health hazards are taken.

Ensure that the construction firm / division / company had sound safety policies.

Comply with the safety procedure, norms and guidelines (as applicable) as outlined in NBC 2005 (BIS 2005c).

Adopt additional best particles and prescribed norms as in NBC 2005 (BIS 2005).

Provide clean drinking water to all workers. Provide adequate number of decentralized latrines and urinals to construction workers.

1.11.4. Ensure that the vegetation is cleared only from the areas where work will start right away or area to be disturbed due to any sort of construction activity like for vehicular movement, stacking of materials, labour hutments, carpenter or steel workshops etc. Vegetate / mulch areas where vehicles do not ply. Apply gravel / paving is impractical.

1.11.5. Employ measures to segregate the waste on-site into inert, chemical or hazardous wastes. Recycle the unused chemical / hazardous wastes such as oil, paint, batteries and asbestos. The inert waste is to be disposed off to Municipal Corporation / local bodies dump yard and landfill sites.

1.12. **Preserve and protect landscape / Landslide during construction.**

Following provisions shall be made at site by the contractor to preserve and protect landscape. Nothing shall be paid on this account unless specifically provided for in the BOQ.

1.12.1. To preserve the existing landscape/ landslide and protect it from degradation during the process of construction select proper timing for construction activity to minimize the disturbance such as soil pollution due to spilling of the construction material and it's mixing with rainwater. The construction management plan including soil erosion control management plan shall be prepared accordingly for each month and get approved from the Engineer-in-Charge. The application of erosion control measures includes construction of gravel pits and tire washing bays of approved size and specification for all vehicular site entry/ exists, protection of slopes greater than 10%. Sedimentation Collection System and run-off diversion systems shall be in place before the commencement of construction activity. Preserve and protect the existing vegetation by not-disturbing or damaging to

specified site areas during construction. The trees that are identified to be retained on site are protected during the construction period using the following measures:

(i) The damage to roots is prevented during trenching, placing backfill, driving or parking heavy equipments. The dumping of trash, oil, paint and other material is detrimental to plant health. These activities should be restricted to the areas outside of the canopy of the trees.

(ii) The trees are not used for support their trunks should not be damaged by cutting and carving by nailing posters and advertisements or in any other way.

(iii) The lighting of fires or carrying out heat or gas emitting construction activity within the ground covered by canopy of the trees is not permitted.

(iv) The young trees of saplings identified for preservation within the construction site must be protected using tree guards of approved specification.

(v) The grades of soil should be maintained around existing vegetation. Lowering or raising the levels around the vegetation should not be allowed unless specifically directed by the Architect/Engineer –in – Charge.

(vi) Maintenance activities should be performed, as and when needed, to ensure that vegetation remain healthy.

2. EARTH WORK

2.1. Earth work in excavation shall generally be as per CPWD specification.

2.2. The rate for earth work shall include work in or under water / foul position, liquid mud, water, etc. Wherever required the contractor shall carry out close / open timbering, including strutting, shoring and packing, etc. The rates also shall be inclusive of work at any lifts, depths, heights and leads within the site. Nothing extra shall be paid on the above accounts.

2.3. Dewatering, if required shall be carried out conforming to BIS code IS:9759 or as per the specification approved by the Engineer-in-Charge. Suitable stand by arrangement is to be kept to cater for repair/maintenance of pumps and disruption of power/fuel supply. The water/slush/mud etc. shall be disposed off as per the procedure and approval of the local bodies. All permission on this regard is to be taken from local authorities by the contractor and no extra shall be paid on this account.

3. CEMENT

3.1. Unless otherwise specified or called for by the contract, cement shall be Pozzolonic Portland Cement of 43 grade (IS : 8112) in 50 kg. bags. The use of bulk cement will be permitted only with the approval of the Engineer-in-Charge. Changing of brands or type of cement within the same structure shall not be permitted unless otherwise necessitated and approved by the Engineer-in-Charge.

3.2. Contractor will have to make his own arrangement of storage of adequate quantity of cement. Storage, handling, etc., of cement shall be as specified in CPWD specification.

3.3. Conformity of cement to IS specification is to be produced from the manufacturer by the contractor to the Engineer-in-Charge including manufacturer's test certificate. Should anytime, the Engineer-in-Charge has reason to consider that any cement is defective, then irrespective of it's origin and or manufacturer's test certificate, such cement shall be tested immediately at a national / approved test laboratory and unless the results of such tests are found to be satisfactory, it shall not be used in the work. In case of such additional tests, the cost shall be born by the contractor.

3.4. Cement brought to site and cement remaining unused at the completion of the work shall not be removed from site without the written approval of Engineer-in-Charge.

3.5. The record of cement received at the store, issued to site of work and consumption of cement shall be regulated and proper accounts maintained as provided in clause 10 of the contract. The theoretical consumption of cement shall be worked out as per procedure prescribed in the contract.

4. STEEL

4.1. Contractor shall procure reinforcement bars (Fe 415 / Fe 500 / Fe 550) conforming to CPWD / BIS code. Manufacturer's test certificate with respect to all steel brought to site as well as independent laboratory testing for samples as per BIS codes shall be provided to the Engineer-in-Charge. In case of non-conformity, the same shall be rejected and removed from the site by the contractor within one week of rejection.

4.2. For checking nominal mass, tensile strength, yield stress, bend test, re-bend test, etc., specimen of sufficient length shall be cut at random at frequency as specified in the relevant IS code.

4.3. The cost of sample and the charges for testing shall be born by the contractor. In case additional tests are required by the Engineer-in-Charge, if it appears to be not up to the requirement, additional tests may be ordered by the Engineer-in-Charge. In such case, the cost of samples shall be born by the contractor and the charges for the testing shall be born by the contractor / department in the manner indicated below:

i) By the Contractor, if the results show that the steel does not conform to the specification.

ii) By the Department, if the results show that the steel conforms to the specification.

4.4. The records of steel received at the store, issued to site of work, and consumption shall be regulated and proper accounts maintained as provided in contract clause 10 of the contract. The theoretical consumption shall be worked out as per the procedure laid down in the contract.

5. CONCRETE AND RCC WORKS

The work in general shall be carried out as per the CPWD specifications.

5.1. **CONCRETE:**

All the concrete for the construction of cast- in- situ RCC works and specified plain cement concrete works shall be procured from a Ready Mix Concrete Suppliers (plants) approved by the Engineer – in – Charge. Site batching plant produced concrete shall also be permitted on approval by the Engineer-in-Charge. The mix design and other parameters of

the RMC including transporting and placing etc. shall be strictly as per the **REVISED CPWD SPECIFICATIONS 2018 FOR CEMENT MORTAR, CEMENT CONCRETE AND RCC WORKS**, unless specified otherwise and shall be informed to the RMC supplier by the Contractor .The Contractor shall be wholly responsible for ensuring the property of concrete, as required at site, irrespective of the fact that the RMC plant/supplier /batching plant shall be approved by the Engineer-in-charge. Engineer-in-charge or his representatives shall be at liberty to inspect the operations, quality of various ingredient materials and take samples, if required, verify quantity of various ingredients being used at the RMC plant /batching plant and take samples of concrete at the RMC plant/batching plant and also at site, as desired. The Contractor shall satisfy himself that the quality of materials including various ingredients is as per the specifications. In case the aggregates tested do not comply with any requirement of specifications, the source for the same shall be rejected. The aggregates shall be stored in such a way as to prevent mixing with foreign material as well intermixing amongst them. Different sizes of coarse aggregate shall be stored in separate compartment to prevent intermixing at the partition.

5.2. BATCHING OF CONCRETE

5.2.1. Various ingredients of the cement concrete and Reinforced Cement Concrete shall be mixed by weigh batching only. The measuring equipments shall be maintained in clean and serviceable condition. The calibration certificate shall be made available from RMC supplier approved agency and calibration shall be subject to third party check also, as directed and decided by the Engineer-in-charge and this shall be mandatory and binding on the Contractor and his RMC supplier. The weigh batching shall be done by converting the proportion of ingredients into their masses considering their specific gravity, density, voids, absorption, bulking etc. The decision of Engineer –in- Charge in this regard shall be final and binding. The various grade of concrete to be procured from RMC supplier shall be as specified in item and as directed by the Engineer-in-charge.

5.2.2. The Contractor has to procure the concrete from a Ready mix concrete plant / or site Batching plant having the computerized weigh batching conforming to IS: 4925 with arrangement for automatic dosing of admixture and adequate production capacity. The minimum cement content in concrete shall be as specified in the relevant IS code. The target mean strength shall be as per CPWD specification. Suitable adjustments shall be available for allowing variation in respects of quantity of aggregates / water to allow for variations due to surface moisture in the aggregates. Fly ash shall not be used in RCC. All the items of work involving cement shall be carried out using PPC 43 grade cement.

5.3. WATER CEMENT RATIO AND WORKABILITY

5.3.1. The quantity of water added to cement, sand and aggregates during mixing, including moisture contents of the aggregates, shall not exceed 0.45 water cement ratio. Reference may be made to CPWD Specifications for guidance with respect to workability. The concrete mix shall be suitably designed for the required slump, if required, by using appropriate admixture to limit the maximum water cement ratio.

5.4. CONCRETE TESTING:

5.4.1. Samples from fresh concrete shall be taken as per IS: 1199. Random sampling procedure shall be adopted to ensure that each concrete batch shall have a reasonable chance of being tested. At least one sample shall be taken from each shift of work. Samples of concrete for each batch shall have to be taken by the RMC supplier also and tested after 28

days and results submitted to the department for record. Procedure of testing, its acceptance criteria etc. shall be regulated in accordance with the CPWD Specifications.

5.5. TRANSPORTING:

5.5.1. The period between mixing of concrete and placing it in final position shall be kept to a minimum and the delivery of concrete shall be coordinated with the rate of placement, to avoid delays in delivery and placement. The concrete shall be supplied / transported through transit mixers and general construction of transit mixer and other requirements shall conform to IS: 5892

5.5.2. Concrete shall be handled from the place of mixing to the place of final deposit by methods, which prevent segregation, or loss of any ingredients and contamination.

5.5.3. Where concrete is conveyed by chutes, the chutes shall be made of metal or fitted with metal lining. The approval of the Engineer-in-Charge shall be obtained for the use of chutes in excess of 3 metres long and in such cases the concrete shall be remixed if so required by the Engineer-in-Charge or closed bottom buckets shall be used. If concrete is placed by pumping, the conduit shall be primed properly. Once pumping is started, it shall not be interrupted as far as possible. Concrete shall not be dropped in to place from a height more than 1.5m.

5.6. PLACING:

5.6.1. Concreting of any portion of the work shall be done in presence of the representative of the Engineer-in-Charge and shall be done only after approval of the Engineer-in-charge.

5.6.2. Concrete can be laid using born pumps, buckets, cranes, trolleys etc. as required as per the site conditions. However, nothing extra shall be payable on accounts of using any particular method of laying concrete.

5.6.3. Concreting shall be carried out continuously between construction joints shown on the drawings or as agreed by the Engineer-in-Charge. The Contractor shall closely follow the sequence of concreting where it is specified in the drawings. If concreting is interrupted before reaching the predetermined joint an approved construction joint shall be provided. Construction joints shall be minimized as far as possible. These shall be set at right angles to the general direction of the member .The surface film of the first placed concrete should preferably be removed while the concrete is still green to expose the aggregate and leave a sound irregular surface. However care shall be taken not to disturb the concrete already laid.

5.6.4. Concrete shall be deposited as nearby as practicable in its position to avoid re-handling and shall not be dumped in a large quantity at any point.

5.6.5. All care shall be taken to prevent honey combed concrete or bleeding or segregation of concrete.

5.7. CHEMICAL ADMIXTURES AND ADDITIVES

5.7.1. Chemical admixtures shall not be used unless permitted by the Engineer-in-charge. However, admixtures procured from the manufacturers and of brand as approved by the

Engineer-in-charge may be allowed on specific request of the Contractor for imparting special characteristics to the concrete. Only those admixtures which conform to IS: 6925 and IS: 9103 shall be allowed to be used, for restricting water cement ratio to 0.45 and at the same time obtaining specified slump value as per CPWD Specifications. The admixtures shall not in any way adversely affect the durability of the concrete and the reinforcement. Admixtures generating hydrogen and nitrogen etc. shall not be allowed to be used. Slump required shall be as per the CPWD specification and as per the method of placement adopted by the contractor. However the water cement ratio for all concrete shall not be more than 0.45. Nothing extra shall be payable an account of any admixture required for achieving certain slump or for the method of placement like with born pump, bucket with crane etc. However the concrete and admixtures shall satisfy the other parameter as specialized in the tender.

6. Glazed Partitions and Glazed Shutters

6.1. The Contractor shall procure and submit the samples of various materials such as toughened glass, aluminum/wooden beading, cured silicone setting blocks, silicone sealant etc. for the approval of the Engineer-in-charge prior to the execution of the work.

6.2. Wooden frame work for glazed partitions wherever required shall be executed and paid for separately under respective item.

6.3. The float glass of specified thickness shall be flat, transparent and clear as judged by the unaided eye. The float glass shall confirm to ASTM C-1036. The glass shall be to the required size with a tolerance of +/- 2mm in both the directions. The glass cut to the required size shall be toughened as per ASTM C-1048. Cutting of glass after toughening shall not be permitted.

6.4. In glazed partitions, the glass shall be fixed in location in aluminum channel/wooden beading. The glass panels shall be supported on cured silicon setting blocks of suitable size. The spacer blocks of required size shall be fixed on both sides of the glass panel to hold the glass in position and to form uniform gap on both sides of the glass for filling weather silicone sealant. The weather silicone sealant of approved brand and of the required shade shall be filled continuously along the length of aluminum channels. The silicone shall be allowed to be cured for the required time as per manufacturer's specifications and tooled properly. The vertical butt joints of the glass panels shall also be filled with weather silicone sealant using spacer tape. Wherever required adjoining glass panels shall be jointed together using patch/spider fittings, which will be supplied by the department free of cost to the contractor at site of work.

6.5. In glazed shutters the clear float toughened glass of required thickness shall be fixed in wooden styles on either side as per architectural drawing. The shutter shall be fixed in position using floor spring. The vertical sides of the shutter shall be provided with sealing strips of 'ENVIOR' or equivalent make.

6.6. Rate shall include the cost of all materials and labour involved in all the operations described above. However the cost of providing and fixing aluminum/wooden beading, door fittings shall be paid separately under the respective items.

7. Structural Steel Work

7.1. Structural steel work shall generally as per CPWD Specification

7.2. **Scope of Work**

The work covered by this specification consists of supplying, fabricating and erecting structural steel complete in strict accordance with this specification and the applicable drawings.

7.3. Shop Drawings

The shop drawings of structural steel based on construction drawings shall be prepared by the contractor submitted to the Engineer in charge. The necessary information for fabrication, erection, painting of structure etc. must be furnished immediately after acceptance of the tender.

7.4. Painting

Painting should be strictly according to I.S. 1477 (Part l - Pretreatment) and I.S. 1477 (Part II - Painting).

Painting should be carried out on dry surfaces free from dust, scale etc. The paint shall be approval by the Engineer.

One coat of shop paint (Zinc Chromate) shall be applied on steel except where it is to be encased in concrete or where surfaces are to be field welded.

8. STAINLESS STEEL WORKS

8.1. Stainless Steel Frame Work and Hand Rail

Providing, fabricating and fixing in position welded built up section of Grade 316 and of required sections using stainless steel pipes, plates, flats, etc., as shown on drawing, description and as directed by the Engineer-in-Charge. The work shall also include cutting, welding, grinding, bending to required shape and profile, hoisting, buffing and polishing, cutting chase, embedding in masonry / concrete, rigidly fixed etc. all complete at all floors and levels. All railings shall be measured in running meter for a particular type of complete railing.

8.2. Testing of Material

The stainless steel sections shall be tested in an independent laboratory as approved by the Engineer-in-Charge. One sample of each type of stainless section shall be tested for SS grade. This sample shall be selected randomly from site or factory / workshop. If the sample fails the tests, the material shall be rejected and removed from site by the contractor and replace with satisfactory material at his on cost. One sample for each lot shall be tested. The cost of testing and sample shall be born by the contractor.

8.3. Stainless steel jali for door and window shall be made from SS grade 304. The gauge of jali shall be 14/26, and unit weight shall not be less than 0.087 kg/sqft.

9. PARTICULAR SPECIFICATION FOR FLOORING, WALL LINING WORK

9.1. Granite Work

This section shall cover marble, granite and marble/granite veneering to walls, flooring and counter top work as detailed below.

9.2. Material

Granite shall be hard, sound, dense and homogeneous in texture in accordance to the sample & of the required size and thickness approved by the Engineer. It shall be reasonably uniform in colour, texture, pattern & shape and free from stains, cracks, decay and weathering and of specified quality, size and thickness. The slabs shall be pre-polished or matte flamed finished as specified in the factory before delivery. Before placing order a samples of the flooring shall be installed at the site and got approved. The granite slabs in external and internal wall veneer work shall be mirror polished in the factory with Silicon Carbide abrasives starting from no. "00" upto no. 5 and then using buff/lead strip rolls with tin oxide for final mirror polish. For flooring and counter top the final tin oxide polish shall not be used.

9.3. Specialist Sub-Contractor

The supply & installation of the granite work shall be carried out by the approved renowned specialist agency experienced in the trade. The Specialist agency will be approved by the Engineer / Architect after executing necessary samples of relevant veneering, cladding and flooring works. The work will commence only after approval of relevant shop drawings for Marble / Granite.

9.4. Granite Veneering Work (Wet Fixing)

9.4.1. Preparation

Every stone shall be cut to the required size and shape, so as to be free from any waviness and to give truly vertical and horizontal joints. In exposed masonry, the faces that are to remain exposed in the final position and the adjoining faces to a depth of 6 mm shall be fine chisel dressed in both directions or polished as required to a depth of 6 mm so that when checked with a 60 cm straight edge no point varies from it by more than 1 mm. for veneering work. No dressing or polishing shall be done at the back of the stone, so as to ensure better grip with the backing. The dressed slabs shall be of the thickness, as specified with permissible tolerance of (±) 2 mm.

9.4.2. Fixing with Mortar

Mortar for fixing shall be as specified in the description of the particular item and as per the specification of mortar mentioned in CPWD Vol. – II (specification).

9.4.3. Laying with Mortar

The stone shall be wetted before laying. Before installing the stone slabs the backing shall be plastered, cured and all surfaces imperfections removed. Pre-polished stone of the required size shall then be installed in position. The adjoining slabs shall be secured to each other and to the backing by means of stainless steel cramps, pins & dowels and araldite. The material for cramps shall have high resistance to corrosion under condition of dampness and against the chemical action of mortar or concrete in which cramps are usually embedded.

All the joints shall be full of mortar. Special care shall be taken to see that grounding for veneer works are full of mortar. If any hollow groundings are detected by tapping

the face stones, these shall be taken out and re-laid. The thickness of the face joints shall be uniform, straight and as fine as possible and pointed with mortar as specified.

The veneering shall be carried in truly plumb. All courses shall be laid truly horizontal and all vertical joints truly vertical.

9.4.4. Protection

The work shall also be suitably protected from damage, mortar dropping and all other extraneous materials and rain during construction. Double scaffolding having two sets of vertical supports shall be provided wherever necessary and shall be sound and strong.

9.5. Granite Flooring and Counter Top

9.5.1. Dressing of Slabs

Every stone shall be prepolished and accurately machine cut to the required size and shape so that a straight edge laid along the side of the stone is fully in contact with it. For patterned flooring actual dimensions shall be taken at the site and shop drawings in suitable scale prepared to identify correctly the sizes and shapes of all stones. Each stone shall be marked with a suitable identification number. All angles and edges of the granite slabs shall be true, square or angular as required and free from chippings and the surface shall be true and plane.

The thickness of the slabs shall be shown in the drawing with allowable tolerance of ± 2 mm. In respect of length and breadth of slabs a tolerance of ± 5 mm will be allowed.

9.5.2. Laying

Sub-grade concrete or the R.C.C. slab on which the slabs are to be laid shall be cleaned, wetted and mopped. For patterned work the stone shall first be laid in position loose to ensure achievement of the required pattern and any adjustments required shall be made and all stone shall be wetted and washed just before placing and the bedding for the slabs shall be with mortar as described in the item.

The average thickness of the bedding mortar under the slab shall be to suite the overall thickness of flooring specified and the thickness at any place under the slab shall not be less than 12 mm.

Mortar of the specified mix shall be spread under the area of each slab, roughly to the average thickness specified in the item. The prepolished slabs shall first be laid on top of the mortar in accordance with the approved drawing and pressed tapped with wooden mallet and brought to proper level in continuity with the adjoining slabs. It shall be lifted and laid aside. The top surface of the mortar shall then be corrected by adding fresh mortar at hollows. The mortar shall be allowed to stiffen slightly & uniformly and cement slurry of honey like consistency shall be spread over the same at the rate of 4.4 kg of cement per sqm. The edges of the slab already paved shall be buttered with grey or white cement with or without admixture of pigment to match the shade of the slabs as given in the description of the item. The slab to be paved shall then be lowered gently back in position and tapped with wooden mallet till it is properly bedded in level and line with as fine a joint as possible. Subsequent slabs shall be laid in the same manner. After each slab has been laid, surplus cement on

the surface of the slabs shall be cleaned off. The flooring shall be cured for a minimum period of seven days.

The surface of the flooring as laid shall be true to falls and, slopes as required. The slabs shall be matched as shown in drawing or as instructed by the Engineer.
Slabs which are fixed in the floor adjoining the wall shall enter not less than 12mm under the plaster /skirting or dado. The junction between wall plaster and floor shall be finished neatly and without waviness. Wherever required the flooring shall be laid in patterns and/or with brass divider strips as required.

9.5.3. **Curing and Finishing**

The day after the slabs are laid all joints shall be cleaned of the cement grout with a wire brush or trowel to a depth of 5mm and all dust and loose mortar removed and cleaned. Joints shall then be grouted with white cement mixed with or without pigment to match the shade of the topping of the wearing layer of the slabs. The Plaster of Paris slurry shall be applied to the entire surface of the slabs in a thin coat to protect the surface from abrasive damage.

Before handing over the area, the protective cover shall be removed carefully and the surfaces cleaned and carefully rubbed with a "namdah" block to leave a clean & shining floor without any defects to the satisfaction of the Engineer. If any slab is disturbed or damaged, it shall be refitted or replaced and properly jointed. The finished floor shall not sound hollow when tapped with a wooden mallet.

10. PARTICULAR SPECIFICATION FOR ROOFING AND THERMAL INSULATION

10.1. GENERAL

10.1.1. The False Ceiling Tiles shall be procured from an approved manufacturer as per the specification provided in the CPWD and as indicate in the drawings.

10.1.2. The tiles and the suspension system shall be as specified in the item nomenclature. The Contractor shall prepare the shop drawings for the False ceiling based on actual measurements at site and based on the architectural drawings, clearly indicating the typical panel as well as edge panel on all sides with details to adjust the minor variations in orthogonality. Also, junction details with different types of false ceiling materials shall be prepared and submitted for the approval of the Engineer-in-Charge before execution.

10.1.3. The installation shall be got done through a reputed Interior Contractor who shall be engaged by the Contractor. The details of earlier works executed by the Interior Contractor shall be submitted to the Engineer - in-Charge in advance. If required, those works shall be inspected to assess the quality of workmanship. The false ceiling shall be perfectly level after installation.

10.1.4. The Contractor shall prepare the mock-up at site for approval of material and quality of workmanship by the Engineer-in-Charge. Only after the approval of mock-up, the Contractor shall start the mass work.

10.1.5. The tiles shall have precisely machined edges including edge treatment required for the installation depending on the type of suspension system grid as approved by the

Engineer-in-Charge and as per the Architectural Drawings. The opening of the required size for light fittings, fire detection devices, sprinklers, AC diffusers, etc. shall be suitably made in the tiles by cutting in an approved and workmanlike manner. For the purpose of measurement, no deduction shall be made in the area of false ceiling on this account. Also, nothing extra shall be payable on this account. The end tiles shall be cut to the required size in a workmanlike manner as per the site requirement. Nothing extra shall be payable on account of any wastage in the material and /or account of providing grid at closer spacing than the general grid.

10.1.6. These tiles shall be fixed on to coordinate suspension ceiling system with supporting grids system that fully integrates with the ceiling tiles. It shall be ensured that the suspension system shall bed suitable to take all the incidental and dead loads efficiently and shall not sag. The permissible sag shall be as per the British Standards BS 8290 – 1991. The Contractor shall provide a guarantee for 10 tears against sag on account of defective material and/or workmanship.

10.1.7. The Contractor shall ensure that the grid system is designed and installed to carry all incidental loads and no other unauthorized load shall be transferred to this system. The luminaries, air grills/diffusers, signages, etc. shall be as far as possible independently supported to avoid any over loading of the ceiling system which may result in excessive deflection or twisting of grids. Any strengthening of grid system by providing additional hangers, fasteners, runners, cross tess, etc. or providing additional bracing may be carried out as required for any specific locations or for specific purpose for which nothing extra shall be payable. Perimeter trims/edge profiles of required size and shape, powder coated to required colour and shade, shall be installed at the suspension grid to completely enclose the ceiling and shall be properly secured to the walls at not more than 450mm centre to centre using stainless steels screws and PVC sleeves. It shall be neatly jointed at all external and internal angles and overlap sections in a workman like manner with mitred joints.

10.1.8. The ceiling should be set out such that the perimeter boards or tiles are in excess of half a module co that the edge panels on both the sides are of equal sizes as far as possible. The tiles shall be cut to required size and shape with rebates as specified using hand tools or mechanically operated tools in a workman like manner but with all precautions as per the manufacturer’s specifications regarding generation of dust and ventilation.

10.1.9. The entire installation shall have minimum half an hour fire rating and integrity as specified as per BS 476.

10.1.10. The Contractor shall ensure that the material is procured and delivered at installation site without any damage. Adequate care shall be taken before installing as well as afterwards till handing over the building for occupation. It shall be protected from rains, excessive humidity, chemical fumes, vibrations, dust, etc. The Contractor shall ensure careful handling and storage and prevent any edge damage or breakage. Any tile with edge damaged or crack etc., shall not be allowed to be used in the work and shall be replaced by the Contractor at his own cost. Similarly, adequate care shall be taken by the Contractor while placing or removing and handling the tiles so as not to cause any damage. Also, the Contractor shall direct his interior contractors to take adequate precautions to prevent the tiles from any dirt, fingerprints, any other marks/splashes, etc. The ceiling shall not be wet cleaned. Abrasive cleaners shall not be used to clean the marks.

11. SINGLE SKIN ROOFING OVER RCC SLOPED SLAB

Material: **Metal profile tile** in tile finish having depth of **28-30mm** at min. **195-200mm** pitch distance with steps at 200-300mm having height of 12-15 mm. Profiled sheets shall be min. **0.55mm TCT, high tensile zinc aluminium alloy coated steel** (300 mpa) having a coating mass of 150 gsm zinc-aluminium alloy coating total of both sides as per AS 1397 : 1993 and finished with 20 microns colour coating of **Super Polyester / SMP** quality paint coat on exposed surface over a primer coat of 5 microns of approved colour and a alkyd back coat of 5 microns on the reverse side over a 5 microns primer coat. The rate shall include providing necessary ridge, gutter, flushing etc. as shown and required.

Coating Mass

The sheet is pre-painted having zinc aluminium alloy coating total mass of 150 gms/m2 i.e. AZ 150 on both sides as per coil manufacturers test certificate and AS 1397-1993.

Specification for Colour Coating

a)	Paint Coating	:	Super Polyester XRW / SMP Paint
b)	Thickness of Paint i) Top coat ii) Bottom coat	:	 20 microns 5 microns
c)	Hardness (Pencil) as per AS : 2728	:	HB or Harder
d)	Adhesion (T-Bend) as per AS : 2728	:	Minimum 5T (no cracking)
e)	Flexibility (T-Bend) as per AS : 2935	:	Minimum 7T (no cracking)
f)	Resistance to corrosion (Salt Spray Test as per ASTM B-117)	:	1000 hrs. at 35 deg.C ± deg.C (passed)
g)	Scratch resistance as per AS : 1580.403.1	:	For 1500 gms. minimum (no scratch)
h)	Resistance to heat at 100 deg.C for 24 hrs.	:	No change in colour (passed)

Specification for Self Drilling Fasteners

Self drilling fasteners would comply as per following specifications :-

i)	Resistance to Corrosion	:	Neutral Salt Spray Test for 1000 hrs.
ii)	Humidity exposure test	:	1000 hrs.

APPLICATION SPECIFICATIONS

1. Providing & fixing "Z" GI section of 50x50x50x1.6mm over the sloping RCC roof, horizontally at a distance of 1500 mm center to center with one each at the top & bottom edge.
2. Providing & fixing permanently colour coated sheet in tile profile over the "Z" section with self drilling fasteners having EPDM washers as per manufacturers specification.
3. Providing & fixing capping at the top edge of the sheet made from the same overlapping.

A SINGLE SKIN ROOFING OVER STEEL STRUCTURE

Specification shall be same as for Single Skin Roofing over RCC sloped roof except that the metal sheet shall be fixed to the steel structure by using 'Z ' shape parlins at required spacing. However the parlin shall be measured separately under relavat item of steel.

TR Panel shall be fixed on to the Purlin with hot dipped galvanized imported self drilling fasteners with EPDM washers and with necessary overlap as per manufacturer's specification.

B **SINGLE SKIN ROOFING IN CURVED PROFILE**

Specification shall be same as for Single Skin Roofing over RCC sloped roof except that the metal sheet shall be fixed to the steel structure by bolting the sheet to the curved profile angle @ width of the sheet. The sheet shall be crimped to make it to required curved profile. There shall be two small ribs between the profiles. The sheet to be directly fixed to the gutter with hexagonal head, self drilling suitable fastener. Also the side lap shall overlap the crest of the subsequent sheet and shall be stitched to each other with stitching screws. The work shall include required fasteners, gutter, flashing and capping for all edges, caps and corners

C **DOUBLE SKIN ROOFING OVER STEEL STRUCTURE**

Material

Top Sheet Profile	Trapezoidal profiled sheet / Tile shape sheet as per description of item.
Bottom Sheet Profile	Plain sheet with slight ribs or perforated sheet as per the description of the item.
Panel Thickness	80mm
Facing Material	300 MPa Galvalume Steel on external sheet and 550 MPa for the inner sheet with 150 GSM Alu-Zn Coating
Facing Material Thickness	0.55 mm TCT
Facing Material Coating	DFT 20 microns colour coated SMP coating over 5 micron primer
Insulation	75mm thick noncombustible grade Rock Wool having density 64 kg/m3.
Sub grit	'Z' shape of 50mm x x75mm x 50mm X 1.6mm GI.

APPLICATION SPECIFICATION

FIXING
• Metal Roof Panel shall be fixed on to the Purlin / Girt with hot dipped galvanized imported self drilling fasteners with EPDM washers and with necessary overlap as per manufacturer's specification. • Panel shall be supplied in upto 1M effective width and in single length upto 12M without any joints depending on site requirements.

Outer Sheet : Tile profiled high tensile (Min.300 MPa yield stress) colour coated, zinc aluminium alloy coated steel sheet having crest height of 28-30mm at a pitch distance of 195-200mm between the 2 crests with steps at 200-300mm having height of 12-15mm. The sheet thickness shall be 0.55mm TCT (total coated thickness) comprising of base metal thickness of 0.5mm over which zinc aluminium alloy coating mass of 150 gms./m2 on both sides (as per AS : 1397) with 20 microns Super Polyester / SMP paint over the 5 micron primer coat on the exposed side and 5 micron primer coat with 5 micron back coat on inner side of the sheet.

Inner Sheet : Trapezoidal profiled 0.55mm thick high tensile (550 MPa yield stress) colour coated, zinc aluminium alloy coated steel sheet having crest height of 28-30mm at a pitch distance of 195-200mm with 2 stiffening ribs between the 2 crests to give additional strength to the sheet. The sheet thickness shall be 0.55mm TCT (total coated thickness) comprising of base metal thickness of 0.5mm over which zinc – aluminium alloy coating mass of 150 gms./m2 inclusive of both sides finished with 20 microns Super Polyester / SMP paint over 5 microns primer coat on the exposed side and 5 microns back coat over the 5 microns primer coat on the inner side of the sheet.

Coating Mass

The sheet is pre-painted having zinc aluminium alloy coating total mass of 150 gms/m2 i.e. AZ 150 on both sides as per coil manufacturers test certificate and AS 1397-1993.

Specification for Colour Coating

a)	Paint Coating	:	Super Polyester XRW / SMP Paint
b)	Thickness of Paint i) Top coat ii) Bottom coat	:	 20 microns 5 microns
c)	Hardness (Pencil) as per AS : 2728	:	HB or Harder
d)	Adhesion (T-Bend) as per AS : 2728	:	Minimum 5T (no cracking)
e)	Flexibility (T-Bend) as per AS : 2935	:	Minimum 7T (no cracking)
f)	Resistance to corrosion (Salt Spray Test as per ASTM B-117)	:	1000 hrs. at 35 deg.C ± deg.C (passed)
g)	Scratch resistance as per AS : 1580.403.1	:	For 1500 gms. minimum (no scratch)
h)	Resistance to heat at 100 deg.C for 24 hrs.	:	No change in colour (passed)

Specification for Self Drilling Fasteners

Self drilling fasteners would comply as per following specifications :-

i)	Resistance to Corrosion	:	Neutral Salt Spray Test for 1000 hrs.
ii)	Humidity exposure test	:	1000 hrs.

Rockwool Insulation

Rockwool Slabs (Water Repellant Grade) of density 64 kg/m3 and thickness 75mm conforming to IS : 8183 having thermal conductivity value (K-value) 0.030 W/mK at 10 deg.C. Rockloyd Rockwool Slabs type tested shall conform to non-combustibility as per BS : 476 Part-4 from a reputed lab like CBRI, Roorkee. Rockwool slab shall have been tested for Noise Reduction Coefficient (NRC) from a Govt. lab and shall have NRC value not less than 1.

12. FINISHING WORK

12.1. The work shall be carried out as per CPWD specification and manufacturer's specification where CPWD specification is not available. Paint shall be procured from approved manufacturer only. Paint shall not be procured in more than 20 litre container. Name of

manufacturer, date of manufacture and shelf lite shall be mentioned on the container including procedure for handling and warning, etc. The contractor shall prepare samples for each kind of paint for approval of the Engineer-in-Charge before procuring paint in mass.

12.2. **Paint**

Surface preparation and application of prime coat shall be as per CPWD specification and as per manufacturer's specification. The surface shall be finished with two coats of paint in the required shade over one coat of approved primer. The consumption shall be regulated as per manufacturer's specification.

13. ALUMINIUM WORKS FOR DOOR, WINDOW & PARTITION

13.1. The material for the work shall be procured from approved manufacturer only after getting approval from Engineer-in-Charge. Contractor shall submit samples of unanodised as well as anodized / powder coated sections, neoprene gasket, glass, ss screws, anchor fastener, screw selant, etc. to the Engineer-in-Charge for his approval.

13.2. The contractor shall prepare and submit shop drawings giving details of various components. Manufacturer's test certificate also shall be submitted if asked for. No material shall be procured before getting approved of samples and shop drawings from the Engineer-in-Charge.

13.3. The contactor shall prepare finished samples of aluminium window along with glazing, finishing and fittings for approval of Engineer-in-Charge for workmanship.

13.4. The contractor shall get the necessary test carried out in approved laboratory. One test for each lot or for each 1000 kg for one type of section which ever is more test shall be carried out. Unsatisfactory material shall be removed from site. The aluminium extruded section with chemical composition and technical properties as per IS: 733 and IS: 1285.

13.5. For sectional weight, tolerance limit shall be as per manufacturer's specification. However, payment for extruded sections shall be based on unit weight as per manufacturer's catalogue. The length of each member shall be taken correct to half a centimeter. For glazing, the actual area of the glazing pane excluding the portion in the beading shall be measured in Sqm. upto two decimal places for payment.

13.6. All joints shall be accurately fabricated and shall hair line in appearance. All doors, windows, ventilators, partitions and glazing, etc., shall be water and air tight by providing neoprene gaskets and weather silicon sealants. Where in closed position, there should not be any flow of air through joints, beadings, rebates, etc. The jointing accessories shall not cause any bi-metalic reaction by providing separator, wherever required. Nothing extra shall be payable for the above.

13.7. Aluminium sections shall be powered coated as per IS code or anodized as per IS : 7088 as mentioned in the description of items or drawing. The thickness of powder coating / anodizing shall be as specified. The exposed surface of the aluminium section shall be protected against surface damage by providing protecting tape. After fixing and assuring of proper functioning of window, door, false ceiling, etc., such tape shall be removed / cleaned out. Nothing extra shall be payable in this account.

13.8. All glass panes shall be retained with frame by using exterior grade neoprene gaskets. Glass edges shall be clean and grounded. All rebates shall square. Thickness and type of glass

shall as mentioned in the drawing and item description. Quality of glass shall be as specified by CPWD.

14. PARTICULAR SPECIFICATION AND SPECIAL CONDITION FOR STRUCTURAL GLAZING WORK

14.1. Scope

14.1.1. The scope of work under this work is to design, engineering, manufacturing including installation work. The glass shall be of heat strengthened 10-19 mm thick hard coated reflective tinted glass of approved shade (as mentioned in the drawings) glass assemblies. The contract documents provide the design intent for the facade systems and associated works. The Contractor is to produce finalized shop and fabrication drawings that will fully comply with the specified requirements and design drawings.

14.1.2. The Specification together with the drawings indicates the design intent and scope of the works. Together they illustrate the mandatory geometry of façade components including extrusion forms, materials to be used in the design, define the performance parameters for the facade, provide minimum acceptable standards and establish a regime for verification of the design, fabrication and installation processes. Contractor is to present different façade system options to Engineer for approval prior to commencement of work.

14.1.3. .The Facade shall include all engineering, labor, materials, tools, equipment, appliances and services required to manufacture, deliver, furnish and install all items necessary for the proper execution and completion of the Work as shown on the Contract Documents, as specified herein, and/or as required by job conditions. All items not shown or specified, but which are necessary for the proper execution and completion of the Work shall be provided by the Facade Contractor.

14.1.4. The extent of the Facade covered herein is shown on the elevations, sections, floor plans and details of the Contract Documents and includes a fully enclosed, structurally sound, weather tight wall system including but not limited to:

14.1.5. The Contractor shall assume responsibility for the detailed implementation of the design, procurement, fabrication and installation of all Facades and related elements in accordance with the Contract Documents to satisfy the performance requirements stated in this Specification. It shall be the Contractor's responsibility to warrant the above, and to ensure that all materials and work meet the requirements of the contract documents.

14.1.6. As scope and performance documents, the Drawings and Specifications do not necessarily indicate or describe in detail. all work required for the full performance and completion of the Contract Works. The Contractor shall provide all items required for proper completion of the Contract Works without adjustment to the sub-contract price unless otherwise agreed in writing.

14.2. Glass panels

14.2.1. Extruded Aluminium Mullions without reinforcement / reinforcement with SS 316 Grade material only if required.

14.2.2. Cast aluminium wind load restraint support

14.2.3. Cast aluminium dead load support.

14.2.4. Head, sill and jamb glazing channels and related anchor supports

14.2.5. Joint filler silicone gasket at interior glass joints

14.2.6. Insert setting components, support brackets, expansion joint solutions as required accommodating wall expansion and building movement.

14.2.7. Sealants, caulking, joint fillers, miscellaneous gaskets, fasteners and weeps, closures, and cut outs, as shown or asmay be required in conjunction with the system or to join the system to adjacent construction.

14.2.8. Integrated door portal framing Doors and hardware.

14.3. LOCAL CODES AND STANDARDS:

All Design, Material and Workmanship shall comply with the following minimum standards:

Indian standards

1. IS 875 (Part 3) Design loads for Buildings and structures for wind loads
2. IS 1893 (Part 1) Earth Quake resistant design of structures
3. IS 800 General construction in steel
4. Applicable building code: IS

1. BS 1474 Extruded aluminum alloy profiles
2. DIN 17615 (Part-1) Tolerance in extrusion
3. BS 3019 (Part1) TIG welding of aluminum alloys
4. BS 3571 (Part 1) MIG welding of aluminum alloys.
5. BS 8118 Design guidelines for aluminium structural framing system.
6. BS 1470 Aluminium alloy sheets grade and Thickness

1. BS 4190 Mild steel
2. Façade India Testing INC Page No: 7
3. External Façade & Glazing Works
4. BS 4360 Mild steel grades
5. BS 2659 (Part1) Protection of iron and steel by aluminium and zinc against atmospheric corrosion.
6. BS 2989 (Part1) Continuously hot dip zinc coated steel
7. BS 3019 TIG welding
8. BS 3571 MIG welding
9. BS 729 Hot dip galvanized coating on iron and steel

1. BS 1449(Part-2) Stainless steel sheet

Fastners& anchors

2. BS 6105 SS grade A2(304 general use) Corrosion resistant Stainless steel
3. A4 grade (316 grade for severely corrosive climates).
4. BS 6161: Part 8 Determination of the fastness to ultraviolet light of colored anodic oxide
5. BS 6161: Part 18 Determination of surface abrasion resistance.

1. BS 952 Glass for glazing
2. BS 6262 Glazing for buildings
3. BS 5713 hermetically sealed double glass unit
4. AS 1288 Glass selection and installation

5. ASTM C 1036 Glass
6. ASTM C 1048 Heat Strengthened and Fully Tempered Glass
7. ASTM C 1172-03 Laminated Architectural Flat Glass

Gaskets

1. BS 4255 EPDM gaskets
2. ASTM C 1115 Silicone Rubber Gaskets.

Sealants

1. BS 6213 Selection of constructional sealants
2. S 5889 Silicon Sealants
3. BS 4254 Two part polysulphide based sealant
4. ASTM C 1184 Specification for Structural Silicone sealant
5. ASTM C 920, Specification for Joint Sealants.
6. ASTM C 1135 Specification for Tensile, Adhesion & Properties of Sealant.
7. ASTM C 509 Specifications for Sealing Material.
8. ASTM C 1087 Specification for test method of determining Compatibility of materials and other accessories.
9. THERMAL INSULATION CWCT Guidelines (Centre for Window & Cladding Technology)
10. VAPOUR CONTROL LAYER CWCT Guidelines (Centre for Window & Cladding Technology)
11. FABRICATION CWCT Guidelines

1. BS 3987 Anodic oxidation coating on aluminum for external architectural application
2. BS 1615 Anodic oxidation coatings on aluminium and its alloys.
3. BS 6161 Test method for anodic oxidation coatings on aluminum and its alloys.
4. BS 4842 Liquid organic coating for aluminium alloy extrusions, sheets and preformed sections for external architectural purposes.
5. AAMA 2605.2 Specification for high performance organic coating
6. AAMA 2604.2 Specification for high performance powder coating
7. BS 6496 Specification for Powder coating for aluminum alloy extrusions, sheet and preformed sections.
8. BS 6497 Powder coating to hot dip galvanized hot rolled steel sections for external architectural purposes.

Performance Requirements

1. ASTM E 283 Air leakage performance under Uniform static air pressure
2. ASTM E 331 Water penetration under uniform static air pressure
3. ASTM E 330 Structural performance under uniform static air pressure.
4. AAMA 501.1 Water penetration by Dynamic pressure.
5. AAMA 501.4 Seismic floor displacement by static method.
6. AAMA 501.2-03 Water leakage-field check of installed storefronts, Curtain walls & sloped glazing systems
7. AS 1580 Methods of test for paint and related material.
8. E 488 Strength of anchors in concrete and masonry elements

14.4. The Work, as erected, shall meet or exceed the following structural and weather resistance requirements
As demonstrated by engineering calculations and prior testing of mock-up(s).

14.5. **Provision for Thermal Movements**

14.5.1. The Work shall be designed to provide for such expansion and contraction of component materials as will be caused by an exterior ambient temperature of -20oF to +110oF (or to values provided by building engineer), a metal surface temperature of +180oF for dark colors and +150oF for light colors, and an interior ambient temperature range of +50oF to +75oF(or to values provided by engineer),, without causing buckling, stresses on glass, metal, joint seals, undue stress on structural elements, damaging loads on fasteners, reduction of performance or other detrimental effects.

14.5.2. The amount of such thermal movement that is accommodated in the Facade shall be identified on that drawings, and shall be accompanied by thermal calculations.

14.6. Provision for Movement of the building Structure

14.6.1. The Work shall be designed to accommodate performance criteria, including but not limited to dead load and live load deflection, thermal expansion, elastic shortening and/or sway and torsion of the building frame, and seismic forces.

14.6.2. The amount of such movement that is accommodated in the Facade design shall be identified on that Drawings.

14.6.3. Anticipated building live load vertical movement (including allowance for creep, elastic shortening of vertical components and the vertical component of sway) and anticipated lateral movement due to wind load and/or seismic load values provided by building Structural Engineer.

14.7. Structural Properties

14.7.1. Minimum design wind pressures for the Work acting normal to the plane of the surface of the Work shall be the greater of those required by the applicable Building Code, or as recommended by the Engineer as a result of his expertise in the design and construction of such Work, but no less than 30 PSF positive and negative, except at corners 8'-0" in from the edge on both faces where the design load shall be no less than 45 PSF positive and negative.

14.7.2. At corners and other changes in plane, both surfaces shall be assumed to experience the worst combination(s) of inward and outward design pressures simultaneously.

14.7.3. A one third increase in allowable stress shall not be permitted in calculations employing these design pressures, unless such calculations are based upon minimum rather than nominal metal thickness. Glass members or elements shall not be relied upon or utilized in calculations to demonstrate structural adequacy.

14.7.4. The deflection of any framing member, in a direction normal or perpendicular to the plane of the wall, when subjected to the design loads specified above shall not exceed L/110 where L is the clear span of the member, nor shall the deflection of a framing member overhanging an anchor point exceed 2l/110

14.7.5. The deflection of any framing member in a direction parallel to the plane of the wall, when carrying its full dead load, shall neither exceed an amount which will reduce the glass bite at the perimeter channel below 75% of the design dimension, nor reduce the clearance between that member and the edge of the glass to less than 1/4".

14.7.6. Glass deflection (for each panel independently) at full design load shall be limited to L/140 where "L" is the distance between pinch plates or the measurement of the glass edge spanning between vertical mullions, whichever is greater.

14.8. **Seismic requirement. –**

14.8.1. Seismic rack test – two directions @150% design pressure at design movement (or) Seismic movement @ design displacement at two directions – AAMA-501-4.

14.8.2. Seismic rack test @ 100% - two directions Design pressure at deign movement (or) Seismic movements @ design displacement at two directions AAMA E 283/

14.9. **Water Penetration**

14.9.1. Water penetration, for purposes of this Specification Section, is defined as the appearance of uncontrolled water on the indoor face of any part of the Work. "Controlled" water or condensation is that which is demonstrably drained harmlessly to the exterior of the Work without endangering or wetting adjacent surfaces or insulation, and not visible in the final construction.

14.9.2. No uncontrolled water penetration shall occur at a pressure differential of 12PSF as tested in accordance with ASTM E-331.

14.10. **Air Leakage**

14.10.1. Air leakage through the Work shall not exceed 0.06 CFM per square foot of wall area at a test pressure of 6.24 PSF as tested in accordance with ASTM E-283.

14.10.2. The Contract Drawings and Specifications may not delineate some conditions or modifications which may be required to complete the Work of this Section. The Engineer shall develop any conditions not detailed on the Drawings or noted in this Section through shop drawings to the same level of aesthetics and in compliance with performance criteria, as intended in the Drawings and the Specifications.

14.10.3. Fire Safety:

14.10.4. For conditions where the mullion passes in front of the slab edge as it is attached to a building, provide a continuous aluminum or steel slab edge metal that will allow the fire safety and smoke seal material to be applied per manufacturer's specifications.

14.11. **Curtain wall system**

The drawings show a Curtain Wall design concept utilizing a through-

The-joint point supported approach for the Facade solution. It is intended that a single company bear contractual responsibility for engineering, fabricating and erecting the entire facade including tensile fabric and GRC paneling with doors.

14.11.1. **Manufacturers**

The following extruders are acceptable suppliers of products,these manufacturers must comply prior to bid with the requirements of section 1.06. Alternate manufacturers' products shall not alter the performance, design intent, geometry, site

lines, support locations and loads, interface details, or Architectural intent of the system.

A. Aluminium

a. Hindalco
b. Jindal

B. Glass

a. Asahi
b. Guardian

Alternate manufacturers' products shall not alter the performance, design intent, geometry, thickness, support locations, interface details, or Architectural intent of the system. Submit product data to the Engineer for approval.

14.11.2. **Components and Materials**

A. Metals

1. Provide sizes, shapes and profiles as shown and/or required. Provide thickness, as necessary, to comply with structural loading requirements. Provide finish of carbon steel members per section 08900.
2. Aluminum extrusions: 6005A-T5 or 6061-T6
3. Aluminum castings:
    a. minimum Fy (min) = 28 ksi
    b. ultimate tensile strength Fu (min) = 30ksi
4. Gusset plates - A36 or A572 as required and specified on drawings.
5. Stainless Steel tubing - 304 stainless steel, unless exterior application exposedto weather then use 316 stainless steel.
6. Stainless Steel tension rods/cables and end fittings to be non-magnetic 300 series S.S., all with a #4 satin finish. If exterior application exposed to weather use only 316 stainless steel with #4 satin finish.
7. Carbon Steel tension rods - painted carbon A500 Grade B steel as called for in the final construction documents.
8. Tension rods end fittings to provide at least 1" take-upper assembly. Equivalent rod/cable connection detailing permitted subject to Engineer'sapproval.
9. Anchor gusset plates: Structural steel per ASTM A36primed and painted as directed by Stakeholder.
10. Alloy and temper as recommended by the manufacturer and finish applicator, to comply with the requirements of performance, fabrication and application of finish. Minimum thickness shall be3mm

B. Glass

General Requirements for all types of Glass -

I. The glass production facility should provide a fully traceable history of glass panels, with a unique record sheet for each panel. The batch number dates and times of each process should be recorded including delivery, cutting, heat strengthening, heat soaking, coating, lamination, fabrication of DGU etc. All base supply float glass should be/have:

1. Comply with the requirements of BS EN 572 parts 1 and 2 and q3 of ASTM C1036.
2. Clean cut, without significant edge faults that produce risk of breakage (including feathered edges, shells or other imperfections) and free from bubbles, inclusions, cracks, rippling, dimples, sleeks or other defects.
3. Cut to accurate sizes in the factory.
4. The glass production facility should provide a fully traceable history of glass panels, with a unique record sheet for each panel. The batch number dates and times of each process should be recorded including delivery, cutting, heat strengthening, heat soaking, coating, lamination, fabrication of DGU etc.
5. The quality of views through the glass from inside within a single level must be consistent.
6. The visual quality of glass surface reflections within a single façade type on the same elevation should be consistent.
7. No local defects producing irregular reflections, i.e. no distortion of more that .05 diopter.

8. Glazing more than 3m above the ground with unsupported edges to be laminated.
9. Glazing that is inclined by more than 15° from vertical to be laminated.

C. **Thickness**

The thickness and dimensions of glass shown on the drawings are minimum thicknesses, not prescribed thicknesses or dimensions. Calculate the glass thicknesses, using the recommendations in the relevant standards or validated proprietary design methods to meet the structural, environmental, and acoustic and safety requirements as approved by Engineer..

D. Visual Quality

a) Visual distortions of views and reflections to minimized.
b) Visual quality of views and reflections to be established using visual mock-ups.
c) Glass used for visual mock-ups to follow actual composition where possible.
d) Glass from visual mock-ups to be retained until one year after completion

E. Heat Treatment

a) Prior to heat treatment glass must comply -
b) Grind flat edges to a small arris.
c) Dubb Corners.
d) Grind out small shells and/or chips.
e) Maximum chip/shell diameter 2 mm.
f) Not more than four randomly placed edge located chip/shells in any single pane of glass.

F. Heat Strengthened Glass

a) Comply with the requirements of ASTM 1048- for Kind HS glass.
b) Tempered on a roller hearth furnace eliminating tong marks
c) Conform to the following requirements in the horizontal heat treatment process: a. Maximum bow: 0.1%
    i. ii. Roller wave: All thicknesses 0.075mm depth maximum between peak sand troughs
    ii. Edge dip: 0.25mm maximum
d) Identification marks indicating its nature and processor to be located in the bottom left when viewed from inside.
e) Locate roller marks on heat treated glass parallel to the sill (horizontal)
f) Demonstrate by the prime manufacturer's testing that the residual surface compressive
g) Stress in the glass is between 35 N/mm² and 50 N/mm² when measured by GASP in accordance with ASTM F218-95 (2000). Demonstrate the uniformity of RSCS over the area of the panel by either GASP or other tests as approved by the Engineer.
h) For point supported glass using heat strengthened glass the residual surface compressive stress to be in the range of 45N/mm² to 50N/mm². At least 2 number GASP test results to be submitted for each batch of glass for each day of production.

14.12. **Fully Toughened/Tempered Glass**

Toughened/Tempered glass to be / have:

a) Conform to ASTM 1048-04 Kind FT.
b) Glass to come from a source that uses computerized optical methods to scan the floatglass during production for inclusions. The glass used for toughening should be of thehighest graded quality from this scanning.

c) Tempered on a roller hearth furnace eliminating tong marks.
d) Conform to the following requirements in the horizontal toughening process:
    a. Maximum bow: 0.1%
    b. ii. Roller wave: All thicknesses 0.075mm between peaks and troughs
    c. iii. Edge dip: 0.25mm maximum
e) Location of Identification marks indicating its nature and processor to be agreed with the Engineer.
f) Locating of roller marks on heat treated glass parallel to the sill (horizontal)
g) Heat soak test all toughened glass
h) Heat soaking to EN 14179 as amended by the heat soak procedure described in Appendix B.
i) Provide the Engineer with copies of temperature log records for each batch and any statistical analysis of the
j) test data. The manufacturer shall, upon request, show by statistical analysis of test data that the probability of failure is less than one in 130 tonnes.
k) Demonstrate by the prime manufacturer's testing that surface compressive stress in the glass is greater than or equal to 100 N/mm² when measured by GASP in accordance with ASTM F218-95 (2000).
    l) Do not use Toughened (Tempered) glass in situations where breakage could result in glass falling more than 3 meters to an occupied area, unless specifically approved orthe glass is laminated.

14.13. Insulating glazed units

a) Hermetically sealed complying with BS5713.
b) Mechanically applied primary poly-isobutylene seal located between glass and spacer providing a continuous vapor proof barrier of a minimum width of 2mm and a secondary two part silicone sealant extending around the perimeter of the unit.
c) The design of the secondary seal consistent with the glazing details. Where the unit is supported by structural sealant or clips to the spacer bar the secondary seal to be designed for the effects of wind and barometric pressures.
d) Aluminium alloy spacers with a black finish and sufficient rigidity for their purpose. Formed to accommodate seals and to contain desiccant.
e) All breather tubes nipped closed prior to installation.
f) All corners and joints fabricated so as to ensure a water vapor tight construction.
    g) Desiccant of molecular sieve Type 3A complying with ASTM-E-774.

14.14. Performance Coating

a) Nominally neutral in colour and uniform in tone, hue, colour, texture, pattern andopacity.
b) Consistent appearance to the glazed units. Allowable pinholes in coated surfaces:
c) Diameter 0.8-1.2 mm (2 within 300x300mm)
d) Diameter 1.2-1.6 mm (1 per sheet)
e) Diameter 1.6 mm and above not allowed
f) Any edge deletion of coatings stopped within 0.5mm of the primary seal.
g) The Low-Emissivity coating shall be applied to the glass either by pyrolytic or vacuum (Sputtering) deposition method, soft coat Low-E is acceptable for double glazed units only except where the DGU is curved in which cases hard coat Low-e is acceptable. This coating will be applied to control the solar heat gain and enhance the energy performance and comfort level of the building. The coating shall meet the requirements of ASTM C 1376-97and satisfy the thermal performance of the facade.

h) Any heat strengthening or toughening of glass with a low-e coat shall be completed in a convection oven.

i) Conduct independent laboratory tests to verify the "U" and "SC" values of the glass delivered against the data provided by the glass supplier. This would be in the form of1(one) number of sample testing for each type of glass.

j) Coating applicator to be from single source. Provide source of coating for Engineer's approval.

14.15. Sealants

1. All joints, which are sealed with sealant as part of the fabrication or erection procedure, shall be sealed with an approved low/medium modulus silicone sealant (exposed or concealed) in manufacturer's standard color as selected by the RTDC. All perimeter sealant (metal to adjacent construction) shall be sealed with an approved low/medium modulus silicone sealant in manufacturer's standard color as selected by the RTDC. Silicone sealant shall be as manufactured by General Electric (Silpruf) or Dow Corning (790 or 795)
2. In using specified sealant, strictly observe printed instructions of sealant manufacturer regarding joint size, limitations, backer rod, mixing, cleaning, surface preparation, priming and application. A primer shall be used, unless written instructions from the sealant manufacturer advise to the contrary, and sealant manufacturer certifies that the lack of the use thereof will not reduce sealant performance. Sealant shall not be applied when substrates are wet or when the temperature is below 40oF, unless special low temperature application procedures, as recommended by the sealant manufacturer are followed.
3. Care shall be exercised to insure against "three surface adhesion". Bond breakers shall be provided where necessary.
4. Provide certification from sealant manufacturer that the sealant manufacturer has reviewed all sealant details and finds sealant suitable for the purpose intended, compatible with and will not stain the surfaces with which they are in contact. Statement as to compatibility, adhesion sufficiency and non-staining shall be accompanied by actual test results on production substrates performed in accord with applicable ASTM procedures. Cleaners used in laboratory testing shall be as intended for use on the Work and shall be VOC complaint with local governmental requirements.

14.16. Accessories

1. Fasteners visible or exposed to the weather to be fabricated from non-magnetic stainless steel (316 alloy or equivalent).
2. Self-drilling screws may not be used without approved test reports.
3. Slip joint linings/sleeves/shim: Provide stainless steel sleeve spacers and/or suitable bearing pads, as required, to insure free noiseless movement between surfaces where expansion and deflection movements are intended. Provide "Eel Slip", "Nylatron" or high impact polystyrene shims or pads or equivalent plastic units or sizes and thickness (minimum 1/16" except 1/8" for "Eel Slip) recommended by the manufacturer to permanently prevent "freeze up" of joints.
4. Flashing require within the system and to adjacent construction shall be aluminum.

14.17. Fabrication

14.17.1. General

All parts of the Work shall be of the materials, design, sizes and thickness shown or note on the Drawings and/or specified in this Specification Section or as may be required to meet the aesthetic intent and design performance requirements. Methods of fabrication and assemble, however, unless specifically stated, shall be at the discretion of the manufacturer and subject to the acceptance of the client.

14.17.2. Workmanship

All work shall be done by competent workman thoroughly skilled in the trade. Use no materials, equipment or practices that may adversely affect the functioning, appearance and durability of the completed Work and related construction. The work shall be accomplished in compliance with the

specified criteria and without buckling, opening of joints, undue stress on fasteners, sealant and gaskets, opening of welds, cracking of glass, leakage, noises or other harmful effects.

14.17.3. **Joints in Metalwork**

All exposed Work shall be carefully matched to produce continuity of line and design with all joints, unless otherwise shown or specified, being accurately fitted joints and rigidly secured. Any exposed edges shall be finished to match face of the Work.

14.17.4. **Shop Assembly**

As far as practicable, all fitting and assemble work shall be done in the shop.

14.17.5. **Exposed Fasteners**

Exposed fasteners on finished surfaces will not be permitted unless otherwise shown on the Drawings, or specified. Exposed fasteners, if permitted by the Stakeholder, shall be painted to match the adjoining finish and shall be located as inconspicuously as possible.

14.17.6. **Protection of Metals**

Protection against galvanic action shall be provided where dissimilar materials or metals are in contact. This protection shall be provided by either painting the contact surfaces with two heavy coatings of zinc rich primer in different colors or by application of an appropriate sealant or tape or other approved galvanic isolator.

14.17.7. **Welding –**

All welding shall be in accord with pertinent recommendations of the American Welding Society and shall be done with electrodes and/or methods recommended by the suppliers of the metals being welded. Type, size and spacing of welds shall be as shown on the approved shop drawings.

Welds behind finished surfaces shall be done in such a manner as not to cause distortion "weld telegraphing" and/or discoloration on the finished side. Weld spatter and welding oxides on finished surfaces will not be permitted.

14.17.8. **Shop Painting of Carbon Steel**

Items of carbon steel, unless galvanized after fabrication or scheduled for other finish shall, after completion of fabrication and welding, be thoroughly cleaned of all loose scale, filing, dirt and other foreign matter and shall be painted with two coats of an approved zinc rich primer in two different colors. Surface preparation shall be SSPC-SP6. See section 08900 for additional finish requirements.

14.17.9. **Shop Painting of Aluminum**

a) Extrusions - factory paint all exposed metal surfaces in strict accordance with manufacturers recommended application procedures. Use PPG Duracron (or equivalent) paint to standard color selection for all interior applications; use PPG Duranar XL (or equivalent) paint for all exterior applications. Submit color chart.
b) Castings - factory paint all exposed metal surfaces with a powder coat type paint to standard color selection; submit color chart.

14.18. Execution

14.18.1. Examination

After lines and grades have been established, and before beginning installation in any area, the Contractor shall examine all parts of the structure on which the Work is to be placed in that area. Should any conditions be found which, in his opinion, will prevent the proper execution of his Work, he shall report such conditions in writing to the Contractor and make recommendations as to any necessary corrections. Installation or Work shall not proceed in that area until the Contractor approves proposed installation methods.

14.18.2. Installation

14.18.2.1. Lines and Grades

Bench marks for elevations and building line offset marks for alignment shall be established on each floor level by the Contractor, who shall be responsible for their accuracy. Should any error be found in their location, the facade Contractor shall so notify the Contractor in writing, and installation Work shall not proceed in the affected areas until the errors have been corrected.

14.18.2.2. Erection Tolerances

1. Contractor Tolerances
The following are the tolerances that the Contractor must hold for the building steel framing, supporting the work of the
Façade Contractors' scope:

a. All steel work to IS/ BS standards
b. Columns 1/8" per foot up to 50' in height, to a maximum of 1" out of plane of the wall and 2" in plane of the wall.
c. Beams - +/- ½" from theoretical location all directions
d. All Concrete work to IS standards
e. Slabs - +/- ½" from theoretical elevations
f. All parts of the Work shall be erected, plumb and true, in proper alignment and relation to established lines and grades, and as shown on approved shop drawings and/or erection drawings. The following are the guidelines for the Facade system Contractor for field erection tolerances:
g. Survey and layout connections to the building within +/- 1/8" from the oretical locations.
h. Vertical framing members must be plumb to within +/- 1/8" from theoretical position.

14.18.3. **Completion of the Work:**

All welding shall be done by skilled mechanics, certified, qualified or licensed in accord with local building regulations and shall conform to the recommended practices of the American Welding Society and approved drawing requirements. Welds and adjoining burnt areas shall be thoroughly cleaned and painted with two coats of paint as specified above. Protect glass and other finished surfaces from damage, and prevent causing fires.

14.19. Use of Sealant Materials

14.19.1. Application of exterior sealant in moving joints shall not Commence until the Work of this Specification Section has been "topped out" and Stakeholder has released Work for sealant application.

14.19.2. Sealing materials specified in this Specification Section shall be used in strict accordance with the manufacturer's printed instructions and shall be applied only by mechanics trained or experienced in their use.

14.19.3. Before applying sealing materials, all mortar, dirt, dust, moisture, protective coatings and other foreign matter shall

14.19.4. completely be removed from surfaces it will contact. Comply with manufacturer's instructions for final wiping of surfaces immediately before application of primer and glazing sealants.

14.19.5. Adjoining surfaces shall be masked, when required to maintain a clean and neat appearance. Sealant compounds shall be tooled to fill the joint and provide a smooth finish surface.

14.19.6. Clean excess sealant from glass and support members immediately after application, using solvents or cleaners recommended by the manufacturers.

14.20. Anchorage

Anchorage of the Work to the structure shall be by approved methods in strict accordance with approved shop and/or erection drawings. Supporting brackets shall be so designed as to provide three dimensional adjustment and accurate location of all components. After the unit is properly positioned, all connections so designated on approved shop drawings shall be rigidly fixed by welding or other positive means.

14.21. **Glazing**

14.21.1. Before glazing, the backer structure shall be checked to see that it is square, plumb and true plane, and within tolerance to install the glass. Perimeter glazing channel clearance shall be sufficient to avoid all point loading.

14.21.2. If found otherwise, glazing shall not proceed until proper corrections are made. Correct glass sizes to insure adequate "glass bite" shall be verified by field measurement. Glass shall be installed in such manner to assure proper "glass bite" at all channels.

14.21.3. No glass shall be cut after leaving the factory.

14.21.4. Install in accordance with Glazing Manufacturer's requirements and the shop drawings.

14.21.5. Employ only experienced glaziers who have had previous experience with materials and systems being applied. Use tools and equipment recommended by the glass manufacturer.

14.21.6. Plate-to-plate joints of glass are sealed with siliconesealant. Joint dimensions shall be maintained to be compatible with sealant properties and live load movement of the structure.

14.21.7. Bolt Torque: Torque bolts to torques specified on shop drawings using calibrated tool. Lock torqued bolts into position to prevent back-off. Reset calibrations regularly to ensure accurate torqueing.

14.21.8. Maintain a minimum temperature of 40oF during Glazing unless the manufacturer of the glazing material specifically agrees in writing to application of this material at lower temperature. If job progress of other conditions require glazing work when temperature is below 40oF (or below the minimum temperature recommended by the manufacturer), consult the manufacturer and establish in writing the minimum provisions required to ensure satisfactory work.

14.21.9. Inspect each unit of glass immediately before installation. Glass which has significant impact damage at edges, scratches or abrasion of faces, or any other evidence of damage shall not be installed.

14.22. **Removal of Debris**

All debris caused by or incidental to the installation of this Work shall be deposited in trash receptacles provided by the Contractor on a daily basis, as the Work progresses.

14.23. **Cleaning**

14.23.1. Remove from the installed Work all sealant smears or other unsightly marks caused by Contractor's workmen that would not be readily removed by normal final cleaning with mild soap and water.

14.23.2. Contractor shall be responsible for any damage or disfigurement of the Work caused by his own personnel.

14.23.3. Final cleaning excluded from the scope of this section.

14.24. **Inspection**

The Engineer will inspect the Work. The Contractor shall cooperate with the Engineer personnel and allow unrestricted access to the Work, both in plant and field, and to any

scaffolds used in the performance of the Work without requiring any scaffold releases, in order to facilitate such inspection. The Contractor to schedule all required field inspections required by the Contract Documents through the Contractor.

The Contractor shall perform all tests that may be required by the inspection personnel as a condition precedent to issuance of the Certificate of Completion.

14.25. **Protection**

14.25.1. Take all necessary means to prevent any damages (scratches, dents, nicked edges etc.) to components during handling and erection Replace components beyond acceptable field repair at no additional cost . Special protection tape of 70 microns shall be applied on to the profiles. The tape glue should not get transferred on to the profile

14.25.2. Surface or react with the finish till hand over time. Sample of the final finish of profile and protection tape shall be submitted for approval before production start.

14.25.3. Protect glass surfaces by protection sheet. Do not apply markers of any kind to glass surfaces.

14.25.4. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in any manner as a result of construction activities, natural cause's accidents or vandalism. Replace with new material at no additional cost .

14.25.5. Maintain glass in a clean condition at all times, including during construction to prevent glass damage from corrosive action from the elements and contributing side-effects (by wash off) to the components and other work.

SECTION – B ELECTRICAL WORKS

SPECIFICATION FOR LAYING OF CABLE

1. METHOD OF LAYING OF CABLES:

The cable work shall be done as per IS 1255. The cable shall be directly laid in ground, in RCC pipes, in open ducts or on surface depending upon the requirement and site conditions. While deciding the route of the cables at preliminary stage it should be ensured that the joint in the cable shall be placed at most suitable place, such inaccessible locations like the water logged areas, carriage ways, pavements proximity to telecom cables, water mains, pipes etc. should be avoided.

2. LAYING DIRECTLY IN GROUND

The cable should be laid directly in ground, wherever it is passing open country, along the road/lanes etc. The area, which is likely to be excavated frequently, should be avoided. Care should be taken to select the area where re-excavation is easily possible without affecting the other services in the proximity.

3. PROVISION OF TRENCHES

Width of Trench: - The width of trench shall be determined on the following basis:-
The minimum width of cable trench shall be 350 mm. wherever more than one cable is laid in the same trench in horizontal formation the width of trench shall be increased such that inter axial distance between the cable shall be at least 200 mm.
There shall be clearance of 150 mm between the end cabled and the sides of the trench.
In addition to the protective cover over the cables laid in the underground trench, a brick on edge should be laid in between the two-just apped cables along the direction of the lay of the cable for providing separation.

Depth of Trench: - The depth of the trench shall be determined on the following guidelines:-
Normally cables should be laid in single tier formation. Wherever the cables are laid in single tier formation, the total depth of the trench should not be less than 750 mm for cables upto 1.1 KV grid and 1200 mm for cables above 1.1 KV. Wherever it is unavoidable to lay the cable in wire than one tier the depth of trench should be increased by at least 300mm for each additional tier to be formed.

4. EXCAVATION OF TRENCH: -

The excavation of trench shall be done as per IS 3764. To the extent possible the trench be excavated in straight lines. Wherever a change in line is required, suitable curvature as per clause 1.11 shall be provided.

In case gradient has to be provided in the depth of the trenched it should be a gradual. Manual or mechanical means should be employed for doing excavation. The soil shall be stacked on the side of the trench in such a manner that it should not fall back into the trench.

Due care should be taken to avoid damage to any existing cables, pipes or other such installations in the proposed route during execution. While excavating, if route markers, bricks, tiles, bare or protective covers are encountered further excavations should not be carried out without the approval of Engineer Incharge.

In case existing property gets exposed during trenching same should be temporarily supported or proposed adequately as directed by the Engineer Incharge. The trenching in such case shall be limited to short lengths. Protective pipes should be laid refilled in accordance with clause 6; in case there is a danger of collapse, or the trench is endangering existing structure the site should be well supported before proceeding on with the excavation work.

The bottom of the trench should be level, free from sand, brickbats and gravel etc. such cushion of at least 75 mm should be provided under the cable.

5. LAYING OF CABLE IN TRENCHES: -

Before the cable is issued for laying the individual cores should be tested for continuity and insulation resistance. The cable should be removed from drum by mounting the drum on jacks and spindles of adequate strength. Care should be taken so that the supporting arrangements do not creep to one site while the drum is in rotation.

The cable should be pulled over rollers in trench, steadily and uniformly and without jerks and strains. The entire cable shall be as far as possible be paved off in one stretch, however, if this is not possible the remaining cable shall be removed by flaking i.e. making one long loop in reverse trench over rollers the cable shall be lifted over the roller by helpers standing about 1000 mm apart and drawn straight. The cable shall then be taken off, the rollers by additional helpers by lifting the cable and then laying in reasonably straight line.

In shorter runs and sizes upto 50 Sq.mm of cable and grade upto 1.1 KV any other method with the approval of Engineer Incharge may be employed.

After properly straightening the cable, the cores etc testing for continuity and insulation resistance as per clause 1.0/Pt. IV and the cable is then measured. The ends of cables should be sealed suitably to avoid ingress of moisture.

The cable laid in a trench in single tier formation shall have covering of dry sand of not less than 150 mm above the base cushion of sand before the protection cover is laid.

In case of the multi-tier formation after laying the first cable, sand cushion of 300 mm shall be provided. Each of the subsequent tier shall have sand cushion of 300 mm. The top most cable shall have sand layer of not less than 150 mm before the protection cover is laid.

Wherever straight through/termination joint is to be provided a surplus length of 3000 mm of cable should be left on both the sides in the formation of loop. Wherever longer run of cable length is provided, balance cable may be left at suitable entrance as specified by the Engineer Incharge.

Wherever the cable is entering buildings, fixed structures like sub stations end/or back trenches surplus length of 3000 mm should be left in the shape of loop, otherwise decided by Engineer Incharge. Surplus cable of some location found suitable should be left in the shape of loop.

6. FINAL PROTECTION: -

The cable shall be protected in accordance with clause 5.7 to provide warning to future excavators and also for avoiding any accidental mechanical damage by pickaxe blows etc. The cable should be protected with well-burnt bricks. The bricks on face should be so provided that the width of the brick is in the direction of lay off cable. The bricks should be provided through out the length of the cable to the satisfaction of Engineer Incharge. Wherever more than one cable is laid in the same trench, the protection cover for cable should protect at least 50 mm on the side of end cables.

7. BACK FILLING OF TRENCHES: -

After excavation and laying of cables the trench should be back filled with excavated earth, free from stone or other sharp edge debris and should be watered if necessary. A crown of earth of 50 mm should be left in the center, tapering towards the sides of the trench to allow for subsidence. The trench should be inspected at regular intervals particularly during wet weather and any settlement shall be made good contractor by further filling, if required. Due to cable laying work any disturbance to existing equipments in the area like roads, pavements, garden should be made good after the cable laying work is over.

8. ROUTE MARKERS: -

Route marker should be provided along straight runs of the cables at locations approved by the Engineer Incharge and generally at intervals not exceeding 100 meters. Whenever the cable route is changing or it is entering a fixed installation, route market must be provided. Route marker shall also be provided at joints of cables.

Route marker shall also be made out of 100x20 mm CI/GI plate, welded or bolted on two 35x35x6mm angle iron 500 mm long. The said route marker shall be mounted parallel to and at a distance of 500 mm from the edge of the trench.

9. CABLE IDENTIFICATION TAG: -

Cable markers should be provided where more than one cable is laid in juxta posted configuration. The marker tags as approved described with cable identification details shall be permanently attached to all the cable on the man hole pull pits/entering points in buildings through open duct.

10. LAYING OF CABLES IN PIPES/CLOSED DUCTS: -

Wherever the cable is to cross road, enter into any building be mounted on poles, be laid/ in paved areas, the cable shall be laid in pipes or closed ducts. GI/I/CI/RCC pipes shall be used for such purpose. The diameter of such pipes shall be adequate for passing of cables. The pipe shall be laid on suitable bed provided on the ground. Sand cushion/brick/tiles if required can be provided under the pipe. The pipe should be filled with sand after laying the cable insides. The tope surface of pipes shall be at a minimum depth of 1000 mm from the ground level.

The pipes on road crossing should be laid on the skew to reduce the angle of bend as the cable enters the leaves crossing. This is very important for high voltage cables. If the cable is to be laid in duct, suitable manhole cutouts at convenient distance should be provided for facilitating inspection and maintenance of cables.

Pipe shall be continuous and clear of any debris before drawing of cables sharp edges at ends should be smoothened to prevent injury to cable insulation and ensuring proper safety.

LAYING OF OPEN DUCTS: -

Open ducts with suitable removable covers should be preferred in sub stations, switch rooms, plant rooms, generator rooms and workshops etc. The cable ducts should be of suitable dimension so that the cable shall be laid conveniently. If required the cable can be fixed with clamps on the walls of the ducts. The cable can be fixed with clamps on the walls of the ducts. The duct shall be covered with removable RCC slabs of suitable dimensions MS, chequre red plates covers so that covers can be lifted conveniently for maintenance inspecting and replacement. The ducts should be filled with dry sand and after the cable is laid and covered or finished with cement plaster specially in high voltage applications.

No joints/splices should be permitted inside the ducts.

As far as possible laying of cable with different voltage grade in the same duct should be avoided. The cable trays, hooks or racks should be provided for supporting cables in masonry/contracts cable ducts etc. otherwise the cable can be laid directly in the duct or trench or through etc. While laying the cables inducts due care should be exercised to ensure that unnecessary crossing of cable is avoided.

11. LAYING ON SURFACE: -

In the switching stations, factories, tunnels and for raising mains throughout special rack ways the laying of cables on surface should be done.

The cable shall be laid in through or brackets at regular intervals or directly cleated to wall ceilings.

The cable should be laid over bracket support and clamps to prevent undue sag.

The cable clamps should be made from material such as mild steel, porcelain wood, aluminum PVC, epoxy material. These should be non-magnetic and non-corrosive in nature.

12. LAYING ON MS LADDER TRAY: -

The cable shall be laid in the existing MS ladder tray in straight line as far as possible and shall be clamped properly by providing suitable clamps as per site requirement (The clamping arrangements to be get approved from Railways before providing)

Normally the distance between each clamp of laid cable shall not be more than 1.5 m (Appx.).

Terms and conditions for Comprehensive AMC for the Lifts and Travelators for 5 years inclusive of 2 years of Defect Liability Period

1. The Lifts and Travelators installed at the mentioned location are expected to work very extensively for meeting passenger requirements. Therefore, any break-down of these Lifts and Travelators will adversely hamper the movement of Passengers. The objective of this Comprehensive AMC, therefore, is to achieve trouble free working of these Lifts and Travelators through- out the period to ensure availability of the Lifts and Travelators for passenger use.

2. The tenderer shall undertake Comprehensive AMC as per maintenance schedule detailed.

3. The Lifts and Travelators shall be examined once in a month by the contractor for assessing the working condition and repair/replace the defective/work-out parts as a result for wear & tear, if the conditions so warrants, free of charge, to ensure trouble free working of the Lifts and Travelators.

4. Attend any number of break-down calls as reported by the authorized representative of RTDC, within a reasonable time period, to ensure availability of the Lifts and Travelators, at the earliest possible. Under any circumstances, attention of the break-down calls shall not be extended more than 24 hours of the intimation (In writing or over phone) of the same by authorized Electrical department official

5. The Contractor shall be in a better position to attend the break-down calls reported after normal working hours also, as felt necessary to keep the Lifts and Travelators in good working condition.

6. The contractor should make available competent Service Engineer, at Shimla, on a round-the-clock basis, to attend any emergency calls/break-downs. Mobile number of the Service Engineer shall be made available to the authorized personnel of Electrical Department for use in exigency.

7. The charges quoted for the Comprehensive AMC of Lifts and Travelators shall include:

    a. Cost of preventive maintenance visits during the contract period
    b. Cost of all consumables for the performance of the AMC
    c. Cost of all spares
    d. Salary/Boarding, lodging, transportation, medical facilities and all other incidental expenses.
    e. Taxes, duties and other levies, if any applicable. RTDC will not undertake to pay any other charges other than the accepted AMC charges

8. In case, the total penalty exceeds 10 % of the CAMC value, RTDC shall have the right to cancel the CAMC and forfeit the security deposit /performance guarantee submitted by the contractor.

9. Payment will be arranged on quarterly basis for the completed portion of CAMC by the contractor, as certified by the Engineer-in-charge, concerned. The bills, as certified by the Engineer-in-charge, shall be forwarded to the concern authority together with the CAMC service call reports/break-down attention reports, jointly signed by the authorized representatives of RTDC & the contractor.

10. The Contractor shall be solely responsible for any damages suffered by the consignee's property during the contract period. The liability shall be limited to making good the damages inflicted.

11. The firm shall deploy adequate skilled and trained staff and supervisor. They should be well qualified and conversant to keep the equipment in proper working condition they will be responsible to maintain the equipments in efficient, reliable and safe operating condition.

12. During monthly inspection, the Service Engineer shall foresee the probable failures and corrective action taken so as to avoid any break-downs.

13. The CAMC shall be valid for a period of five years from the date of first attention of CAMC. Necessary CAMC register shall be maintained by the contractor.

14. If any of the programmed/scheduled maintenance activities are skipped during the CAMC period, amount corresponding to the skipped maintenance activity/attention shall be recovered from the contractor.

15. The Contractor shall ensure that in case failures reported by the authorized representative of RTDC, qualified Service Engineer shall visit the Lifts and Travelators installation for attending the break-down failures within 12 hours from the date of complaint by RTDC. The period of 12 hours after failure report shall be treated as grace period, which will not count towards break-down time. Complaints will be lodged by RTDC by FAX/Phone/e-mail/ per bearer.

16. All the Lifts and Travelators are to be handed over to the RTDC in good working condition after completion of Comprehensive Annual Maintenance Contract (CAMC) work, failing which the deduction shall be made from the firm's bill after calculating amount of defects and discrepancies.

17. The routine maintenance work shall be carried out during non peak hours as per the program decided by RTDC. However breakdown/corrective maintenance can be done at any time in consultation with RTDC.

18. Lifts and Travelators shall be maintained in such a fashion so that there is no inconvenience to commuters.

19. The contractor shall arrange his own tools/special tools for carrying out routine/ schedule /corrective/ breakdown maintenance.

20. RTDC Administration shall not be responsible for any accident to the staff by any reasons whatsoever the contractor shall ensure that staff is duly insured for liability in case of any accident, strikes, riots, civil commotion. RTDC will not liable for any damage causes due to any reasons.

21. A Log Book shall be maintained at site to record the maintenance schedule and break down etc. Every fault noticed/reported by the RTDC shall be entered in the log together with the action taken. The fault log will be maintained as part of the permanent quality assurance record for the Lifts and Travelators and shall be subject to regular inspection by the RTDC's representative. This register should be signed jointly by the firm and RTDC representative.

22. The firm shall make arrangement for registration of complaint and to attend the complaint round the clock as Lifts and Travelators are working round the clock. The defective period will be treated from the lodging of complaint. The firm shall also display the telephone No., Mobile No. and address on each Lifts and Travelators at suitable location for lodging complaint

23. The firm shall be liable for any losses/damage of material/human due to poor maintenance.

24. The contract can be terminated by RTDC by given a notice of three months.

25. The contract shall be valid for five years from date of successful completion of the Project.

26. The contractor shall be required to maintain stocks of recommended spare parts to be jointly decided by RTDC & the contractor. All the spare parts shall be replaced with original and genuine parts.

27. The contract includes replacement of material as a result of normal wear and tear such as Worms, gears, thrusts, bearings, brake magnet coils, brake shoes, brushes, windings, commutators, rotating elements, contacts, coils, resistance, for operating and motor circuit, magnet frames and other mechanical parts and any other items and control panel of the Lifts and Travelators. The parts which are replaced shall be contractor's property. The parts to be replaced shall be done with original manufactures components to be approved by RTDC.

    When a Lift or Travelator is under maintenance/break down, suitable display/board shall be arranged by the contractor and exhibited at suitable location attracting the notice of the passengers/users, so that possibility of/any person using the Lifts and Travelators (which is out of service due to break down/maintenance) could be avoided.

    In case of breakdown, the contractor shall give fitness to the RTDC's representative in writing before the equipment is offered for passenger service.

29. The contractor shall also make their own arrangement for regular cleaning of the external/exposed parts of the Lifts and Travelators and other site of work during the tenure of the contract.

30. The contractor staff shall be always be in uniform with name and badge and I-Card while entering in the area. The identity cards will be issued to the staff of the contractor duly approved by RTDC. They will be required to carry the identity cards with them during duty hours

31. The contract shall cover all Spares, Consumables and Assemblies which shall be replaced free of cost by the contractor during the currency of the contract if found defective.

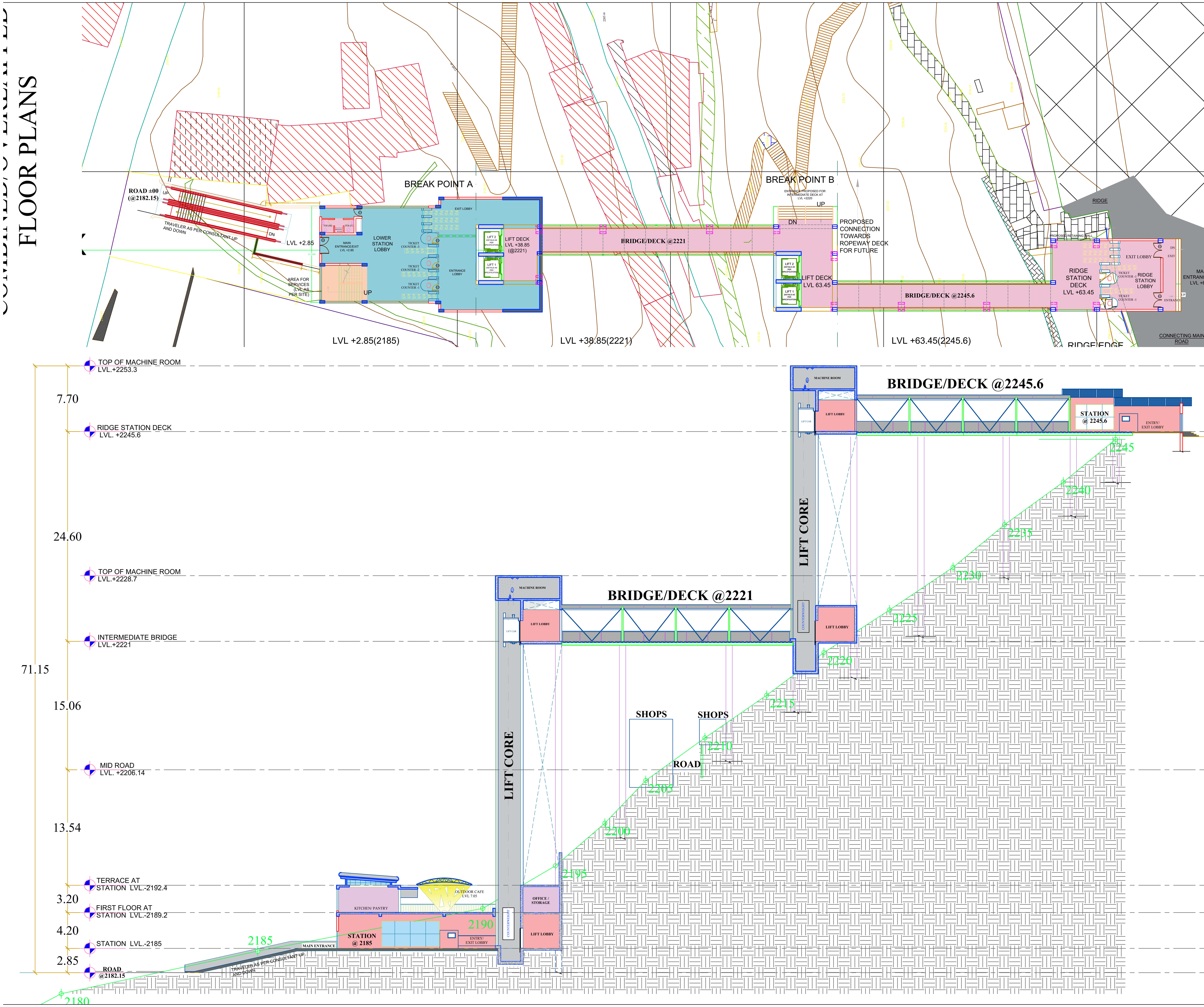
32. During the currency of CAMC contracts, the contractor shall be responsible for all electrical, mechanical & civil works related to Lifts and Travelators. The contractor shall always maintain all the safeties provided in perfect working order at any point of time. The RTDC's representative shall be provided all support by the contractor to carry out checks/surprise checks as & when desired.

33. Failure Investigation: - The contractor shall conduct failure investigation and submit the same to Employer's representative along with Action Plan.

34. Safety Audit:- The contractor shall conduct regular (at least every three months) internal safety audit on both the safety management system and the internal site conditions to ensure safe working of Lifts and Travelators during the currency of CAMC. The safety audit reports shall be put up to RTDC for their perusal.

SECTION-10

INDICATIVE ARCHITECTURAL DRAWINGS



NOTE:-

- APPROVAL / NOC SHOULD BE OBTAINED FROM THE CONCERNED LOCAL AUTHORITIES / DEPPTTS . AS PER RULES BEFORE EXECUTION OF THE WORK.
- NO CHANGES ARE TO BE INCORPORATED IN THE DESIGN/ CONST- RUCTION WITHOUT CONCERN OF THE CHIEF ARCHITECT.
- PHOTO COPYING OR TRACING OF THIS DRAWING IS NOT PERMITTED.
- ANY CONFUSION OR ERROR REGARDING THIS DRAWINGS SHALL BE BROUGHT IN TO THE KNOWLEDGE OF THE CHIEF ARCHITECT BEFORE EXECUTION.
- EXISTING STRUCTURE THOSE WHICH ARE NOT USE SHOULD BE DISMANTLED AS PER REQUIREMENT OF PERMISSIBLE GROUND COVERAGE.
- DRAWINGS SHOULD BE READ IN UNISON WITH STRUCTURE AND MEP
- THESE ARE NOT GFC DRAWINGS

PROPOSAL DRAWING

REVISION

S.N.	DATE	DESCRIPTIONS	INITIAL

ARCHITECTURE

INTEGRATED STUDIO FOR ENVIRONMENTAL EFFORTS & DEVELOPMENT PVT. LTD. (InSEED PVT LTD)

PROJECT TITLE:

LAKKAR BAZAAR

CLIENT : -

RTDC

DRAWING TITLE:

SECTION

DRAWING NUMBER:

InSEED- LAKKAR BAZAAR/005

DEALT BY :	DATE:	REV.NO
SMITA	03-03-2020	R0
CHECKED BY:	SCALE:	
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SECTION-11

ENVIRONMENT, HEALTH AND SAFETY REQUIREMENTS

(EHS POLICY)

ENVIRONMENT, HEALTH & SAFETY POLICY

SPECIFICATION FOR ENVIRONMENT, HEALTH & SAFETY POLICY (EHS) MANAGEMENT

CONTENTS

1. **SCOPE**: This specification established the Environment, Health and Safety (EHS) management requirement to be complied with by the Contractor during construction. Requirements stipulated in this specification shall supplement the requirements of EHS Management given in relevant Act (s)/ legislations. General Conditions of Contract (GCC), Special Conditions of Contract (SCC) and Technical Specifications. Where different documents stipulate different requirements, the most stringent shall be adopted.

2. **REFERENCES:** This document should be read in conjunction with following:
    - General Conditions of Contract (GCC)
    - Special Conditions of Contract (SCC)
    - Technical specifications

3. REQUIREMENTS OF ENVIRONMENT, HEALTH & SAFETY (EHS) MANAGEMENT SYSTEM TO BE COMPLIED BY BIDDERS

3.1. **MANAGEMENT RESPONSIBILITY**

3.1.1. The Contractor should have a documented EHS policy to cover commitment of their organization to ensure health, safety and environment aspects in their line of operations.

3.1.2. The EHS management system of the Contractor shall cover the EHS requirements including but not limited to what is specified hereunder.

3.1.3. Contractor shall be fully responsible for planning and implementing EHS requirements. Contractor as a minimum requirement shall designate/deploy the following to co-ordinate the above:

No. of workers deployed

Up to 250 -Designate one safety supervisor

Above250 &up to 500 – Deploy one qualified and experienced safety Engineer /officer

Above 500-One additional safety (for every500 or less) engineer/officer as above.

Contractor shall indemnify & hold harmless Owner/RTDC & either representative free from any and all liabilities arising out of non–fulfillments of EHS requirements.

3.1.4. The Contractor shall ensure that the Environment, Health &Safety (EHS) requirements are clearly understood & faithfully implemented at all levels at site.

3.1.5. The Contractor shall promote and develop consciousness for Safety, Health and Environment among all personnel working for the Contractor. Regular awareness, program site meetings

shall be arranged on EHS activities to cover hazards involved in various operations during construction.

3.1.6. Arrange suitable first aid measures such as First Aid Box, trained personnel to give First Aid, Stand by Ambulance or Vehicle and install fire protection measures such as: adequate number of steel buckets with sand and adequate fire extinguishers to the satisfaction of RTDC/Owner.

3.1.7. The Contractor shall evolve a comprehensive planned and documented system for implementation and monitoring of the EHS requirements. This shall be submitted to RTDC/Owner for approval. The monitoring for implementation shall be done by regular inspections and compliance to the observations thereof. The Contractor shall get similar EHS requirements implemented at his sub-contractor(s) work site/office. However, compliance of EHS requirements shall be the sole responsibility of the Contractor. Any review /approval by RTDC/Owner shall not absolve contractor of his responsibility / liability in relation to all EHS requirements.

3.1.8. Non-Conformance on EHS by Contractor (including his Sub-contractors) as brought out during review/audit by RTDC/Owner representatives shall be resolved forthwith by Contractor. Compliance report shall be provided to RTDC/Owner.

3.1.9. The Contractor shall ensure participation of his Resident Engineer/Site-in- Charge in the Safety Committee /EHS Committees meetings arranged by RTDC/Owner. The compliance of any observations shall be arranged urgently. He shall assist RTDC/Owner to achieve the targets set by them on EHS during the project implementation.

3.1.10. The Contractor shall adhere consistently to all provisions of EHS requirements. In case of non-compliance or continuous failure in implementation of any of EHS provisions; RTDC/Owner may impose stoppage of work without any Cost &Time implication to Owner and/or impose a suitable penalty for noncompliance with a notice of suitable period, up to a cumulative limit of 1.0% (one percent) of Contract Value with a maximum limit of Rs. 10 lakhs. This penalty shall be in addition to all other penalties specified else where in the contract. The decision of imposing stoppage of work, its extent & monitory penalty shall rest with RTDC/Owner &binding on the Contractor.

3.1.11. All fatal accidents and other personnel accidents shall be investigated by a team of Contractor's senior personnel for root cause & recommend corrective and preventive actions. Findings shall be documented and suitable actions taken to avoid recurrences shall be communicated to RTDC/Owner. Owner/RTDC shall have the liberty to independently investigate such occurrences and Contractor shall extend all necessary help and co-operation in this regard.

3.2. HOUSE KEEPING

3.2.1. Contractor shall ensure that a high degree of house keeping is maintained and shall ensure inter alia the following wherever applicable:

a. All surplus earth and debris are removed/disposed off from the working areas to identified location(s).

b. Unused/Surplus Cables, Steel items and steel scrap lying scattered at different places within the working areas are removed to identified location(s).

c. All wooden scrap, empty wooden cable drums and other combustible packing materials, shall be removed from work place to identified location(s).

d. Building shall be kept clear and materials like: pipes, steel, sand boulders, concrete, chips and bricks etc. shall not be allowed in the building to obstruct free movement of men &machineries.

e. Fabricated steel structural, pipes &piping materials shall be stacked properly for erection.

f. Water logging in building shall not be allowed.

g. No parking of trucks/trolleys, cranes and trailers etc. shall be allowed around building which may obstruct the traffic movement.

h. Utmost care shall be taken to ensure overall cleanliness and proper upkeep of the working areas.

i. Trucks carrying sand, earth and pulverized materials etc. shall be covered while moving within the premises.

j. Only properly designed steel scaffolding materials to be used for working at heights more than 3.0M. Double scaffolding using wooden ballis may be allowed for working at height less than 3.0M

3.3. ENVIRONMENT, HEALTH AND SAFETY

3.3.1. The Contractor shall provide safe means of access to any working place including provisions of suitable and sufficient scaffolding at various stages during all operations of the Work for the safety of his workmen, and RTDC/Owner. Contractor shall ensure deployment of appropriate equipment and appliances for adequate safety and health of the workmen and protection of surrounding areas.

3.3.2. The Contractor shall ensure that all their staff and workers including their subcontractor (s) shall wear Safety Helmet and Safety shoes. Contractor shall also ensure use of safety belt, protective goggles, gloves etc. by the personnel as per job requirements. All these gadgets shall conform to relevant IS specifications or equivalent.

3.3.3. Contractor shall ensure that a proper Safety Net System shall be used at appropriate locations. The safety net shall be located not more than 30 feet (9.0 metres) below the working surface at site to arrest or to reduce the consequences of a possible fall of persons working at different heights.

3.3.4. Contractor shall ensure that flash back arrester shall be used while using Gas Cylinders at site. Cylinders shall be mounted on trolleys.

3.3.5. The Contractor shall assign to his workmen, tasks commensurate with their qualification, experience and state of health for driving of vehicles, handling and erection of materials and equipments. All lifting equipments shall be tested certified for its capacity before use. Adequate and suitable lighting at every work place and approach there to, shall be provided by the Contractor before starting the actual operations at night.

3.3.6. Hazardous and/or toxic materials such as solvent coating or thinners shall be stored in appropriate containers.

3.3.7. All hazardous materials shall be labeled with the name of the materials, the hazards associated with its use and necessary precautions to be taken.

3.3.8. Contractor shall ensure that during the performance of the work, all hazards to the health of personnel have been identified, assessed and eliminated.

3.3.9. Chemical spills shall be contained & cleaned up immediately to prevent further contamination.

3.3.10. All personnel exposed to physical agents such as ionizing radiation, ultraviolet rays or similar other physical agents shall be provided with adequate shielding or protection commensurate with the type of exposure involved.

3.3.11. Where contact or exposure of hazardous materials could exceed limits or could otherwise have harmful affects, appropriate personal protective equipments such as gloves, goggles, aprons, chemical resistant clothing and respirator shall be used.

3.3.12. A Crèche where 10 or more female workers are having children below the age of 6 years. Reasonable Canteen facilities are made available at appropriate location depending upon site conditions.

3.3.13. Suitable facilities for toilet, drinking water, proper lighting shall be provided at site and labour camps, commensurate with applicable Laws / Legislation.

3.3.14. Contractor shall ensure storage and utilization methodology of materials that are not detrimental to the environment. Where required Contractor shall ensure that only the environment friendly materials are selected.

3.3.15. All persons deployed at site shall be knowledgeable of and comply with the environmental laws, rules &regulations relating to the hazardous materials substances and wastes. Contractor shall not dump, release or otherwise discharge or dispose off any such materials without the express authorization of RTDC/Owner.

4. DETAILS OF EHS MANAGEMENT SYSTEM BY CONTRACTOR

4.1. **On Award of Contract:**

The Contractor shall prior to start of work submit his Safety Health and Environment Manual or procedure and EHS Plans for approval by RTDC/Owner. The Contractor shall participate in the pre-start meeting with RTDC/Owner to finalise EHS Plans including the following:

1. Job procedure to be followed by Contractor for activities covering Handling of equipment, Scaffolding, Electric Installation, describing the risks involved, actions to be taken and methodology for monitoring each activity.

2. RTDC/Owner review / audit requirement.

3. Organization structure along with responsibility and authority records /reports etc. on EHS activities.

4.2. **During job execution**

4.2.1. Implement approved Environment, Health & Safety management procedure including but not limited to as brought out under para 3.0. Contractor shall also ensure to:

1. Arrange workmen compensation insurance, registration under ESI Act, third party liability insurance etc., as applicable.

2. Arrange all HSE permits before start of activities (as applicable) like hot work, confined space, work at heights, storage of chemical / explosive materials and its use and implement all precautions mentioned therein.

3. Submit timely the completed checklist on EHS activities, Monthly EHS report, accident reports, investigation reports etc. as per RTDC/Owner requirements. Compliance of instructions on EHS shall be done by Contractor and informed urgently to RTDC/ Owner.

4. Ensure that Resident Engineer/Site-in-Charge of the Contractor shall attend all the Safety Committee/EHS meetings arranged by RTDC/Owner. In case of his absence from site a second senior most person shall be nominated by him in advance and communicated to RTDC/Owner.

5. Display at site office and work locations caution boards, list of hospitals, emergency services available.

6. Provide posters, banners for safe working to promote safety consciousness.

7. Carryout audits/inspection at sub contractor works as per approved EHS

8. Document and submit the reports for RTDC/Owner review.

9. Assist in EHS audits by RTDC/Owner, and submit compliance report.

10. Generate & submit HSE records / report as per EHS Plan

11. Appraise RTDC/Owner on EHS activity.