

Engineering Procurement & Construction (EPC) of Road Trials Test Track & Side Slope Test Track with Culverts, Drains and associated works at BEML Limited, Palakkad Complex, Kerala



Date: 23.01.2026

BEML LIMITED

PALAKKAD COMPLEX

(A Government of India Mini Ratna Company under Ministry of Defence)

Kinfra Wise Park, Kanjikode, Palakkad – 678621

**NOTICE INVITING E-TENDER
REQUEST FOR PROPOSAL ("RFP TENDER DOCUMENT")
ENGINEERING, PROCUREMENT & CONSTRUCTION (EPC)**

**CONSTRUCTION OF ROAD TRIALS TEST TRACK & SIDE SLOPE TEST TRACK WITH
CULVERTS, DRAINS AND ASSOCIATED WORKS AT BEML LIMITED, PALAKKAD
COMPLEX, KERALA**

*ISSUED BY:
THE GENERAL MANAGER,
MATERIAL MANAGEMENT
BEML LIMITED, PALAKKAD COMPLEX*

Tender Document No: 6300040316

Last Date for Submission online: 16.02.2026 @ 17.00 Hrs.

Engineering Procurement & Construction (EPC) of Road Trials Test Track & Side Slope Test Track with Culverts, Drains and associated works at BEML Limited, Palakkad Complex, Kerala

TENDER DOCUMENT

Subject: Construction of Road Trials Test Track & Side Slope Test Track with culverts, drains and associated works on EPC basis at BEML limited, Palakkad Complex, Kerala.

Tender Notice No.	6300040316
Approx. Estimated Value.	INR 980 Lakhs
EMD (Earnest Money Deposit)	INR 19.60 Lakhs
Completion Period	12 Months
Pre bid Meeting Date	04.02.2026 @ 11.00 Hrs.
Due Date & Time for Submission of Tenders	16.02.2026 @ 17.00 Hrs.
Date & Time of Opening of Technical Bid	16.02.2026 @ 17.30 Hrs.
Defect Liability Period	Five Years (05)

BEML Limited invites tenders from reputed contractors for the below mentioned work in Two Bid system (Technical bid and Commercial bid) through e- Tendering mode i.e. BEML SRM platform.

Quotations should be submitted online (E-mode) in SRM Portal in Two-Bid system as below:

- (1) Technical Bid
- (2) Commercial Bid

Note:

- (1) Commercial bids of only technically acceptable firms will be opened and considered for further evaluation by BEML.
- (2) No commercial terms to be indicated in the technical bid else the offers of such bidders will be rejected and not considered for further commercial evaluation.

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2. NOTICE INVITING TENDER (NIT)

BRIEF ABOUT BEML:

BEML Limited is a leading multi-technology 'Schedule A' company under the Ministry of Defence, plays a pivotal role in serving India's core sectors like Defence, Rail, Power, Mining and Construction by offering world class products.

BEML Limited, a committed player in the field of manufacturing earthmoving, transportation, and construction equipment, celebrates a rich legacy spanning six decades of relentless pursuit of excellence and innovation.

PROPOSED WORKS:

For inhouse testing of New HMV trucks (6x6, 8x8, 12x12), it is proposed to design and construct a Road trials test track (flexible pavement) of 1400m in length with 7m width for conducting the road trials of New HMV trucks (6x6, 8x8, 12x12). It is also proposed to construct Side Slope Track (rigid pavement) of 60m length, inclined width of 6m, gradient of 15-degree (30m length) & 22.5-degree (30m length) along ideal location of road trials test track.

An area of around **17 acres** (approx.) is identified for the proposed development and other required facilities. The proposed Layout of development is enclosed as '**FLAG – A**'.

The work shall be executed on Engineering, Procurement & Construction (EPC) Contract Basis which includes topographic survey, soil investigation, geometric design, pavement design, hydrological study, design of culverts, design of storm water drains & drawings, construction & finishing of road trial loop & Side Slope rigid pavement along with required storm water drains, culverts, future provisional crossings and other associated services in accordance with the approved layout plan, design & drawings.

The successful bidder shall carry out Engineering Design, Procurement & Construction (EPC) of the subject project and finalize the geometric design, dimensions of all carriageways, drains and culverts, as per "Scope of Work"/Design Considerations/Technical Specifications and execute the work. The required description of utilities and facilities essential for this test track project shall be finalized by the successful bidder and all of these shall be deemed to be part of the work.

1) General Instructions to Bidders

The Bidders are advised to carefully go through, read and understand this tender documents completely including terms and conditions, Annexures and Appendices etc before submitted bids.

- a) This NIT is not transferable under any circumstances.

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- b) All entries in the NIT shall be in English either typed or written legibly. Erasing, over-writings and use of correction fluids are not permitted. All cancellations and insertions should be duly signed / attested by bidder concerned.
- c) All the corresponding documents shall be attached along with the quotation/offer.
- d) Late and/or incomplete tender shall not be considered.
- e) Canvassing in any manner including unsolicited letters and request for post tender corrections shall render offers of such parties liable for rejection.
- f) Bidder shall ensure that all the information & documents submitted by them are true & correct.
- g) In case, it comes to the knowledge of BEML that the bidder has submitted false information before awarding of contract then the offer would be rejected.
- h) In the event, it comes to the knowledge of BEML that the successful bidder has submitted false information, subsequent to the award of contract, the contract shall be cancelled/short closed by the company and shall invoke Risk purchase clause with liabilities on such bidder for the entire contract quantity. The EMD shall also be encased as a result of consequence of breach of contract at the discretion of BEML.
- i) In case any person/persons, Company, firm, Associations having any litigation, arbitration cases between themselves and BEML Ltd, pending before any court of law/ Arbitrator shall not be eligible to participate in this tender.
- j) Non-compliance with any of the tender conditions, incomplete offers, conditional and ambiguous offers are not acceptable and liable for rejection.
- k) The bidder shall fill in all the required particulars in the blank space provided for the purpose in the tender document.
- l) All the documents shall be uploaded in SRM Portal.
- m) Fax/email quotations are not acceptable.
- n) BEML reserves the right to accept or reject all tenders or any tender in part or full without assigning any reasons thereto, which is final & binding on the Bidder.

This tender document is available on BEML SRM E-portal (i.e <http://www.bemlindia.in/eprocurement/demo.php>), BEML website (www.bemlindia.in) & CPPP portal for downloading and study of documents. However potential bidders have to submit their bids in BEML SRM E-portal only.

Bidders willing to participate in the tender may contact through e-mail: admin.srm@beml.co.in to obtain the user name & password for submitting the bids.

In case of any queries relating to bid submission, you may send the same by e-mail to admin.srm@beml.co.in or you may contact BEML SRM Team on phone no. 08022963269/141 on working days from Monday to Friday

Note: To participate in this e-tender bidder should have a valid Class III Organization Digital Signature with Signing and Encryption issued by authorized Certifying Authority.

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1.1 Clarifications

A Bidder requiring any technical / document clarification may obtain clarification during pre-bid meeting or may email to below representatives before tender closing.

Mr. Frankelin F.	Head- Civil Maintenance & Construction	Email: frankelin.f@bemltd.in Contact No.: 7204960821
Mr. Ponner K.	Head -Plant Maintenance	Email: ponner.k@bemltd.in Contact No.: 9448787926
Mr. Ashok B B	AGM- Purchase	Email: ashok.bb@bemltd.in Contact No.: 9739622085

(2) Requisite of Bidders:

Subject to provisions in the Tender Document, participation in this Tender Process is open to all bidders who fulfill the 'Eligibility' and 'Qualification criteria'. Bidder should meet the following requirements.

- a. The Bidder shall be a any private, public, quasi govt. organization and must be registered company and valid GSTN, PAN ESI, EPF & CIN etc.,
- b. Bidder must fulfill qualification criteria of tender.
- c. Must Not be insolvent, in receivership, bankrupt or being wound up, not have its affairs administered by a court or a judicial officer, not have its business activities suspended and must not be the subject of legal proceedings for any of aforesaid reasons.
- d. Bidder must not be stand declared ineligible/ blacklisted/ banned/ debarred by the Procuring Organization or its Ministry/ Department from participation in its Tender Processes.
- e. Bidder must not be convicted (within Five years preceding the last date of bid submission) or stand declared ineligible/ suspended/ blacklisted/ banned/ debarred by appropriate agencies of public sector undertaking/Government of India from participation in Tender Processes of all of its entities, for:
 - Offences involving moral turpitude in business dealings under the Prevention of Corruption Act, 1988 or any other law; and/or
 - Offences under the Indian Penal Code or any other law for causing any loss of life/ limbs/ property or endangering Public Health during the execution of a public procurement contract and/ or suspected to be or of doubtful loyalty to the Country or a National Security risk as determined by appropriate agencies of the Government of India.
- f. Bidder must not have changed its name or created a new "Allied Firm", consequent to having declared ineligible/ suspended/ blacklisted/ banned/ debarred as above.
- g. Bidder must not have an association (as a bidder/ partner/ director/ employee in any capacity) Of any retired personnel (of Gazette Rank) or any retired Gazette Officer of the Central or State Government or its Public Sector Undertakings if such a retired person has not completed the cooling- off period of one year after his retirement. However, this shall not apply if such managers/ officers have obtained a waiver of the cooling- off period from their erstwhile organization.

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- h. Bidder must not have an association of the near relations of executives of BEML involved in this Tender Process.
- i. Bidder must not have a conflict of interest, which substantially affects fair competition. The prices quoted should be competitive and without adopting any unfair/unethical/anti-competitive means. No attempt should be made to induce any other bidder to submit or not to submit an offer for restricting competition.

(3) Pre-Bid Meeting:

The bidders or their authorized representative with the authorization letter of the firm is invited to attend the PRE-BID MEETING which will take place at BEML Ltd., Palakkad Complex, Kinfra Wise Park, Kanjikode, Palakkad – 678621, Telephone: 0491-2568178 on date & time as stated in the Tender.

The purpose of the Pre-Bid meeting will be to clarify issues related to the tender and to answer Questions on any matter that may be raised at that stage.

Bidder are allowed to visit site, examine and obtain all information required and satisfy Himself/herself before submission of the Tender. Ignorance of site condition shall not be entertained by BEML at a later date.

Pre-bid Meeting is planned as mentioned in SRM portal at BEML Ltd. Palakkad Complex.

(4) Submission of Bids:

Tender is in TWO-BID system (Technical & Commercial Bid) Bids should be submitted e-mode (SRM Portal) only as follows:

a) Submission of Technical bid (without price):

- i The Bidder should upload all the requisite technical documents along with respective supporting documents and other information deemed appropriate in respect of the Tender.
- ii **The price details/commercial bid details should not be given in the technical bid.** If any of the bidder have given any price/commercial details in the technical bid, their offer is liable for rejection and will not be considered for further evaluation.
- iii Technical Bid will be opened on date and time of bid opening and the commercial Bids of those bidders whose technical bids are qualified (accepted) only will be opened for commercial evaluation after technical evaluation.

b) Submission of Commercial bid:

- i Price Bid to be submitted through e-mode in SRM portal.
- ii Price details in specified field on SRM Portal to be submitted.
- iii The Commercial Bids of those bidders whose technical bids are qualified (accepted) only will be opened for commercial evaluation.

Note:

- a) Bids must be uploaded on or before the last date/extended date for submission mentioned in Tender Notice/amendment.
- b) No manual Bids shall be made available or accepted for submission (except for originals of scanned copies as per sub-clause). Bidder must comply with the conditions of the e Procurement portal, including registration, compatible Digital Signature Certificate (DSC) etc. In the case of

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downloaded documents, Bidder must not make any changes to the contents of the documents while uploading, except for filling in the required information.

- c) BEML at its sole discretion reserves the right to seek the hard copies of the documents which are already been uploaded in SRM, through Courier / post pertaining to technical bid of this tender enquiry at a later date, if required.

In such cases, only the documents uploaded in SRM platform in original has to be couriered at the request of BEML. Any irrelevant documents furnished through courier will not be considered.

(5) Bid Opening

Bids received shall be opened online at the specified date and time given in NIT or extended date and time. If the office is closed on the specified date of opening of the bids, the opening shall be done on the next working day.

(6) Disclaimers and Rights of Procuring Entity

The issue of the Tender Document does not imply that the Procuring Entity is bound to select bid(s), and it reserves the right without assigning any reason to:

- a) Reject any or all of the Bids, or
- b) Cancel the tender process; or
- c) Abandon the procurement of the Services; or
- d) Issue another tender for identical or similar Services

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2 TENDER DETAILS

This is an E-mode of Tendering through SRM, any manual or technical errors committed before uploading or during the process of uploading the Document shall bound to be duly accepted by the Bidders. The Bidders shall not have claim whatsoever in this regard.

The Experience and requisite Documents should be in the name of Bidder only and prior experience as any other business entity and / or requisite documents in the name of any other business entity shall not be considered.

A. Qualification Criteria

A. Tender Description	As indicated in TENDER NOTICE		
B. Contract period	Twelve (12) Months		
C. Tender No.	6300040316		
D. Tender closing date / time	16.02.2026 at 17:00 Hours		
E. Security Deposit	e-BG for 10% of P.O value to be submitted		
F. Labour License under contract labour (R & A) ACT 1970 and Central Rules made there under	Successful bidder has to submit a valid Labour license / Proof of applying for the same within a period of one month from the date of awarding work order.		
G. PF and ESI	Firm should have PF and ESI Code Nos OR on award of contract the successful bidder (Firm) shall apply for PF and ESI codes to the respective authorities. In case the firms have registration in other states (other than Kerala) they have to agree to obtain separate sub code for the local area.		
PART-“A”			
The scanned copies of following qualifying documents are to be uploaded along with the technical bid.			
Sl. no	Description	Requirement	Remarks
		Detail	
1.	Tender Document	To be uploaded in SRM	Signed & sealed Tender document to be uploaded in SRM along with other technical documents.
2.	NIT Acceptance Letter	NIT Acceptance letter to be uploaded in SRM	Signed & sealed NIT Acceptance letter to be uploaded in SRM along with other technical documents.
3.	Corrigendum if any	All pages of corrigendum need to be signed & sealed.	Corrigendum to be submitted along with other technical documents.

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4.	Legal valid entity; The Bidder shall necessarily be a legally valid entity either in the form of Proprietary firm/Partnership firm/Private Limited Company/Govt Entity.	Bidder in the form of JV/consortium is not permitted. A proof for supporting the legal validity of the Bidder shall be submitted.		The following list of acceptable documents should be submitted along with tender document; a. Certificate of incorporation/commercial establishment of firm/License certificate of firm etc. b. Pan Card/GST registration, PF registration, ESI Registration, Labour License and any other applicable statutory requirement etc.
5.	Financial Capacity; Average Minimum Annual Financial Turnover in last 3 years ending 31 st March 2025	Certified by practicing CA	294.00	Any of the following documents to be submitted with Bid: Certified balance sheets for the relevant period mentioned above, must necessarily have UDIN. Certified from Chartered accountant/cost accountant indication, turnover details for relevant period mentioned above, must necessarily have UDIN.
6.	Technical Capability; Experience in executing similar type of works/ civil works completed during last 7 years ending December 2025 value greater than or equal to the said requirement. Similar works nature to be considered is mentioned in Note below	3 Similar works each of Minimum value	392.00	(a) The experience certificate shall be considered only for the works completed in full & complete. (b) Select any applicable one and upload scanned copy of similar work completion certificates issued by client. (c) If the works /contracts were carried out in other than Government or PSUs, the bidders have to submit TDS Certificates along with experience Certificate.
		2 Similar works each of Minimum value	490.00	
		1 Similar work of Minimum value	784.00	
7.	Earnest Money Deposit (EMD)	To be remitted before tender closing date	19.60	Proof of remittance to be submitted in SRM (RTGS / DD / Cheque/e-BG) (ANNEXURE - III- for e-BG FORMAT)

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8.	Integrity Pact	Enclose Copy		To be submitted with seal and signature on SRM (APPENDIX -VI)
9.	PF & ESI Registration Certificate	Enclose copy		Copy to be submitted
10.	PAN No. & GST No	Enclose copy		Copy to be submitted
11.	Latest 3 Financial Years IT returns Filing	Enclose copy		Copy to be submitted
12.	Make in India (MII) certificate* The 'Class-I local supplier'/'Class-II local supplier'	Enclose copy		Self-certification to be attached.
13.	Bidder should not be blacklisted/ debarred by any government/ semi government department/ PSU. Bidder should submit the declaration of not being ineligible for corrupt or fraudulent practices.	Enclose copy		FORM 3A AT APPENDIX II.

PART- "B"

The **Priced BoQ** are to be entered in Financial Bid Section on SRM only. **Bidders to submit only Price (Lumpsum for all services) and applicable tax details in Commercial Bid through BEML SRM e-procurement platform. Price breakup will be obtained from the successful bidder.**

Note:

- The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7 % per annum, calculated from the date of completion to the last date of receipt of applications for tenders.
- The experience certificate shall be considered only in the cases of works completed in full and complete.
- The work shall be completed as a whole. Partial value / completion shall not be considered.
- In case of experience certificate obtained from organizations other than Government organizations/Public Sectors, the same shall be supported with TDS certificate by the contractor.
- The meaning of "Similar work" for the purpose of tender is defined as any one following works executed/carried out in public sector/reputed Private organizations & Govt. organizations/ academic institution/ autonomous bodies etc
 - Execution/relaying/maintenance of Durability/Handling/NVH/Comfort/off road or any other special surface at any Proving Ground/Test Track.**
 - Execution of Expressway/National Highway/Airport Runways**

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- (c) **Execution of Test Track surfaces i.e. bituminous, low friction (Braking/ABS Track), Noise Track**
- (d) **Heavy-duty pavement in Heavy Industries like Ports/Petroleum Refineries/Power Plant/Cement Manufacturing Units/Container ware house.**

6. Work experience completed under JV / as a sub-contract shall not be considered for evaluation of experience criteria.

7. **Experience certificate issued by the same management/sister concern/ joint ventures etc. are not acceptable.**

***The minimum local content, the margin of purchase preference and the procedure for preference to Make in India is explained as follows.**

1. The 'local content' requirement to categorize a supplier as 'Class-I local supplier' is minimum 50% and for Class-II local supplier it is 20%.

2. If L1 is 'Class-I local supplier', the contract will be awarded to L1.

3. If L1 is not 'Class-I local supplier', the lowest bidder among the 'Class I local supplier' will be invited to match the L1 price subject to Class-I local supplier's quoted price matching within L1+20%. If matched, the 'Class-I local supplier' will be awarded the contract.

4. If the lowest 'Class-I local supplier' fails to match the L1 price, the next highest bidder within the margin of preference of L1+20% will be invited to match. If none of the 'Class-I suppliers within the preference margin of purchase preference matches the L1 price, the contract will be awarded to the L1 bidder.

5. "Class-II local supplier will not get purchase preference.

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B. Submission of EMD (Earnest Money Deposit):

EMD: The bidders shall submit EMD along with their bids. The EMD/bid security shall be accepted in the following mode as detailed below:

- i Earnest Money Deposit as specified to be furnished in the form of Demand Draft drawn in favor of “**BEML Limited**” payable at **Palakkad**, from a Nationalized Bank / Scheduled Bank.
- ii Bidder may do the NEFT/RTGS payment to the **BEML Bank Details** given in Tabular Column under EMD Clause below.
- iii Payment of EMD amount through E-Bank Guarantee:
An irrevocable Bank Guarantee from a Scheduled Commercial Bank authorized by RBI to issue a **E-Bank Guarantee** in favor of the Purchaser as per format in **Annexure-III** having a validity period of bid validity + 45 days from the date of opening of Tender.

The scanned image of earnest money deposit to be uploaded online in technical bid and original one to be submitted to the address mentioned below so as to reach Latest by last date of submission subscribing the tender No & work description on envelope.

Note:

1. *The Bidders who have not uploaded proof of EMD submission in any form mentioned above along with technical bid document before closing date & time of the tender will be liable for rejection.*
2. *Submissions of EMD through **Bank Guarantee** shall be through the mode of **E-Bank Guarantee** only. Physical Bank Guarantee's will not be accepted.*

Earnest Money Deposit (EMD):

Method for Payment of EMD (Earnest Money Deposit):

EMD to be deposited in particular Bank a/c and the same will be used for refund.

1. Seller Details.

SELLER DETAILS		
Sl. No.	DESCRIPTION	DETAILS
1	SELLER NAME	
2	ADDRESS	
3	PIN CODE	
4	STATE	
5	CONTACT PERSON	
6	MOB-NO	

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7	E-MAIL ID	
SELLER BANK DETAILS		
8	BANK NAME	
9	A/C NO	
10	IFSC CODE	
11	BANK MAIL ID	
12	BANK CONTACT NO	
SIGNATURE WITH SEAL		

BEML BANK DETAILS FOR REMITTANCE OF EMD/SECURITY DEPOSIT THROUGH E-BANK GUARANTEE

Sl. No.	DESCRIPTION	DETAIL
1	UIN NUMBER	NCTGC2524P
2	ACCOUNT NAME	FINANCE DEPT BEML LTD PALAKKAD KERALA
3	BANK NAME	STATE BANK OF INDIA PALAKKAD
4	BRANCH	P.B.NO.8, ENGLISH CHURCH ROAD PALAKKAD - 678001
5	IFSC CODE	SBIN00000893
6	SWIFT	SBININBB397
7	NAME OF REPRESENTATIVE	MS. LIJITHA T M
8	EMAIL	lijitha@bemlltd.in
9	MOBILE NUMBER	0491-2565251

BEML BANK DETAILS FOR REMITTANCE OF EMD THROUGH RTGS/NEFT

Sl. No.	DESCRIPTION	DETAIL
1	Name	BEML LIMITED
2	Account Number	38285182460
3	IFS Code	SBIN0006861
4	Bank Name	STATE BANK OF INDIA

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5	Address	BEML PALAKKAD COMPLEX, KINFRA WISE PARK, MENONPARA ROAD KANJIKODE EAST PALAKKAD-678621
6	Branch	Overseas Branch, Bangalore (06861)

General Instructions with regard to EMD:

- a) Bid submitted online without submission of EMD in-time will not be considered.
- b) EMD submitted in any other form will not be accepted and the offer is liable to be rejected.
- c) EMD lesser than mentioned in tender will not be accepted and the quotation is liable to be rejected.
- d) EMD of technical disqualified bidder's will be returned.
- e) EMD of unsuccessful bidders will be returned after finalization of the contract and the EMD of successful bidder will be released after submission of E-Performance Bank Guarantee / Security Deposit.
- f) EMD does not carry any interest on return.

5.1 Forfeiture of Earnest Money Deposit (EMD):

- a) Any bidder who withdraws offer / modifies within the bid validity period or before finalization of the tender.
- b) If the successful bidder withdraws the offer after the tender is submitted/ acceptance of the tender.
- c) if any firm withdraws the tender submitted or refuses to execute the order for reasons whatsoever
- d) If there is any breach of terms and conditions of the contract on part of the successful bidder after award of contract and before submission of Performance Bank Guarantee.
- e) If L-1 backs out for any reason, the EMD Amount will be forfeited by BEML Ltd. Please do note that, failure of the successful Bidder to perform the work satisfactorily in any respect after award of Contract will entail for forfeiture of SECURITY DEPOSIT and encashment of E-Performance Bank Guarantee.

The Bidder is advised to carefully go through the terms & conditions of tender before submitting the tender.

Details of EMD online payment acknowledgements / Original DD/Banker's cheque/E-BG have to be uploaded in the SRM and Original has to be submitted to the O/o below mentioned address on or before tender closing date and time.

**The General Manager, Material Management
BEML Limited, Palakkad Complex,
Kinfra Wise Park, Kanjikode, Palakkad – 678621**

Note: Demand Draft / Bankers cheque / Pay Order /bank guarantee should reach the above-mentioned address **before 16.30 Hrs** on the last/extended date of submission for tender, failing which tender will not be considered. Any postal delay or any other reasons what so ever may be will not be considered. The tender will be liable for rejection.

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D. Submission of Integrity pact: Bidders shall submit filled, signed & sealed Integrity Pact with the BEML as per 'Format: Integrity Pact'. Bids without filled, signed & sealed Integrity Pact shall be liable for rejection. (Integrity Pact is applicable if the Estimated value is more than Rs. 1.00 Crore) Integrity pact have to be uploaded in the technical BID.

The bidder / contractor should upload duly signed & stamped **Integrity Pact** (if the tender value is more than or equal to Rs.1.00 crore) as per prescribed format (**APPENDIX- A**) on plain paper as part of technical bid.

The bidder should put their authorized signature in the Integrity pact as a Contractor / bidder with their company seal along with witness's signature, name & address. **The agreement shall be in full as per format enclosed on a plain A4 size paper duly signed & stamped on all pages.**

The Integrity Pact envisages an agreement between the prospective Bidders and the buyer committing the persons/officials of both the parties not to exercise any corrupt influence on any aspect of the contract.

For the successful bidder, the integrity pact will remain valid up to 12 months after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded.

E. General Terms:

1. Contractors / agencies are subject to be disqualified, even though they meet the qualifying criteria, if they make misleading or false representations in the request, statements and attachments submitted in proof of qualification requirements including holding information and / or have record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures, requesting for claims not admissible under the contract conditions, etc.
2. Bid Documents duly filled & uploaded within the last date of submission as mentioned in the tender. The last date for receipt of Tender will not be extended & if any extension, it will be at BEML discretion.

F. CLARIFICATION ON TECHNICAL BID EVALUATION.

1. During evaluation and comparison of bids, BEML may, at its discretion, ask the bidder for clarifications on the bid. The request for clarification shall be given in writing through registered/speed post/email within the specified date. If the Bidders does not comply or respond by the specified date, his tender will be liable to be rejected. No change in prices or substance of the bid including specifications, shall be offered or permitted. No post-bid clarification at the initiative of the bidder shall be entertained.
2. BEML also reserves right to seek confirmation/clarification from the issuer agency, on the supporting documents submitted by the bidder.

Note:

(1) Corrigendum / addendum / amendments / clarification, etc., with respect to works, if any, shall be hosted in BEML e-portal SRM. Bidders are advised to visit BEML e-portal regularly as no separate information/advertisement shall be published in the newspaper or no other communication in this regard including any postponement of tender closing date.

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3 FINANCIAL BID

3.1 FINANCIAL BID FORMAT

Name of the Work:

CONSTRUCTION OF ROAD TRIALS TRACK, SIDE SLOPE TRACK AND ASSOCIATED WORK ON EPC MODE (DESIGN AND BUILD BASIS) AT BEML, PALAKKAD COMPLEX.

Sl. No	DESCRIPTION OF WORKS	QTY	UOM	Amount (In Rs.)
1	<p>Road Trials Test Track:</p> <p>Length:1400m (Minimum)</p> <p>Width: 7m (Minimum)</p> <p>Pavement Type: Flexible pavement.</p> <p>Design: Topographic survey, Geometric design, Horizontal and Vertical Plan & Profile, Pavement design, Hydrology study, Culvert design, Structural design for storm water drain, retaining walls & cross culverts (Box or Pipe).</p> <p>Construction: Setting out, Earthwork, Soil Stabilisation, Backfilling, Subgrade preparation, Sub-Base work (Granular Sub Base), Base Work (Wet Mix Macadam), providing and laying of precast kerbs (M40 grade), Bituminous Base Course (Dense Bituminous Macadam, Bitumen Binder content 4-4.5% weight), Wearing Course (Dense Asphaltic Concrete, Bitumen content 5.4%-5.6% by weight).</p> <p>Construction of Storm Water Drains, Saucer drains for disposing water to storm water drain & future provisional road crossings at every 100m intervals, stone pitching of the road embankment (where ever required).</p> <p>Finishing: Supply and installation of W beam crash barrier where ever required as per design. Painting of crash barrier and kerbs. Lane marking with Thermoplastic marking of 2.5mm thick for centerline and edges of the carriageway.</p>	1	AU	

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	<p>Providing rumble strips as per the design. Fixing of metal alloy body cat eye, retro reflective type. IRC codal provisions shall be followed for road furniture's. Supply and fixing of retro reflective pole mounted traffic signages.</p> <p>Note: Culvert area's and any other critical junctions where wear and tear is anticipated, it mandates to have wearing course in rigid pavement.</p>			
2	<p>Side slope Test track</p> <p>15 Degree Ramp: 30m (Minimum)</p> <p>22.5 Degree Ramp: 30m (Minimum)</p> <p>Transitional Ramp (15 deg to 22.5 deg): Seamless transition with required length.</p> <p>Width: 6m Inclined width.</p> <p>Design: Geometric design, Horizontal and Vertical Plan & Profile, Pavement design, Hydrology study, Structural design for storm water drain, retaining walls & cross culverts (Box or Pipe).</p> <p>Construction of Ramps: Setting out, Earthwork, RCC Retaining wall, stormwater drain, Soil Stabilisation, Backfilling, Embankment, Subgrade preparation, Sub-Base work (Granular Sub Base), Base Work (Wet Mix Macadam), Dry Lean Concrete-M35 grade (150mm), M40 grade Cement Concrete with reinforcement as wearing course finished with power trowelling and Broom finish of surface. Groove cutting of M40 grade concrete to one quarter depth of concrete slab and groove layout not exceeding 4mx4m or 16sqm. The grooves to be cleaned and filled with sealant or joint filler.</p> <p>Construction of Storm Water Drain: Construction of storm water drain with minimum size of 600x600mm. Providing MS/DI gratings for Storm water drain.</p> <p>Finishing: Lane marking of the ramps to be done with anti-skid PU lane mark of 500 microns (inclusive of base and finishing coats). Painting of edge kerb with glossy PU paint. Fixing retroreflective type metal alloy body cat eye.</p>	1	AU	

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Note:

1. Bidders quote shall be taken in reference to below:

a. Road trials test track: **1400m x 7m.**

b. Side Slope test track: 15 degree-**30m x 6m (Inclined width).**

22.5 degree- **30m x 6m (Inclined width).**

Transition Length 15 deg to 22.5 deg- **Seamless Transition.**

Any reduction in Length and Width of the above test tracks specified dimensions subsequent to award of work during the Design stage of the project would lead to proportionate (w.r.t Area in Sqm) reduction in the project value.

Note: There will not be any additional payment for increase in Length and Width of the test track to meet the desired speed and design period.

2. The rates quoted in the tender will cover all provisions of tender documents such as scope of work, relevant specifications, Military Engineering Services (MES) Standard Schedule of Rates (SSR) 2020, Part – I (Specifications), Part – II (Rates) and Amendment to SSR Part – II (Rates) 2020, with correction slips issued up to last date of submission of Bid, relevant IS codes, NBC and other terms & conditions.s
3. Cost of Construction in this EPC tender as quoted above is inclusive of all taxes charges including GST (as applicable), all materials, all Tools and Plants (T& P), all scaffolding, machineries, construction equipment and materials, all labours, PF/ESI, labour Insurance including CAR policy, any other taxes/duties etc. all complete.
4. The work will be awarded as a whole and no splitting of work shall be considered.
5. In case of Tender invited work is combined with Civil and Electrical, the Agency shall have Valid license from statutory authority concerned shall be furnished for execution of specialized works including electrical works.
6. The Agency has to comply with the provisions of ESI & PF act. The Agency shall be required to indemnify BEML for any liabilities arising on account of ESI & PF act as per the Performa in the tender document.
7. Registration certificate for GST No.
8. Measurement for road trial test track will be measured at the centerline of the carriageway.
9. Bidders to note that grade of concrete for structural works such drains, retaining walls shall be design mix concrete grade of not less than M25.

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4 SCOPE OF WORK

The scope of work subject to and on the terms and conditions of this Agreement, the Contractor shall undertake the topo survey, soil investigation, design, engineering, procurement, construction, and maintenance of the Test Tracks and observe, fulfil, comply with and perform all its obligations set out in this agreement up to the expiry of the defect liability period after completion of work.

- a) The bidder shall be provided with a Concept Plans, Bore Log Investigations, CBR Value and Topo survey of the road trials and side slope track, technical specifications and other details forming the part of bid documents. The Bidders shall take reference of the bid documents only for the purpose of additional reference. Bidders shall prepare drawings and documents and in conformity with the IRC and MoRTH. Any modification in the concept plan, required to meet the conformance to IRC and MoRTH, shall be done with the approval of BEML LIMITED.
- b) The work is to be executed on Engineering, Procurement & Construction (EPC) basis and up to the expiry of the defect liability period which shall include all activities for designing, supply, execution and obtaining all required statutory approvals during different stages/ phases with respect to road trials project, services and utilities complete as per requirements and directions of Engineer-In Charge (EIC). It shall include but not limited to the following:

Table A: Detailed Scope of Project Requirement:

Sl. No	Description	Dimension	Details of requirement
1.	Road Trials test track (Flexible Pavement)	1400m (L) x 7m (W)	<p>Road Trials Test Track:</p> <p>Length: 1400m (Minimum)</p> <p>Width: 7m (Minimum)</p> <p>Pavement Type: Flexible pavement.</p> <p>Design: Topographic survey, Geometric design (90 kmph), Horizontal and Vertical Plan & Profile, Pavement design, Hydrology study, Culvert design, Structural design for storm water drain, retaining walls & cross culverts (Box or Pipe).</p> <p>Construction: Setting out, Earthwork, Backfilling, Subgrade preparation, Sub-Base work (Granular Sub Base), Base Work (Wet</p>

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			<p>Mix Macadam), providing and laying of precast kerbs (M40 grade), Bituminous Base Course (Dense Bituminous Macadam, Bitumen Binder content 4-4.5% weight), Wearing Course (Dense Asphaltic Concrete, Bitumen content 5.4%-5.6% by weight).</p> <p>Construction of Storm Water Drains, Saucer drains for disposing water to storm water drain & future provisional road crossings at every 100m intervals, stone pitching of the road embankment (where ever required).</p> <p>Finishing: Supply and installation of W beam crash barrier where ever required as per design. Painting of crash barrier and kerbs. Lane marking with Thermoplastic marking of 2.5mm thick for centerline and edges of the carriageway. Providing rumble strips as per the design. Fixing of metal alloy body cat eye, retro reflective type. IRC codal provisions shall be followed for road furniture's. Supply and fixing of retro reflective pole mounted traffic signages.</p> <p><u>Note: Culvert area's, curvature area and any other critical junctions where wear and tear is anticipated, it mandates to have wearing course in rigid pavement as per site condition.</u></p>
2.	Side Slope test track (Rigid Pavement)	<p>15 degree-30m x 6m (Inclined width)</p> <p>22.5 degree- 30m x 6m (Inclined width)</p> <p>Transition Length of 15 deg to 22.5 deg- Seamless Transition</p>	<p>Side slope Test track</p> <p>15 Degree Ramp: 30m (Minimum)</p> <p>22.5 Degree Ramp: 30m (Minimum)</p> <p>Transitional Ramp (15 deg to 22.5 deg): Seamless transition with required length.</p> <p>Width: 6m Inclined width.</p> <p>Design: Geometric design, Horizontal and Vertical Plan & Profile, Pavement design, Hydrology study, Culvert design, Structural design for storm water drain, retaining walls & cross culverts (Box or Pipe).</p>

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			<p>Construction of Ramps: Setting out, Earthwork, RCC Retaining wall, stormwater drain, Backfilling, Embankment, Subgrade preparation, Sub-Base work (Granular Sub Base), Base Work (Wet Mix Macadam), Dry Lean Concrete-M35 grade (150mm), M40 grade Cement Concrete with reinforcement as wearing course finished with power trowelling and Broom finish of surface. Groove cutting of M40 grade concrete to one quarter depth of concrete slab and groove layout not exceeding 4mx4m or 16sqm. The grooves to be cleaned and filled with sealant or joint filler.</p> <p>Construction of Storm Water Drain: Construction of storm water drain with minimum size of 600x600mm. Providing MS/DI gratings for Storm water drain.</p> <p>Finishing: Lane marking of the ramps to be done with anti-skid PU lane mark of 500 microns (inclusive of base and finishing coats). Painting of edge kerb with glossy PU paint. Fixing retroreflective type metal alloy body cat eye.</p>
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Under this Agreement, the scope of the Project (the “Scope of the Project”) shall mean and include:

3A. **Design** of Road Trials Test Track and Side Slope Test track.

3B. **Construction** of Road Trials Test Track and Side Slope Test track.

3A. Design Obligations of Road Trials Test Track and Side Slope Test track

Subject to and on the terms and conditions of this Agreement, the Contractor shall undertake the following design obligations:

i. Cleaning of Site for Preliminary Investigations.

Contractor immediately after receiving the purchase order and project kick off meeting shall take up complete cleaning and removal of rank vegetation including levelling /dozing, if required up to 20.00 Acres of BEML proposed site and disposal/carting away the debris/plants/rank vegetation/trees outside the premises to a far-off place not objected by any civic authorities

ii. Topographical Survey

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Successful bidder shall undertake topographical survey in order to understand and get the existing ground features in Digital Terrain Model (DTM). All the existing features along the proposed alignment covering a width of 30m shall be collected using Total Station. Additional data at cross roads shall be collected to facilitate cost effective accurate designs. The data obtained from the survey shall be used to carry out the geometric design of the road, cross roads and junction design.

The Main DGPS Control Pillars will be concrete pillars with 50cmx50cm and a minimum of 1m height and embedded up to depth of minimum of 45cm into ground (15cm protruding above the ground).

Bidder to propose locations to BEML to identify the pillar locations such that it will generally not be disturbed by public and during construction. Also, the pillars will be established in such a way that further surveys can be carried out, in the same coordinate system, with the coordinate values of the pillars established using high precision DGPS instruments. The inter visibility between pillars also to be ensured.

The secondary control points will also be concrete pillars with 15cmx15cmx60cm and embedded up to depth of minimum 45cm into ground (15cm protruding above the ground). These secondary pillars will be connected using Total Station and Digital Level instruments with the survey network.

iii. **Geo-Technical Investigation**

Successful bidder shall undertake geo-technical investigation under the guidance of geotechnical expert. Bore-hole investigation shall be carried out at locations identified by Geotechnical expert in consultation with client to determine the ground support. No compromise shall be made in the number of boreholes required to be investigated and shall be carried out as per IRC & MoRTH Guidelines.

Note: Sub soil explorations test carried out by BEML at the project location are attached with this document as Annexure-IV. However, Contractor's shall carry out the required number of tests as recommended by Geotechnical expert. Designs should be initiated in line with the reports of contractor's test reports.

Existing Geo-Technical investigation reports are attached with this NIT for informational reference only and should not be used for final design or construction.

iv. **Determination of California Bearing Ratio (CBR)**

Successful bidder shall take up determination of CBR value of subgrade soil for the design of new pavements and reconstruction, should be determined as per IS:2720 Part-16[18] at the most critical moisture condition likely to occur at the site. The test should be performed on re-moulded samples of soils in the laboratory. The pavement thickness should be based on 4-day soaked CBR value of the soil, re-moulded at placement density (minimum 97 % of maximum Proctor compaction test density) and optimum moisture content ascertained

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from the compaction curve. In areas with less than 1000 mm rainfall, four-day soaking may be too severe a condition for a subgrade well protected with thick bituminous layer and the strength of the subgrade soil may be underestimated. If data is available about the seasonal variation of moisture, the moulding moisture content for the CBR test can be selected based on the field data. The test specimens should be prepared by static compaction to obtain the target density.

Note: Subgrade parameters tested by BEML were found to be less than 5% at the project location. Contractors shall reaffirm the CBR values and Stabilization measures as mandated with reference to Indian codal practices shall be taken up by the successful bidder.

Existing **CBR value reports** are attached with this NIT as Annexure-V, the document is for informational reference only and should not be used for design or construction purpose.

v. **Geometric Design**

Vehicle Type: Heavy Mobility Vehicle with Flexible Axles 6x6, 8x8, 12x12.

Bidder shall undertake geometrical design alignment which plays a vital role in safety and reducing the cost of construction. An optimized profile provides savings. The design of alignment for road trials loop and side slope track would be more critical and required more precision and detailing.

vi. **Pavement Design**

Vehicle Type: Heavy Mobility Vehicle with Flexible Axles 6x6, 8x8, 12x12.

Road Trials Test Track (Flexible) of HMV Vehicle with flexible axles 6x6, 8x8, 12x12: Successful bidder shall design and adopt pavement thickness based on **Design Traffic of 10Msa and Design Speed of 50 kmph** and satisfying relevant IRC Codal provisions.

Side Slope Test Track (Rigid) of HMV Vehicle with flexible axles 6x6, 8x8, 12x12: Successful bidder shall design and adopt pavement thickness based on **Design Traffic of 10Msa and Design Speed of 15-20 kmph** and satisfying relevant IRC Codal provisions.

Brake Test of HMV Vehicle with flexible axles 6x6, 8x8, 12x12: Successful bidder shall design and adopt pavement thickness based on codal recommendations of **Brake Test on straight stretch at Design Speed of 50 kmph** and satisfying relevant IRC Codal provisions.

Exhaust Brake Test of HMV Vehicle with flexible axles 6x6, 8x8, 12x12: Successful bidder shall design and adopt pavement thickness based on codal recommendations of **Brake Test on straight stretch at Design Speed of 50 kmph** and satisfying relevant IRC Codal provisions

Construction methodology shall be provided for above pavements along with Design Brief Report.

vii. **Structural Design of Culverts**

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The structure shall be designed for economy and ease of construction. Latest software package to be used to provide the best techno economic solution. A general arrangement drawing shall be provided first after which the components shall be designed using the structural analysis and design software package. Construction methodology shall be provided for such structures along with Design Brief Report.

Culverts of suitable dimensions shall be provided at required intervals considering the hydrology study and terrain of the proposed location.

viii. Drainage and Utilities Design

Storm Water Drain shall be provided all around the test track and shall be designed to drain rain water from terrain in such a way that proposed test track and any other existing BEML facilities are not inundated.

Design of proper drainage is an essential part in achieving this goal. Latest guidelines shall be used to design the drains and culverts for the proposed road trials and side slope track.

ix. Road Furniture Design

All other components such as Road furniture shall be designed and detailed drawings shall be made available for construction team requirement.

x. Traffic management plan

Developing traffic management plan within the site without disturbing the operations of existing test tracks at Project Location of BEML.

xi. Design Proof Checking

Obtaining proof checking of geometric/pavement designs from Government Institutions, IITs, NITs & IISc.

3B. Construction Obligations of Road Trials Test Track and Side Slope Test track

i. Site

BEML Engineer In-charge and Contractor shall, within 10 (ten) days of the date of this Agreement, inspect the Site and prepare a detailed memorandum containing an inventory of the Site including the vacant and unencumbered land, structures, road works, trees and any other immovable property on or attached to the Site. For sake of clarity the Handover Notice shall clearly specify the parts of Site where work can be executed. Signing of the Handover Notice, in three counterparts (each of which shall constitute an original), by the authorized representatives of the BEML and Contractor shall be deemed to constitute valid evidence of giving the Right of Way to the Contractor for discharging its obligations under and in accordance with the provisions of this Agreement and for no other purpose whatsoever

ii. Cleaning of Site

Contractor immediately after receiving the Right of Way shall take up complete cleaning and removal of rank vegetation including tree cutting, levelling /dozing, if required up to

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20.00 Acres of BEML proposed site and disposal/carting away the debris/plants/rank vegetation/trees outside the premises to a far-off place not objected by any civic authorities

iii. Setting Out of Proposed Alignment

The setting up of the bench mark at site must be done in the presence of the BEML representative. The co-ordinates of the bench mark thus established at site should be taken as guiding till the end of the project. This traversing must be done with a TOTAL STATION. Using of Digital theodolites will not be permitted. The Total Station must be calibrated from an approved agency and the calibration certificate officially has to be submitted to the Engineer-in-charge.

The alignment of all the tracks is to be decided on the basis of this established Bench Mark coordinate. The contractor has to establish several temporary bench mark points with reference to the established bench mark of the project site. All these co-ordinate values are to be entered into a list and must be kept at site till the end of the project. All these values must be checked once in every 30 days.

These permanent and temporary benchmarks must be marked on the concrete pillars of specified dimensions finished neatly with cement slurry on the top surface. All the pillars must have separate numbers and they must carry co-ordinates and reduced levels.

The Contractor shall after receiving the proof checked/vetted drawings as per Sl. No. (x) of Clause 3A, Scope of work, set out the whole of the works (including the positions of culverts) and be responsible for the correctness of the position, levels and dimensions of the road trials test track works, according to the drawings and written instructions of the Engineer in charge. Setting out taken up by the contractor shall be requested for inspection and approval by BEML Engineer In-charge. BEML would accord approval to the alignment after thorough inspections and establishing of DGPS Permanent Control Points used to setout the test tracks alignment.

If at any time during the progress of the works any error shall appear or arise in the position, levels or dimensions of the several works, the contractors on being required to do so by the Engineer in charge, shall at his own expense remove and amend the works to the satisfaction of the Engineer in charge, notwithstanding that he may have been assisted by Engineer-In-Charge in setting out the same. The contractor shall observe, perform and comply with the requirements of all statutes and byelaws and shall also serve notice on the authorities having control of the road surfaces before the same are broken up and he shall likewise serve notices on the owners of the sewers, drains, water, gas or other mains, electric cables and other things which may be in any way affected by the execution of the contract work.

Surveying Equipment's and Personnel

Equipment's for surveying and measurement of the work shall be procured by Contractor for his use. The same shall also be made available to the Engineering-in-Charge at site for any work connected with the contract without any charge. Total station shall be used for surveying purpose in addition to other equipment's of surveying.

The Contractor shall provide the necessary surveying equipment, accessories surveyors and

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labours required for setting out and related measurements, including making available these to the Engineer-in-Charge and his representatives at different stages of the work. The surveying equipment shall be of high standard of manufacture as approved by the Engineer-in-Charge, in good working condition.

The Contractor shall maintain the surveying equipment in good condition during the full duration of works and replace the ones which get worn out or otherwise become unworkable

The Survey Equipment are to be calibrated (but not limited to) as per the table mentioned below:

Sr. No.	EQUIPMENT	FREQUENCY OF CALIBRATION
01	TOTAL STATION	ONCE IN 120 DAYS
02	AUTO LEVELS	ONCE IN 90 DAYS
03	TRAVELLING BEAM	AS REQUIRED
04	GPS SENSOR WITH +/- 3mm ACCURACY	AS REQUIRED

All the calibration certificates must be submitted to the BEML representative in original.

On construction reaching the formation level stage, **the center line shall again be set out by the Contractor** and when approved by the Engineer, shall be accurately referenced in a manner satisfactory to the Engineer by marker pegs set at the outer limits of the formation.

iv. Methodology and Sequence of Work

Prior to start of the construction activities at site, the Contractor shall, within 28 days after the date of the agreement unless otherwise stipulated in the Contract, submit to the Engineer for approval, the detailed method statement. The method statement shall be submitted in two parts.

The general part of the method statement shall describe the Contractor's proposals regarding preliminary works, common facilities and other items that require consideration at the early stage of the contract.

The general part shall include information on:

- a) Sources of materials like coarse aggregates and fine aggregates, quantity and quality of materials available in different sources;
- b) Sources of manufactured materials like bitumen, cement, steel reinforcement, pre-stressing strands and bearings etc. He shall also submit samples/test certificates of materials for consideration of the Engineer;
- c) Locations of the site facilities such as batching plant, hot mix plant, crushing plant, etc.;
- d) Details of facilities available for transportation of men/material and equipment;

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- e) Information on procedure to be adopted by the Contractor for prevention and mitigation of negative environmental impact due to construction activities;
- f) Safety and traffic arrangement during construction;
- g) Implementation of activities provided in the Environmental Management Plan;
- h) Any other information required by the Engineer.

Special part of the method statement shall be submitted to the Engineer by the Contractor for each important item of work as directed by the Engineer. The statement General Section 100 27 shall be submitted at least 4 weeks in advance of the commencement of the activity of item of work unless otherwise stipulated in the contract. The statement shall give information on:

- a) Details of the personnel both for execution and quality control of the work;
- b) Equipment deployment with details of the number of units, capacity, standby arrangement;
- c) Sequence of construction and details of temporary or enabling works like diversion, cofferdam, formwork including specialized formwork for superstructure, details of borrow areas, method of construction of embankment, sub-grade and pavement, pile concreting, proprietary processes and products and equipment's to be deployed. Wherever required technical literature, design calculations and drawings shall be included in the method statement;
- d) Testing and acceptance procedure including documentation;

The Engineer shall examine and approve the method statement with the required modifications. The modified method statement if required shall be submitted within 14 days of the receipt of the Engineer's approval. The sole responsibility for adequacy and safety of the method adopted by the Contractor shall rest on the Contractor irrespective of any approval given by the Engineer

v. Earthwork and Levelling

After submitting and approval of the vertical and horizontal profile along the road center line & cross section, earthwork can commence, the contractor must record the original ground levels at site jointly with the BEML representative. The levels checked must be entered in a field survey book duly signed by the contractor and BEML representative. All these survey books must be submitted in original to the BEML representative. All survey books will be in custody of the BEML representative. The contractor will be keeping the photocopies of the books for their own reference.

The patterns of recording OGL will be as per the latest revision of MORTH or as directed by the BEML representative.

The contractor has to prepare the working cross-sections to be adopted at site with the original ground levels as recorded jointly. The longitudinal profile of the tracks must be as per the original longitudinal sections provided in the Good for Construction Drawings. The cross sections provided in the Good for Construction Drawings are indicative only but the actual work should be carried out as per the cross-sections prepared by the contractor.

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The excavations shall conform to the lines, grades, side slopes and levels shown on the drawings or as directed by the Engineer. The Contractor shall not excavate outside the limits of excavation. Subject to the permitted tolerances, any excess depth/width excavated beyond the specified levels/dimensions on the drawings shall be made good at the cost of the Contractor with suitable material of characteristics similar to that removed and compacted. All debris and loose material on the slopes of cuttings shall be removed. No backfilling shall be allowed to obtain required slopes excepting that when boulders or soft materials are encountered in cut slopes, these shall be excavated to approved depth on instructions of the Engineer and the resulting cavities filled with suitable material and thoroughly compacted in an appropriate manner. After excavation, the sides of excavated area shall be trimmed and the area contoured to minimize erosion and ponding, allowing for natural drainage to take place.

Rock, when encountered in road excavation, shall be removed up to the formation level or as otherwise indicated in the drawings. Where, however, unstable shales or other unsuitable materials are encountered at the formation level, these shall be excavated to the extent of 500 mm below the formation level or as otherwise specified. In all cases, the excavation operations shall be so carried out that at no point on cut formations the rock protrudes above the specified levels. Rocks and boulders which are likely to cause differential settlement and also local drainage problems shall be removed to the extent of 500 mm below the formation level in the formation width including side drains

All the excavated materials meeting the desired soil parameters as stated below shall be reused with the approval of the Engineer or and quantity of soil not meeting the parameters shall be disposed off with all loads and lifts as directed by the Engineer.

Soil Parameters for Reuse/Backfilling:

- (1) Liquid Limit (%): Less than 50.
- (2) Plasticity Index (%): Less than 25.
- (3) Free swelling Index (%): Less than 50
- (4) Cohesion value (Kpa): 25 kpa- 50 kpa
- (5) Angle of Internal friction (ϕ°) : $15^\circ - 28^\circ$
- (6) Maximum Dry Density (KN/m³): 16.0KN/m³

vi. Backfilling

Any backfill materials sourced from Borrow Pits shall be in conformance with MoRTH Specifications Clause 305.

vii. Construction of Culverts.

Contractor shall take up hydrological study as spelt out in the Design part of this contract and propose adequate number of culverts (not less than 8 nos) for the road trials test track.

Construction of culverts shall commence after the approval and site verification of the culvert's locations by BEML Engineer In-charge. Excavation for culvert works shall conform to the lines, grades and side slopes as shown in the drawings.

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Hume Pipes used shall be minimum NP-3 grade and above. Pipes should be laid properly to line and levels specified in the drawings.

Excavation for pipe, the foundation bed for pipe culverts shall be excavated true to the lines and grades shown on the drawings or as directed by the Engineer. The pipes shall be placed in shallow excavation of the natural ground or in open trenches cut in existing embankments, taken down to levels as shown on the drawings. In case of high embankments where the height of fill is more than three times the external diameter of the pipe, the embankment shall first be built to an elevation above the top of the pipe equal to the external diameter of the pipe, and to width on each side of the pipe of not less than five times the diameter of pipe, after which a trench shall be excavated and the pipe shall be laid. Where trenching is involved, its width on either side of the pipe shall be a minimum of 150 mm or one-fourth of the diameter of the pipe whichever is more and shall not be more than one-third the diameter of the pipe. The sides of the trench shall be as nearly vertical as possible. The pipe shall be placed where the ground for the foundation is reasonably firm. Installation of pipes under existing bridges or culverts shall be avoided as far as possible. When during excavation the material encountered is soft, spongy or other unstable soil, and unless other special construction methods are called for on the drawings or in special provisions, such unsuitable material shall be removed to such depth, width and length as directed by the Engineer. The excavation shall then be backfilled with approved granular material which shall be properly shaped and thoroughly compacted upto the specified level. Where bed-rock or boulder strata are encountered, excavation shall be taken down to atleast 200 mm below the bottom level of the pipe with prior permission of the Engineer and all rock/ boulders in this area be removed and the space filled with approved earth, free from stone or fragmented material, shaped to the requirements and thoroughly compacted to provide adequate support for the pipe.

Trenches shall be kept free from water until the pipes are installed and the joints have hardened.

Bedding: surface shall provide a firm foundation of uniform density throughout the length of the culvert, shall conform to the specified levels and grade, and shall be of one of the following two types as specified on the drawings:

- i. **First Class Bedding:** Under first class bedding, the pipe shall be evenly bedded on a continuous layer of well compacted approved granular material, shaped concentrically to fit the lower part of the pipe exterior for atleast ten percent of its overall height or as otherwise shown on the drawings. The bedding material shall be well graded sand or another granular material passing 5.6 mm sieve suitably compacted/rammed. The compacted thickness of the bedding layer shall be as shown on the drawings and in no case shall it be less than 75 mm.
- ii. **Concrete Cradle Bedding:** When indicated on the drawings or directed by the Engineer, the pipe shall be bedded in a cradle constructed of concrete having a mix not leaner than M 15 conforming to Section 1700. The shape and dimensions of the cradle shall be as indicated on the drawings. The pipes shall be laid on the concrete bedding before the concrete has set.

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Any pipe found defective or damaged during laying shall be removed at the cost of the Contractor.

Jointing: the pipes shall be jointed either by collar joint or by flush joint. In the former case, the collars shall be of RCC 150 to 200 mm wide and having the same strength as the pipes to be jointed. Caulking space shall be between 13 and 20 mm according to the diameter of the pipe. Caulking material shall be slightly wet mix of cement and sand in the ratio of 1:2 rammed with caulking irons. Before caulking, the collar shall be so placed that its center coincides with the joint and an even annular space is left between the collar and the pipe. Flush joint may be internal flush joint or external flush joint. In either case, the ends of the pipes shall be specially shaped to form a self centering joint with a jointing space 13 mm wide. The jointing space shall be filled with cement mortar, 1 cement to 2 sand, mixed sufficiently dry to remain in position when forced with a trowel or rammer. Care shall be taken to fill all voids and excess mortar shall be removed. For jointing pipe lines under light hydraulic pressure, the recess at the end of the pipe shall be filled with jute braiding dipped in hot bitumen or other suitable approved compound. Pipes shall be so jointed that the bitumen ring of one pipe shall set into the recess of the next pipe. The ring shall be thoroughly compressed by jacking or by any other suitable method. All joints shall be made with care so that their interior surface is smooth and consistent with the interior surface of the pipes. After finishing, the joint shall be kept covered and damp for at least four days.

Backfilling: Trenches shall be backfilled immediately after the pipes have been laid and the jointing material has hardened. The backfill soil shall be clean, free from boulders, large roots, excessive amounts of sods or other vegetable matter, and lumps and shall be approved by the Engineer. Backfilling upto 300 mm above the top of the pipe shall be carefully done and the soil thoroughly rammed, tamped or vibrated in layers not exceeding 150 mm, particular care being taken to thoroughly consolidate the materials under the haunches of the pipe. Approved pneumatic or light mechanical tamping equipment can be used. Filling of the trench shall be carried out simultaneously on both sides of the pipe in such a manner that unequal pressures do not occur. In case of high embankment, after filling the trench upto the top of the pipe in the above said manner, a loose fill of a depth equal to external diameter of the pipe shall be placed over the pipe before further layers are added and compacted.

Headwalls, wing walls, aprons and other ancillary works shall be constructed in accordance with the details shown on the drawings or as directed by the Engineer. Masonry for the walls shall conform to MoRTH Sections 1300, 1400 or 1700 as applicable. Aprons shall conform to MoRTH Section 2500

viii. Construction of Storm Water Drains

Storm water drains shall be excavated to the specified lines, grades, levels and dimensions to the requirements of the approved drawings. The excavated material shall be removed from the area adjoining the drains and if found suitable, utilized in embankment/sub-grade construction. All unsuitable material shall be disposed of as directed.

The excavated bed and sides of the drains shall be dressed to bring these in close conformity with the specified dimensions, levels and slopes.

Where so indicated, drains shall be lined or turfed with suitable materials in accordance with details shown on the drawings.

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All works on drain construction shall be planned and executed in proper sequence with other works as approved by the Engineer, with a view to ensuring adequate drainage for the area and minimizing erosion/sedimentation

Drain vent size and slopes shall be accurately executed and any drain beds where water stagnation is observed in the drain such length of drain beds shall be dismantled and reconstructed without any extra cost to BEML.

ix. Granular Sub-Base

This work shall consist of laying and compacting well-graded material on prepared subgrade in accordance with the requirements of these Specifications. The material shall be laid in one or more layers as sub-base or lower sub-base and upper sub-base (termed as sub-base hereinafter) as necessary according to lines, grades and cross-sections shown on the drawings or as directed by the Engineer

The material to be used for the work shall be crushed stone or combination thereof in the required proportion depending upon the grading of each fraction so as to result in the mix grading confirming to Grading II and Grading VI of Table 400-1 for Granular Sub Base and Drainage layer respectively with the prior approval of the engineer in-charge". Use of moorum, natural sand, crushed gravel and crushed slag for Granular Sub Base and Drainage layer, either alone or in combination with other type of material will NOT be allowed.

If the water absorption of the aggregates determined as per IS:2386 (Part 3) is greater than 2 percent, the aggregates shall be tested for Wet Aggregate Impact Value (AIV) (IS:5640). Soft aggregates like Kankar, brick ballast and laterite shall also be tested for Wet AIV (IS:5640).

Table 400-1 : Grading for Granular Sub-base Materials

IS Sieve Designation	Percent by Weight Passing the IS Sieve					
	Grading I	Grading II	Grading III	Grading IV	Grading V	Grading VI
75.0 mm	100	-	-	-	100	-
53.0 mm	80-100	100	100	100	80-100	100
26.5 mm	55 –90	70-100	55-75	50-80	55-90	75-100
9.50 mm	35-65	50-80	–	–	35-65	55-75
4.75 mm	25 – 55	40-65	10-30	15-35	25-50	30-55
2.36 mm	20- 40	30-50	–	–	10-20	10-25
0.85 mm	–	–	–	–	2-10	–
0.425 mm	10-15	10- 15	–	–	0-5	0-8
0.075 mm	<5	< 5	< 5	< 5	–	0-3

Preparation of Sub-grade: Immediately prior to the laying of sub-base, the subgrade already finished to Clause 301 or 305 as applicable shall be prepared by removing all vegetation and other extraneous matter, lightly sprinkled with water, if necessary and rolled with two passes of 80–100 kN smooth wheeled roller.

Spreading and Compacting: The sub-base material of the grading specified in the Contract and water shall be mixed mechanically by a suitable mixer equipped with provision for controlled addition of

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water and mechanical mixing. So as to ensure homogenous and uniform mix. The required water content shall be determined in accordance with IS:2720 (Part 8). The mix shall be spread on the prepared subgrade with the help of a motor grader of adequate capacity, its blade having hydraulic controls suitable for initial adjustment and for maintaining the required slope and grade during the operation, or other means as approved by the Engineer. Moisture content of the mix shall be checked in accordance with IS:2720 (Part 2) and suitably adjusted so that, at the time of compaction, it is from 1 to 2 percent below the optimum moisture content. Immediately after spreading the mix, rolling shall be done by an approved roller. If the thickness of the compacted layer does not exceed 100 mm, a smooth wheeled roller of 80 to 100 kN weight may be used. For a compacted single layer up to 200 mm the compaction shall be done with the help of a vibratory roller of minimum 80 to 100 kN static weight capable of achieving the required compaction. Rolling shall commence at the lower edge and proceed towards the upper edge longitudinally for portions having unidirectional crossfall or on super-elevation. For carriageway having crossfall on both sides, rolling shall commence at the edges and progress towards the crown.

Each pass of the roller shall uniformly overlap not less than one-third of the track made in the preceding pass. During rolling, the grade and crossfall (camber) shall be checked and any high spots or depressions which become apparent, corrected by removing or adding fresh material. The speed of the roller shall not exceed 5 km per hour. Rolling shall be continued till the density achieved is at least **98 percent of the maximum dry density** for the material determined as per IS:2720 (Part 8). The surface of any layer of material on completion of compaction shall be well closed, free from movement under compaction equipment and from compaction planes, ridges, cracks or loose material. All loose, segregated or otherwise defective areas shall be made good to the full thickness of layer and re-compacted.

Surface Finish and Quality Control of Work: The surface finish of construction shall conform to the requirements of Clause 902. Control on the quality of materials and works shall be exercised by the Engineer in accordance with MoRTH Section 900.

x. Wet Mix Macadam

This work shall consist of laying and compacting clean, crushed, graded aggregate and granular material, premixed with water, to a dense mass on a prepared sub-grade/sub- base/ base or existing pavement as the case may be in accordance with the requirements of these Specifications. The material shall be laid in one or more layers as necessary to lines, grades and cross-sections shown on the approved drawings or as directed by the Engineer. The thickness of a single compacted Wet Mix Macadam layer shall not be less than 75 mm. When vibrating or other approved types of compacting equipment are used, the compacted depth of a single layer of the sub-base course may be up to 200 mm with the approval of the Engineer.

Coarse aggregates shall be crushed stone. If crushed gravel/shingle is used, not less than 90 percent by weight of the gravel/shingle pieces retained on 4.75 mm sieve shall have at least two fractured faces. The aggregates shall conform to the physical requirements set forth in Table 400-12. If the water absorption value of the coarse aggregate is greater than 2 percent, the soundness test shall be carried out on the material delivered to site as per IS:2386 (Part-5).

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Physical and Grading requirements shall be in conformance with Table 400-12 & 400-13 of MoRTH, Section 400.

Preparation of Base: The surface of the base to receive the wet mix macadam course shall be prepared to the specified grade and camber and cleaned of dust, dirt and other extraneous material. Any ruts or soft yielding places shall be corrected in an approved manner and rolled until firm surface is obtained.

While constructing wet mix macadam, arrangement shall be made for the lateral confinement of wet mix. This shall be done by laying materials in adjoining shoulders along with that of wet mix macadam layer and following the sequence of operations described in Clause 404.3.3.

Preparation of Mix: Wet Mix Macadam shall be prepared in an approved mixing plant of suitable capacity having provision for controlled addition of water and forced/ positive mixing arrangement like pugmill or pan type mixer of concrete batching plant. The plant shall have following features: i) For feeding aggregates– three/ four bin feeders with variable speed motor ii) Vibrating screen for removal of oversize aggregates iii) Conveyor Belt iv) Controlled system for addition of water v) Forced/positive mixing arrangement like pug-mill or pan type mixer vi) Centralized control panel for sequential operation of various devices and precise process control vii) Safety devices Optimum moisture for mixing shall be determined in accordance with IS:2720 (Part-8) after replacing the aggregate fraction retained on 22.4 mm sieve with material of 4.75 mm to 22.4 mm size. While adding water, due allowance should be made for evaporation losses. However, at the time of compaction, water in the wet mix should not vary from the optimum value by more than agreed limits. The mixed material should be uniformly wet and no segregation should be permitted.

Spreading of Mix: Immediately after mixing, the aggregates shall be spread uniformly and evenly upon the prepared sub-grade/sub-base/base in required quantities. In no case shall these be dumped in heaps directly on the area where these are to be laid nor shall their hauling over a partly completed stretch be permitted. The mix may be spread by a paver finisher. The paver finisher shall be self-propelled of adequate capacity with following features: i) Loading hoppers and suitable distribution system, so as to provide a smooth uninterrupted material flow for different layer thicknesses from the tipper to the screed. ii) Hydraulically operated telescopic screed for paving width up to to 8.5 m and fixed screed beyond this. The screed shall have tamping and vibrating arrangement for initial compaction of the layer. iii) Automatic levelling control system with electronic sensing device to maintain mat thickness and cross slope of mat during laying procedure. In exceptional cases where it is not possible for the paver to be utilized, mechanical means like motor grader may be used with the prior approval of the Engineer. The motor grader shall be capable of spreading the material uniformly all over the surface. The surface of the aggregate shall be carefully checked with templates and all high or low spots remedied by removing or adding aggregate as may be required. The layer may be tested by depth blocks during construction. No segregation of larger and fine particles should be allowed. The aggregates as spread should be of uniform gradation with no pockets of fine materials. The Engineer may permit manual mixing and /or laying of wet mix macadam where small quantity of wet mix macadam is to be executed. Manual mixing/laying in inaccessible/ remote locations and in situations where use of machinery is not feasible can also be permitted. Where manual mixing/laying is intended to be used, the same shall be done with the approval of the Engineer

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Compaction: After the mix has been laid to the required thickness, grade and crossfall/camber the same shall be uniformly compacted to the full depth with suitable roller. If the thickness of single compacted layer does not exceed 100 mm, a smooth wheel roller of 80 to 100kN weight may be used. For a compacted single layer upto 200 mm, the compaction shall be done with the help of vibratory roller of minimum static weight of 80 to 100 kN with an arrangement for adjusting the frequency and amplitude. An appropriate frequency and amplitude may be selected. The speed of the roller shall not exceed 5 km/h. In portions having unidirectional cross fall/superelevation, rolling shall commence from the lower edge and progress gradually towards the upper edge. Thereafter, roller should progress parallel to the center line of the road, uniformly over-lapping each preceding track by at least one-third width until the entire surface has been rolled. Alternate trips of the roller shall be terminated in stops at least 1 m away from any preceding stop. In portions in camber, rolling should begin at the edge with the roller running forward and backward until the edges have been firmly compacted. The roller shall then progress gradually towards the center parallel to the center line of the road uniformly overlapping each of the preceding track by at least one-third width until the entire surface has been rolled. Any displacement occurring as a result of reversing of the direction of a roller or from any other cause shall be corrected at once as specified and/or removed and made good. Along forms, kerbs, walls or other places not accessible to the roller, the mixture shall be thoroughly compacted with mechanical tampers or a plate compactor. Skin patching of an area without scarifying the surface to permit proper bonding of the added material shall not be permitted. Rolling should not be done when the sub-grade is soft or yielding or when it causes a wavelike motion in the sub-base/base course or sub-grade. If irregularities develop during rolling which exceed 12 mm when tested with a 3 m straight edge, the surface should be loosened and premixed material added or removed as required before rolling again so as to achieve a uniform surface conforming to the desired grade and crossfall. In no case shall the use of unmixed material be permitted to make up the depressions. Rolling shall be continued till the density achieved is at least 98 percent of the maximum dry density for the material as determined by the method outlined in IS:2720 (Part-8). After completion, the surface of any finished layer shall be well-closed, free from movement under compaction equipment or any compaction planes, ridges, cracks and loose material. All loose, segregated or otherwise defective areas shall be made good to the full thickness of the layer and recompact.

xi. Alignment and Fixing of Edge Kerb:

xii. PRIME COAT OVER GRANULAR BASE

This work shall consist of the application of a single coat of low viscosity liquid bituminous material to a porous granular surface preparatory to the superimposition of bituminous treatment or mix. The work shall be carried out on a previously prepared granular/ stabilized surface to Clause 501.8.

The primer shall be cationic bitumen emulsion SS1 grade conforming to IS:8887 or medium curing cutback bitumen conforming to IS:217 or as specified in the Contract.

Quantity of SS1 grade bitumen emulsion for various types of granular surface shall be as given in Table 500-3.

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Table 500-3 : Quantity of Bitumen Emulsion for Various Types of Granular Surfaces

Type of Surface	Rate of Spray (kg/sq.m)
WMM/WBM	0.7–1.0
Stabilized soil bases/Crusher Run Macadam	0.9–1.2

Primer shall not be applied during a dust storm or when the weather is foggy, rainy or windy or when the temperature in the shade is less than 100C. Cutback bitumen as primer shall not be applied to a wet surface. Surfaces which are to receive emulsion primer should be damp, but no free or standing water shall be present. Surface can be just wet by very light sprinkling of water.

Construction:

Equipment: The primer shall be applied by a **self-propelled or towed bitumen pressure sprayer** equipped for spraying the material uniformly at specified rates and temperatures. **Hand spraying shall not be allowed.**

Preparation of surface: The granular surface to be primed shall be swept clean by power brooms or mechanical sweepers and made free from dust. All loose material and other foreign material shall be removed completely. If soil/ moorum binder has been used in the WBM surface, part of this should be brushed and removed to a depth of about 2 mm so as to achieve good penetration.

Application of Bituminous Primer: After preparation of the road surface as per MoRTH Clause 502.4.2, the primer shall be sprayed uniformly at the specified rate. The method for application of the primer will depend on the type of equipment to be used, size of nozzles, pressure at the spray bar and speed of forward movement. The Contractor shall demonstrate at a spraying trial, that the equipment and method to be used is capable of producing a uniform spray, within the tolerances specified. **No heating or dilution of SS1 bitumen emulsion** shall be permitted at site. Temperature of cutback bitumen shall be high enough to permit the primer to be sprayed effectively though the jets of the spray and to cover the surface uniformly.

Curing of Primer: A primed surface shall be allowed to cure for at least 24 hours or such other higher period as is found to be necessary to allow all the moisture/volatiles to evaporate before any subsequent surface treatment or mix is laid. Any unabsorbed primer shall first be blotted with a light application of sand, using the minimum quantity possible. A primed surface shall not be opened to traffic other than that necessary to lay the next course.

xiii. Dense Bituminous Macadam: The specification describes the design and construction procedure for Dense Bituminous Macadam, (DBM), for use mainly, but not exclusively, in base/binder and profile corrective courses. The work shall consist of construction in a single or multiple layers of DBM on a previously prepared base or sub-base. The thickness of a single layer shall be 50 mm to 100 mm.

Materials: Bitumen- The bitumen shall be viscosity grade paving bitumen complying with the Indian Standard Specification IS:73, modified bitumen complying with Clause 501.2.1 or as otherwise specified in the Contract.

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Coarse Aggregates: The coarse aggregates shall consist of crushed rock, crushed gravel or other hard material retained on 2.36 mm sieve. They shall be clean, hard, durable, of cubical shape, free from dust and soft or friable matter, organic or other deleterious substances. Where the Contractor's selected source of aggregates has poor affinity for bitumen, the Contractor shall produce test results that with the use of anti-stripping agents, the stripping value is improved to satisfy the specification requirements. The Engineer may approve such a source and as a condition for the approval of that source, the bitumen shall be treated with an approved anti-stripping agent, as per the manufacturer's recommendations, at the cost of the Contractor. The aggregates shall satisfy the requirements specified in Table 500-8. Where crushed gravel is proposed for use as aggregate, not less than 90 percent by weight of the crushed material retained on the 4.75 mm sieve shall have at least two fractured faces.

Fine Aggregates: Fine aggregates shall consist of crushed or naturally occurring mineral material, or a combination of the two, passing the 2.36 mm sieve and retained on the 75 micron sieve. These shall be clean, hard, durable, dry and free from dust, and soft or friable matter, organic or other deleterious matter. Natural sand shall not be allowed in binder courses. However, natural sand upto 50 percent of the fine aggregate may be allowed in base courses. The fine aggregate shall have a sand equivalent value of not less than 50 when tested in accordance with the requirement of IS:2720 (Part 37). The plasticity index of the fraction passing the 0.425 mm sieve shall not exceed 4, when tested in accordance with IS:2720 (Part 5).

Filler: Filler shall consist of finely divided mineral matter such as rock dust, hydrated lime or cement approved by the Engineer. The filler shall be graded within the limits indicated in Table 500-9. The filler shall be free from organic impurities and have a plasticity Index not greater than 4. The Plasticity Index requirement shall not apply if filler is cement or lime. Where the aggregates fail to meet the requirements of the water sensitivity test in Table 500-8, then 2 percent by total weight of aggregate, of hydrated lime shall be used and percentage of fine aggregate reduced accordingly.

Aggregate Grading and Binder Content: When tested in accordance with IS:2386 Part 1 (wet sieving method), the combined grading of the coarse and fine aggregates and filler for the particular mixture shall fall within the limits given in Table 500-10 for grading 1 or 2 as specified in the Contract. To avoid gap grading, the combined aggregate gradation shall not vary from the lower limit on one sieve to higher limit on the adjacent sieve.

Job Mix Formula and Minimum Bitumen Content:

The Contractor shall submit to the Engineer for approval at least 21 days before the start the work, the job mix formula proposed for use in the works, together with the following details:

- ii) Source and location of all materials;
- iii) Proportions of all materials expressed as follows: a) Binder type, and percentage by weight of total mix; b) Coarse aggregate/Fine aggregate/Mineral filler as percentage by weight of total aggregate including mineral filler;
- iv) A single definite percentage passing each sieve for the mixed aggregate;
- v) The individual gradings of the individual aggregate fraction, and the proportion of each in the combined grading;

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- vi) The results of mix design such as maximum specific gravity of loose mix (Gmm), compacted specimen densities, Marshall stability, flow, air voids, VMA, VFB and related graphs and test results of AASHTO T 283 Moisture susceptibility test;
- vii) Where the mixer is a batch mixer, the individual weights of each type of aggregate, and binder per batch;
- viii) Test results of physical characteristics of aggregates to be used; Mi
- ix) Mixing temperature and compacting temperature.

Job mix formula to be obtained from the reputed NABL certified laboratories or Government Engineering Colleges. However, **minimum bitumen content shall not be less than 4.5%** by weight. Bitumen extraction tests in the presence of BEML EIC will be conducted at site for each load of vehicle without fail. If the bitumen content is found to be less than the specified percentage, the vehicle will be rejected for usage at BEML. All other requirements of this work shall be governed by MoRTH section 500.

Preparation of Base: The base on which Dense Graded Bituminous Material is to be laid shall be prepared in accordance with MoRTH Clauses 501 and 902 as appropriate, or as directed by the Engineer.

Prime Coat: Where the material on which the dense bituminous macadam is to be laid is other than a bitumen bound layer, a prime coat shall be applied, as specified, in accordance with the provisions of MoRTH Clause 502, or as directed by the Engineer.

Mixing and Transportation of the Mix: The provisions as specified in MoRTH Clauses 501.3 and 501.4 shall apply. Table 500-2 gives the mixing, laying and rolling temperature for dense mixes using viscosity grade bitumen. In case of modified bitumen, the temperature of mixing and compaction shall be higher than the mix with viscosity grade bitumen. The exact temperature depends upon the type and amount of modifier used and shall be adopted as per the recommendations of the manufacturer. In order to have uniform quality, the plant shall be calibrated from time to time.

Spreading DBM at Site: Prior to spreading the mix, the base shall be prepared by carrying out the required operations as per MoRTH Clause 501.8 depending upon the site conditions. Except in areas where paver cannot get access, bituminous materials shall be spread, levelled and tamped by an approved self-propelled paving machine equipped with an electronic sensing device. The essential features of the paver finisher shall conform to Annex A of IRC:27. As soon as possible after arrival at site, the materials shall be supplied continuously to the paver and laid without delay. The rate of delivery of material to the paver shall be regulated to enable the paver to operate continuously. The travel rate of the paver, and its method of operations, shall be adjusted to ensure an even and uniform flow of bituminous material across the screed, free from dragging, tearing and segregation of the material.

Rolling DBM at Site: Bituminous materials shall be laid and compacted in layers, which enable the specified thickness, surface level, regularity requirements and compaction to be achieved. Compaction of bituminous materials shall commence as soon as possible after laying. Compaction shall be substantially completed before the temperature falls below the minimum rolling

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temperatures stated in the relevant part of these Specifications. Rolling of the longitudinal joints shall be done immediately behind the paving operation. After this, rolling shall commence at the edges and progress towards the center longitudinally except that on super-elevated and unidirectionally cambered portions, it shall progress from the lower to the upper edge parallel to the center line of the pavement. Rolling shall continue until all roller marks have been removed from the surface. All deficiencies in the surface after laying shall be made good by the attendants behind the paver, before initial rolling is commenced. The initial or breakdown rolling shall be done with 8–10 tonne static weight smooth-wheel rollers. The intermediate rolling shall be done with 8–10 tonne static weight or vibratory roller or with a pneumatic tyre roller of 12 to 15 tonne weight, with a tyre pressure of at least 0.56 MPa. The Contractor shall demonstrate the efficiency of the equipment proposed to be used by carrying compaction trials. The procedure for site trials shall be submitted to the Engineer for approval. The finish rolling shall be done with 6 to 8 tonne smooth wheel tandem rollers. Rolling shall continue until the specified compaction is achieved. Where compaction is to be determined by density of cores, the requirements to prove the performance of rollers shall apply in order to demonstrate that the specified density can be achieved. In such cases the Contractor shall specify the plant, and the method by which he intends to achieve the specified level of compaction and finish at temperatures above the minimum specified rolling temperature. Laying trials shall then demonstrate the acceptability of the plant and method used. Bituminous materials shall be rolled in a longitudinal direction, with the driven rolls nearest the paver. The roller shall first compact material adjacent to joints and then work from the lower to the upper side of the layer, overlapping on successive passes by at least one-third of the width of the rear roll or, in the case of a pneumatic-tyred roller, at least the nominal width of 300 mm. In portions with super-elevated and unidirectional camber, after the edge has been rolled, the roller shall progress from the lower to the upper edge. Rollers should move at a speed of not more than 5 km per hour. The roller shall not be permitted to stand on pavement which has not been fully compacted, and necessary precautions shall be taken to prevent dropping of oil, grease, petrol/ diesel or other foreign matter on the pavement either when the rollers are operating or standing. The wheels of roller machine shall be in good working order, to prevent the mix from adhering to the wheels. Only sufficient moisture to prevent adhesion between the wheels of rollers and the mix should be used. Surplus water shall not be allowed to stand on the partially compacted pavement.

xiv. Tack Coat Over Dense Bituminous Macadam: The work shall consist of the application of a single coat of low viscosity liquid bituminous material to existing bituminous, cement concrete or primed granular surface preparatory to the superimposition of a bituminous mix, when specified in the Contract or as instructed by the Engineer. The work shall be carried out on a previously prepared surface in accordance with MoRTH Clause 501.8.

Materials: The binder used for tack coat shall be either **Cationic bitumen emulsion (RS 1) complying with IS:8887** or suitable low viscosity paving bitumen of VG 10 grade conforming to IS:73. The use of cutback bitumen RC:70 as per IS:217 shall be restricted only for sites at sub-zero temperatures or for emergency applications as directed by the Engineer. The type and grade of binder for tack coat shall be as specified in the Contract or as directed by the Engineer.

Note: Bituminous material shall not be applied during a dust storm or when the weather is foggy, rainy or windy or when the temperature in the shade is less than 10°C. Where the tack coat consists of emulsion, the surface shall be slightly damp, but not wet. Where the tack coat is of cutback bitumen, the surface shall be dry.

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Construction: As mentioned below:

Equipment: The tack coat shall be applied by a self-propelled or towed bitumen pressure sprayer, equipped for spraying the material uniformly at a specified rate. Hand spraying shall not be permitted except in small areas, inaccessible to the distributor, or narrow strips, shall be sprayed with a pressure hand sprayer, or as directed by the Engineer.

Preparation of Base: The surface on which the tack coat is to be applied shall be clean and free from dust, dirt, and any extraneous material, and be otherwise prepared in accordance with the requirements of Clauses 501.8. The granular or stabilized surfaces shall be primed as per Clause 502. Immediately before the application of the tack coat, the surface shall be swept clean with a mechanical broom, and high-pressure air jet, or by other means as directed by the Engineer.

Application of Tack Coat: The application of tack coat shall be at the rate specified in MoRTH Table 500-5, and it shall be applied uniformly. If rate of application of Tack Coat is not specified in the contract, then it shall be the rate specified in Table 500-5. No dilution or heating at site of RS1 bitumen emulsion shall be permitted. Paving bitumen if used for tack coat shall be heated to appropriate temperature in bitumen boilers to achieve viscosity less than 2 poise. The normal range of spraying temperature for a bituminous emulsion shall be 20°C to 70°C and for cutback, 50°C to 80°C. The method of application of tack coat will depend on the type of equipment to be used, size of nozzles, pressure at the spray bar, and speed or forward movement. The Contractor shall demonstrate at a spraying trial, that the equipment and method to be used is capable of producing a uniform spray, within the tolerances specified.

- xv. Semi Dense Bituminous Concrete (SDBC):** This work shall consist of construction of Bituminous Concrete, for use in wearing and profile corrective courses. This work shall consist of construction in a single layer of bituminous concrete on a previously prepared bituminous macadam surface. A single layer shall be minimum 50 mm thick or as per the drawings approved.

Coarse Aggregates: The coarse aggregates shall be generally as specified in MoRTH Clause 504.2.2, except that the aggregates shall satisfy the physical requirements of MoRTH Table 500-16 and where crushed gravel is proposed for use as aggregate, not less than 95 percent by weight of the crushed material retained on the 4.75 mm sieve shall have at least two fractured faces.

Fine Aggregates: The fine aggregates shall be all as specified in Clause MoRTH 505.2.3.

Filler: Filler shall be as specified in MoRTH Clause 505.2.4.

Aggregate Grading and Binder Content: When tested in accordance with IS:2386 Part 1 (Wet grading method), the combined grading of the coarse and fine aggregates and filler shall fall within the limits shown in MoRTH Table 500-17. The grading shall be as per approved Job Mix Formula.

Minimum binder content: 5.2% by weight.

Construction Operations:

Preparation of Base: The surface on which the bituminous concrete is to be laid shall be prepared in accordance with Clauses 501 and 902 as appropriate, or as directed by the Engineer. The surface shall be thoroughly swept clean by mechanical broom and dust removed by compressed air. In locations where a mechanical broom cannot get access, other approved methods shall be used as directed by the Engineer.

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Tack Coat: In conformance with Serial No. xiv above.

Spreading SDBC at Site: Prior to spreading the mix, the base shall be prepared by carrying out the required operations as per MoRTH Clause 501.8 depending upon the site conditions. Except in areas where paver cannot get access, bituminous materials shall be spread, levelled and tamped by an approved self-propelled paving machine equipped with an electronic sensing device. The essential features of the paver finisher shall conform to Annex A of IRC:27. As soon as possible after arrival at site, the materials shall be supplied continuously to the paver and laid without delay. The rate of delivery of material to the paver shall be regulated to enable the paver to operate continuously. The travel rate of the paver, and its method of operations, shall be adjusted to ensure an even and uniform flow of bituminous material across the screed, free from dragging, tearing and segregation of the material.

Rolling SDBC at Site: Bituminous materials shall be laid and compacted in layers, which enable the specified thickness, surface level, regularity requirements and compaction to be achieved. Compaction of bituminous materials shall commence as soon as possible after laying. Compaction shall be substantially completed before the temperature falls below the minimum rolling temperatures stated in the relevant part of these Specifications. Rolling of the longitudinal joints shall be done immediately behind the paving operation. After this, rolling shall commence at the edges and progress towards the center longitudinally except that on super-elevated and unidirectionally cambered portions, it shall progress from the lower to the upper edge parallel to the center line of the pavement. Rolling shall continue until all roller marks have been removed from the surface. All deficiencies in the surface after laying shall be made good by the attendants behind the paver, before initial rolling is commenced. The initial or breakdown rolling shall be done with 8–10 tonne static weight smooth-wheel rollers. The intermediate rolling shall be done with 8–10 tonne static weight or vibratory roller or with a pneumatic tyre roller of 12 to 15 tonne weight, with a tyre pressure of at least 0.56 MPa. The Contractor shall demonstrate the efficiency of the equipment proposed to be used by carrying compaction trials. The procedure for site trials shall be submitted to the Engineer for approval. The finish rolling shall be done with 6 to 8 tonne smooth wheel tandem rollers. Rolling shall continue until the specified compaction is achieved. Where compaction is to be determined by density of cores, the requirements to prove the performance of rollers shall apply in order to demonstrate that the specified density can be achieved. In such cases the Contractor shall specify the plant, and the method by which he intends to achieve the specified level of compaction and finish at temperatures above the minimum specified rolling temperature. Laying trials shall then demonstrate the acceptability of the plant and method used. Bituminous materials shall be rolled in a longitudinal direction, with the driven rolls nearest the paver. The roller shall first compact material adjacent to joints and then work from the lower to the upper side of the layer, overlapping on successive passes by at least one-third of the width of the rear roll or, in the case of a pneumatic-tyred roller, at least the nominal width of 300 mm. In portions with super-elevated and unidirectional camber, after the edge has been rolled, the roller shall progress from the lower to the upper edge. Rollers should move at a speed of not more than 5 km per hour. The roller shall not be permitted to stand on pavement which has not been fully compacted, and necessary precautions shall be taken to prevent dropping of oil, grease, petrol/ diesel or other foreign matter on the pavement either when the rollers are operating

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or standing. The wheels of roller machine shall be in good working order, to prevent the mix from adhering to the wheels. Only sufficient moisture to prevent adhesion between the wheels of rollers and the mix should be used. Surplus water shall not be allowed to stand on the partially compacted pavement.

xvi. Road Markings: Hot Applied Thermoplastic Road Marking.

The thermoplastic material shall be homogeneously composed of aggregate, pigment, resins and glass reflectorizing beads. The colour of the compound shall be white or yellow (IS colour No. 356) as specified in the drawings or as directed by the Engineer.

Requirements:

- i) Composition: The pigment, beads, and aggregate shall be uniformly dispersed in the resin. The material shall be free from all skins, dirt and foreign objects and shall comply with requirements indicated in MoRTH Table 800-9.
- ii) Properties: The properties of thermoplastic material, when tested in accordance with ASTM D36/BS-3262-(Part I), shall be as below:
 - a. Luminance : White: Daylight luminance at 45°-65 percent min. as per AASHTO M 249 Yellow: Daylight luminance at 45°-45 percent min. as per AASHTO M 249
 - b. Drying time : When applied at a temperature specified by the manufacturer and to the required thickness, the material shall set to bear traffic in not more than 15 minutes.
 - c. Skid resistance: not less than 45 as per BS:6044.
 - d. Cracking resistance at low temperature: The material shall show no cracks on application to concrete blocks.
 - e. Softening point: 102.5°C ± 9.5°C as per ASTM D 36.
 - f. Yellowness index (for white thermoplastic paint): not more than 0.12 as per AASHTO M 249
- iii) Storage life : The material shall meet the requirements of these Specifications for a period of one year. The thermoplastic material must also melt uniformly with no evidence of skins or unmelted particles for the one year storage period. Any material not meeting the above requirements shall be replaced by the manufacturer/supplier/ Contractor.
- iv) Reflectorisation : Shall be achieved by incorporation of beads, the grading and other properties of the beads shall be as specified in Clause 803.4.2
- v) Marking : Each container of the thermoplastic material shall be clearly and indelibly marked with the following information:
 - a. The name, trade mark or other means of identification of manufacturer
 - b. Batch number
 - c. Date of manufacture
 - d. Colour (white or yellow)
 - e. Maximum application temperature and maximum safe heating temperature.
 - f. Sampling and Testing : The thermoplastic material shall be sampled and tested in accordance with the appropriate ASTM/BS method. The Contractor shall

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furnish to the Engineer a copy of certified test reports from the manufacturers of the thermoplastic material showing results of all tests specified herein and shall certify that the material meets all requirements of this Specification

Application Properties of Thermoplastic Material: The thermoplastic material shall readily get screeded/extruded at temperatures specified by the manufacturers for respective method of application to produce a line of specified thickness which shall be continuous and uniform in shape having clear and sharp edges

The material upon heating to application temperatures shall not exude fumes, which are toxic, obnoxious or injurious to persons or property.

Preparation

- i) The material shall be melted in accordance with the manufacturer's instructions in a heater with a mechanical stirrer to give a smooth consistency to the thermoplastic material to avoid local overheating. The temperature of the mass shall be within the range specified by the manufacturer, and shall on no account be allowed to exceed the maximum temperature stated by the manufacturer. The molten material should be used as expeditiously as possible and for thermoplastic material which has natural binders or is otherwise sensitive to prolonged heating, the material shall not be maintained in a molten condition for more than 4 hours.
- ii) After transfer to the laying equipment, the material shall be maintained within the temperature range specified by the manufacturer for achieving the desired consistency for laying.

Reflectorised Paint: Reflectorised paint, if used, shall conform to the Specification by the manufacturers and approved by the Engineer. Reflectorising glass beads for reflectorising paints where used shall conform to the requirements of Clause 803.4.2.

Application: It shall conform to MoRTH Specification **Clause: 803.6.**

Road Trials Test Track Lane marking to be done in 2.5mm thick Thermoplastic type marking. Lane marking shall be as per IRC codal provisions. Lane marking shall include directional arrows, speed limit, rumble strips.

- xvii. **Fixing of Retro Reflective Cat Eyes:** Fixing cat eye solar reflective type of metal body alloy of size 100mm x 100mm x 20mm with PAMA striplens reflector of model No. DA 972.0 fixed with and incl MS stud of suitable size as per manufactures instructions on the edges and centre line of the carriageway.
- xviii. Supervision of works with required quality assurance and quality control. ISO 9001/14001/45001 Documentation and Files of Drawing Register, Checklists for Works, Request for Inspection (RFI's), Concrete pour card, Cube register, Design Mix Concrete grades register, Concrete Batch Slips file, Materials inward register, Reinforcement steel physical and chemical test reports and MTC file, Field MDD test reports of road works,

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OMC and CBR third party lab test reports file, admixture test reports, cement test reports, M-sand and Aggregates test reports and any other reports of materials being used in road trials and side slope track work.

- xix.** All safety norms as per requirement to be ensured by the contractor at site.
- xx.** Bidder shall also consider the necessary costing towards stone pitching or alternative measures to prevent the erosion of road subgrade and subbase works wherever necessary as per the road profile.
- xxi.** Side slope Test Track Lane marking shall be done with PU material (Anti skid) of minimum thickness as per the codal provisions.
- xxii.** Crash Barrier or W beam where ever necessary for the road trials test track shall be provided.
- xxiii.** Approach roads or slip roads for connecting the adjacent test racks shall also be built under this scope of work.
- xxiv.** Saucer drains to be provided at designed intervals for disposing water to storm water drains.
- xxv.** Final Cleaning of Kerbs and Other spoilt infrastructure.
- xxvi.** Handing over to BEML and obtaining the completion certificate.

Statutory Approvals:

- (i) Obtaining approval of the Plan and Profile drawings from relevant proof checking bodies.
- (ii) Any other approval required from the appropriate Statutory Authorities/ Local Bodies.

Special care for existing services:

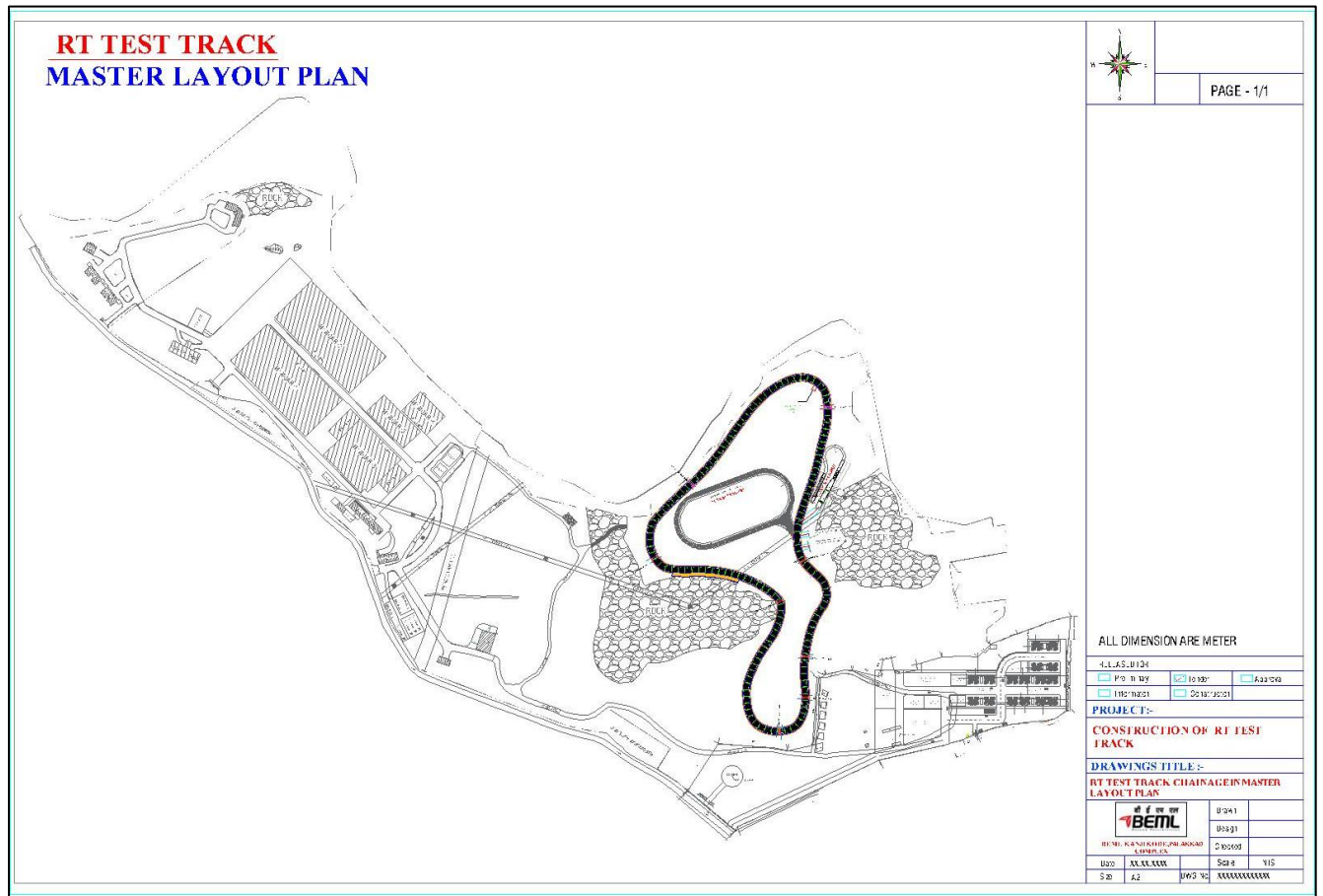
The scope of work includes excavation, if any, of the required services and utilities falling in the project area and supporting/shifting & making functional existing services/sewerage and water supply lines etc. The contractor shall properly take care & safe guard all the existing services in the area affected by the construction of proposed in the campus.

Note:

The work shall be executed through EPC Mode on Design & Build basis including soil investigation, CBR Value, Geometric design, Pavement Design (Flexible & Rigid) Hydrology Study, Culvert & Storm water drains, construction of road trials test track with associated work. Scope of work mentioned in document is only **indicative and not exhaustive**. In addition, the contractor shall be responsible for executing all items required for completing the Road Trials Test Track & Side Slope Test Track activities in all respects to make it operational and ready for carrying out road trials test, as per proof checking agency approved and vetted drawings and direction of BEML Engineer-in-charge.

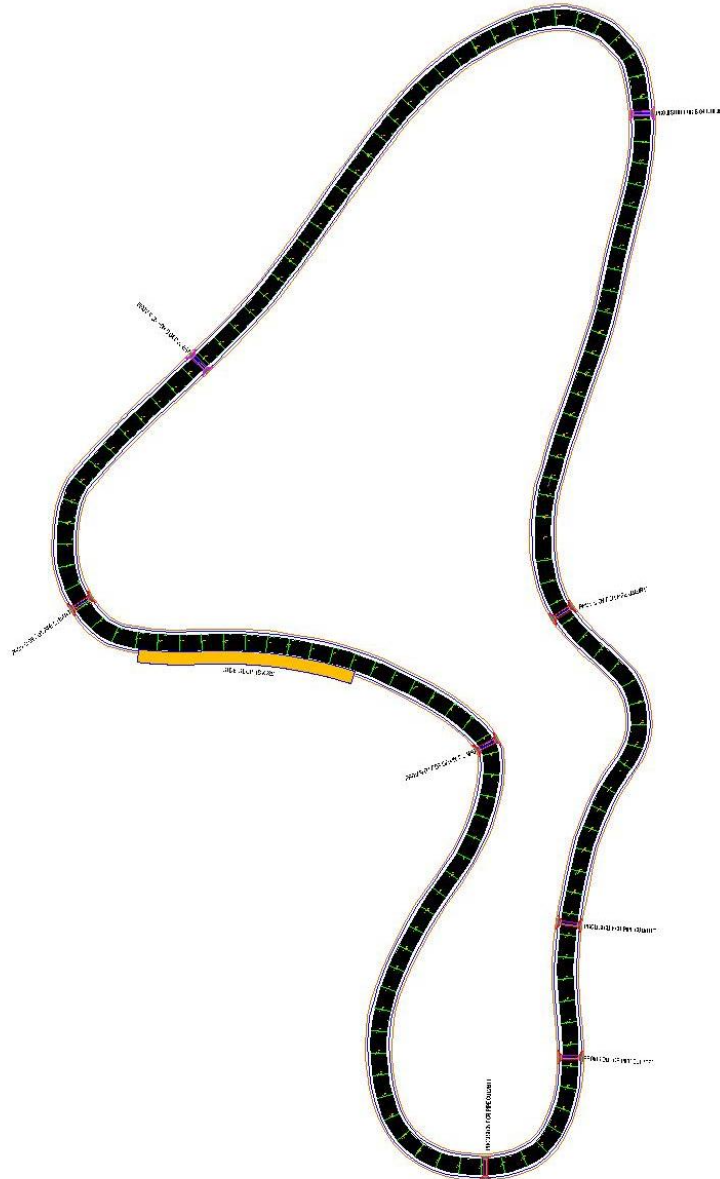
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Layout Plan-Flag A



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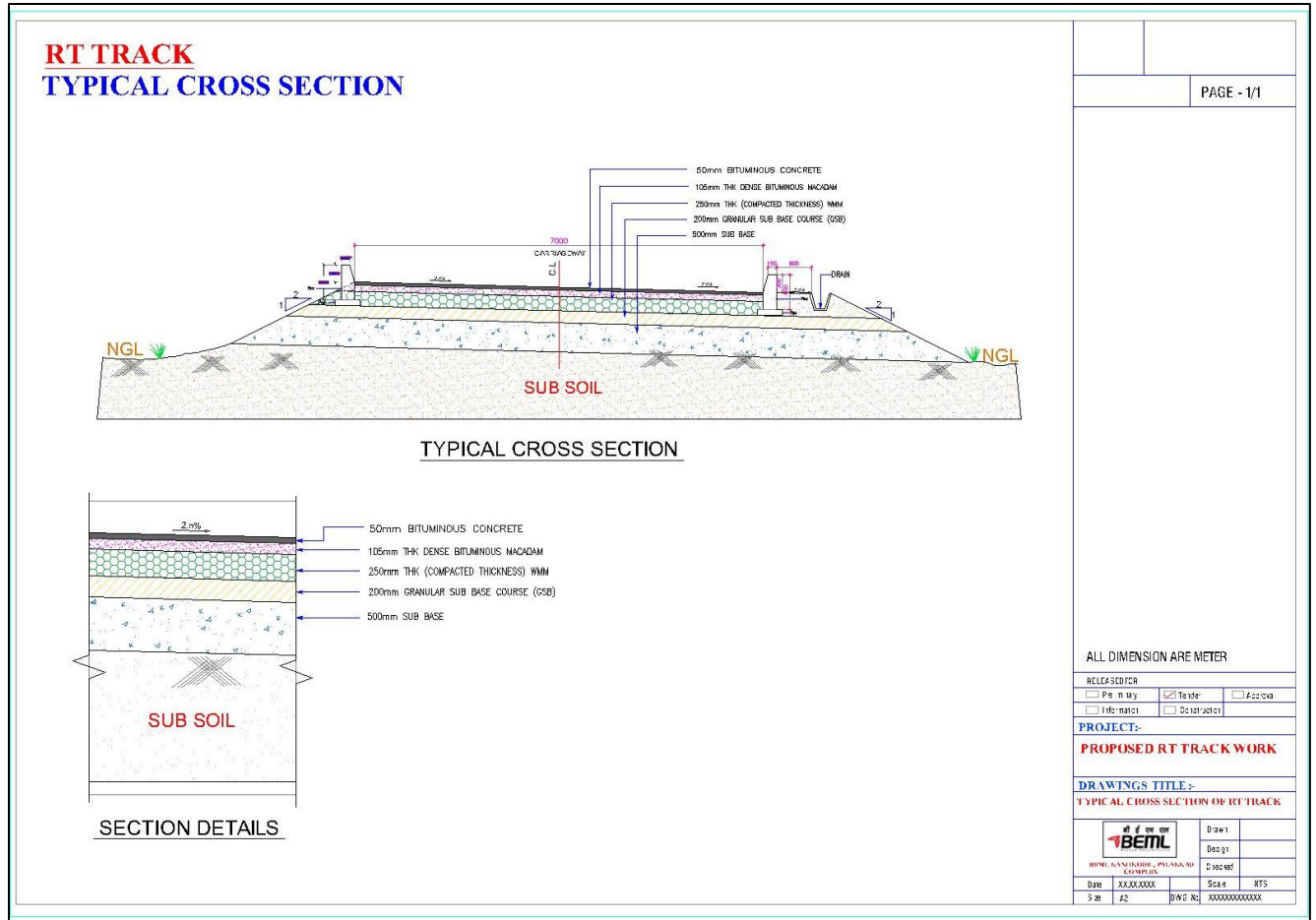
BLOWN UP VIEW OF RT TRACK



RT TRACK DRAWING WITH CULVERT

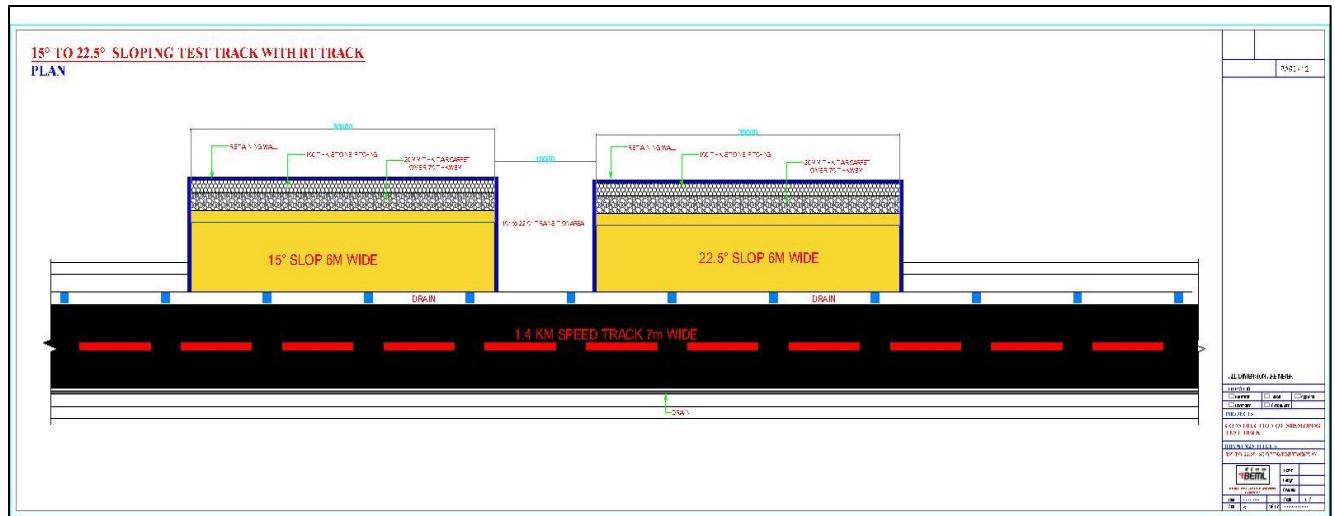
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Cross Section of Road Trials Track

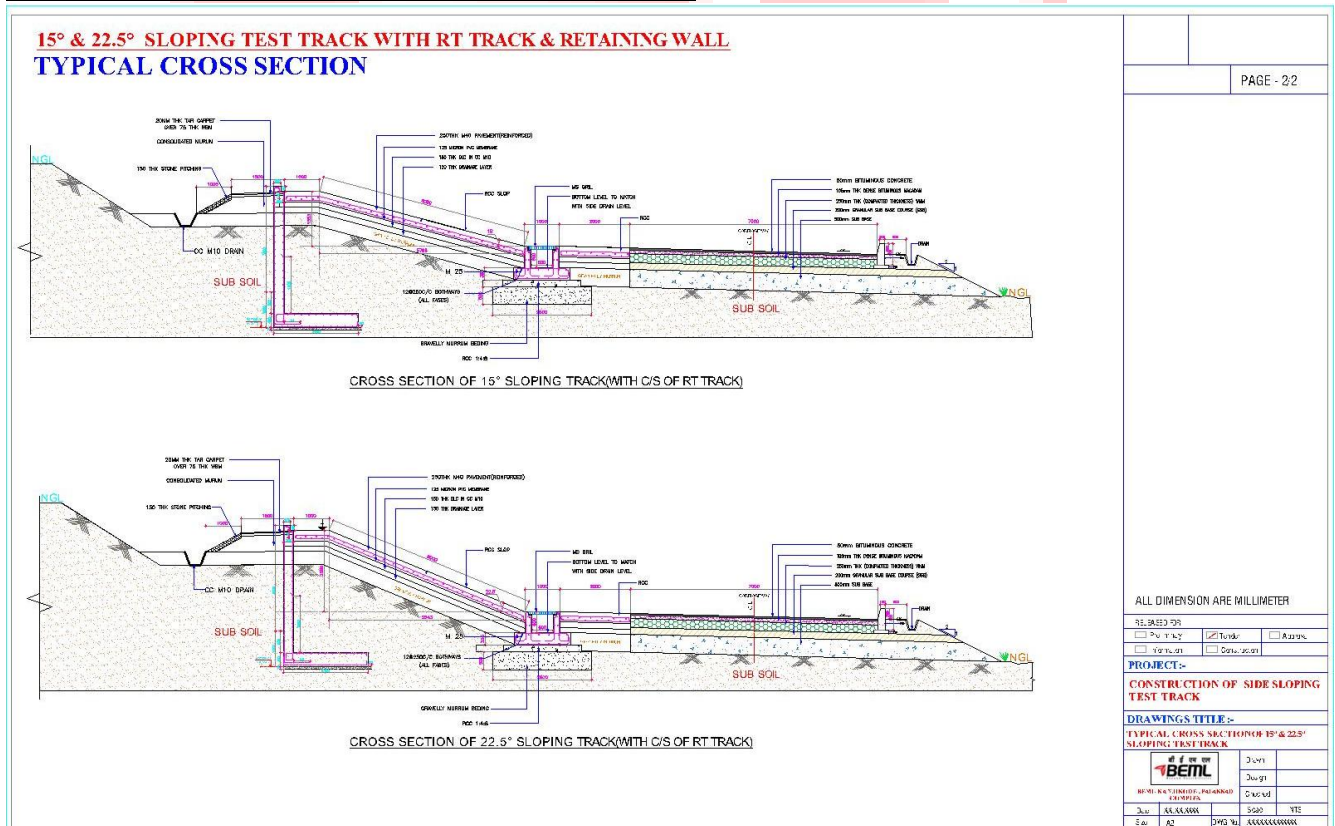


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BLOWN UP PLAN OF SIDE SLOPE



Cross Section of 15-Degree and 22.5-Degree Ramp



Note: The road trails test track geometry and cross section shown above is only Tentative. Bidding firms shall have an engineering approach while concluding the geometry of the test track. The test track so proposed should support BEML vehicles (HMT) to attain the desired speed of 50kmph and traverse

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smoothly along all the curves and gradients of the proposed road. Bidders also to note that 1.4km track length is also tentative measure of length, firms are independent to optimize the length by accommodating the design speed and safe road length to conduct the road trials desired by BEML. Bidders to quote the tender inclusive of all the mandatory works such as drains, culverts, roads, stone pitching, retaining wall wherever required. Any deviation or vary in scope of works shall be taken up in accordance with General Conditions of Contract, Chapter 11. Deviations/Variations Extent, Clause (a), Sub-Clause (i).



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5 GENERAL CONDITIONS OF CONTRACT (GCC)

1. DEFINITIONS & CONDITIONS OF CONTRACT:

1.1 Contract: The contract means all the documents forming part of the tender and acceptance thereof and the formal agreement executed between BEML and the Contractor, together with the entire contents of these documents viz.,

- a. Notice inviting Tender (NIT)/ Invitation to Bid (ITB).
- b. SRM- Supplier Relationship Management
- c. BOQ- Bill of Quantities
- d. GTC- General Terms and Conditions
- e. SG – Standard Gauge, BG – Broad gauge of rail tracks.
- f. Instructions to Bidders.
- g. Technical Specifications & Particulars of specifications, Bill of Quantities.
- h. Tender Drawings.
- i. Price Bid.
- j. Contract Agreement.
- k. General Conditions of Contract as per standard form.
- l. Special Conditions of Contract.
- m. Any Clarifications/Amendments/Addendum issued before submission of tender.
- n. Acceptance Letter by the Accepting Officer and Work Order by Officer-in-Charge and any correspondence that has taken place between the Contractor and BEML from the time the tender is submitted till the acceptance is communicated.
- o. Final Deviation Order signed by BEML & the Contractor.
- p. Mutually agreed amendment/s executed by Parties.

All the above documents taken together shall be deemed to form one contract and shall be complementary to one another.

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

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- I) The expression “Works” or “Work”, shall unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the Works by or by virtue of the Contract contracted to be executed whether temporary or permanent and whether original, altered, substituted or additional.
- II) “WORKS SITE” and “SITE OF WORKS”/” SITE”, shall mean the extent of land which the company places at the disposal of the Contractor or provides access to, from time to time for the purpose of executing the contract Works. In other words, the site shall mean the land, places on, into or where Work is to be executed under the Contract or any adjacent land, path or street or where Work is to be executed under the Contract or any adjacent land, path or street which may be temporarily permitted to be used for the purpose of carrying out the Contract.
- III) “CONTRACTOR”, shall mean the individual, partnership firm, LLP or company undertaking the Works and shall include the legal / personal representative of such individual or the persons composing such firm or LLP or company, or the successors / administrators of such firm or LLP company and the permitted assignees of such individual, firm or company.
- IV) “BIDDER OR TENDERER”, shall means the person, firm, LLP or company submitting a tender (bid) against the invitation to Tender(bid) and includes his/its/their staff, consultants, parent and associate and subsidiary companies, agents, consortium and joint venture partners, sub-contractors and suppliers, heirs, executors, administrators, representatives, successors.
- V) “CONTRACTOR’S REPRESENTATIVE”, shall mean the person responsible for execution of the contract who shall be so declared by the Contractor and who shall be authorised under a duly executed power of attorney to comply with the instructions. He shall be capable of taking responsibility for proper execution of Works.
- VI) “SUB-CONTRACTOR”, shall mean the individual, firm, LLP, Company, Corporation to whom any part of the Work has been sub-contracted by the Contractor and shall include his heirs, his executors, administrators, successors, legal representatives, as the case may be.
- VII) “ENGINEER”, “ENGINEER-IN-CHARGE(EIC)”, “OFFICER-IN-CHARGE (OIC)”, “PROJECT IN CHARGE(PIC)”, shall mean the Engineer / Representatives of BEML who shall supervise and be in charge of the Work or as may be notified at the time of Tender or issuance of Letter of Acceptance.
- VIII) “CONSULTANTS”, “ARCHITECTS” and “CONSULTING ENGINEERS”, means third party consultants/professionals appointed by BEML for the specific project, including the consultant’s representative.
- IX) “ACCEPTING OFFICER”, Authorized officer who accept the contract and under whose authority acceptance letter is issued.
- X) “COMPANY”, “EMPLOYER”, “BEML”, “CLIENT”, SHALL MEAN “BEML LIMITED”.

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XI) “TENDERED VALUE” Shall mean the value of the entire Work as stipulated in NIT (Notice Inviting Tender) at estimated value.

XII) “THE DATE OF COMMENCEMENT OF WORK”, The date of commencement of Work shall be the date of start as specified in acceptance letter or the first date of handing over of the site, whichever is later, in accordance with the phasing if any, as indicated in the tender document.

XIII) “THE ACTUAL DATE OF COMPLETION OF WORK”, shall mean the date mentioned in the Completion Certificate issued by BEML.

XIV) “GST”, shall mean Goods and Service Tax - Central, State and Inter State.

XV) “ORIGINAL CONTRACT VALUE/ Contract sum”, shall mean the sum stated in the Letter of Acceptance/Contract Agreement.

XVI) “LETTER OF ACCEPTANCE (LOA)”, shall mean the letter from the Accepting Authority to the Contractor, conveying acceptance of the Tender. Legally communication of acceptance of offer is considered complete as soon as it is submitted to Postal authorities / Email.

XVII) “DRAWINGS”, shall mean the plans, sections, elevations and details of Works annexed to tender document and such further drawings as the Engineer may issue from time to time, during the progress of Works and shall include tracings and photographic prints.

XVIII) “SCHEDULE BANK”, shall mean a bank included in the second Schedule to the Reserve Bank of India Act 1934, or modification there to

XIX) “TENDER OR BID”, shall mean the offer (Technical and/or Financial) made by individual, firm, LLP, Company or corporation for the execution of the Works.

XX) “BILL OF QUANTITIES(BOQ)”, is a description showing items of work with detailed specification/s and their respective estimated quantities, based on which the Bidder is required to quote.

XXI) “SPECIAL NATURE OF WORK”, shall mean any Work(s) or part thereof for which Defect Liability Period is more than One year as indicated in the BOQ.

XXII) “CONTRACT AGREEMENT/AGREEMENT”, shall mean the agreement between the parties as per the format provided.

1.3 Interpretations:

I) Where the context so requires, words imparting the singular only also include the plural and vice versa. Any reference made to masculine gender includes all genders, as the context may require.

II) Headings and Marginal notes to these General Conditions of Contract shall not be deemed to form part thereof or be taken into consideration in the interpretation or construction thereof or of the contract.

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1.4 WORKS TO BE CARRIED OUT:

The Work to be carried out under the Contract shall, except as otherwise provided in these conditions, include all labourers, materials, tools, plants, equipment, transport, etc. which may be required in preparation of and for and in the full and entire execution and completion of the Works. The descriptions given in the Bill of Quantities shall, unless otherwise stated, be held to include wastage on materials, carriage and cartage, carrying and return of empties, hoisting, setting, fitting and fixing in position and all other labour necessary in and for the full and entire execution and completion of the Work as aforesaid in accordance with good practice and recognized principles.

1.5 SUFFICIENCY OF TENDER:

a) The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the Works and of the rates and prices quoted in the Bill of Quantities, which rates and prices shall, except as otherwise provided, cover all his obligations under the contract and all matters and things necessary for the proper completion and maintenance of the Works, including the Site conditions.

b) Quoted rates shall also include the following:

(I) Working hours as per factory timings.

(II) Movement of men, material and stacking all as per conditions of contract and as directed by the OIC/EIC.

(III) Removing of surplus materials and stacking all as per conditions of contract and as directed by the OIC/EIC.

(IV) Shall be for Work on all floors and heights unless otherwise specifically sought by BEML in tender documents.

1.6 DISCREPANCIES, ADJUSTMENT OF ERRORS AND ORDER OF PRECEDENCE:

The several documents forming the Contract are to be taken as mutually explanatory of one another; detailed drawings being followed in preference to small scale drawing and figured dimensions in preference to scale. If any contradictions are observed in different components of the tender, the following precedence shall be observed:

i. Mutually agreed amendment/s executed by Parties.

ii. Final Deviation Order signed by BEML & the Contractor

iii. Acceptance Letter by the Accepting Officer and Site handing over letter (workorder) by Officer-in-Charge.

iv. Any written clarifications issued by OIC/EIC after submission of tender.

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- v. Any Clarifications/Amendments/Addendum issued before submission of tender.
- vi. Notice inviting Tender (NIT)/ Invitation to Bid (ITB)
- vii. Instructions to Bidders.
- viii. Contract Agreement.
- ix. Price Bid / BOQ.
- x. Technical Specifications & Particulars of specifications.
- xi. Tender Drawings.
- xii. Special Conditions of Contract.
- xii. General Conditions of Contract, as per standard form.

Note:

1. If there are varying or conflicting provisions made in any one document forming part of the Contract, the PIC/OIC/EIC shall be sole deciding authority with regard to the intention of the document and his decision in this respect shall be final and binding on the Contractor.
2. In the event of any error in the description or in the quantity in Price bid or any omission there from shall not vitiate the Contractor or release the Contractor from the execution of whole or any part of contract comprised there in according to the drawings and specifications, or from any of his obligations under the contract.

1.7 SIGNING OF CONTRACT:

A) Contractor on receipt of Purchase order/Work order, shall submit the signed copy of same accepted in all respect within seven days from date of Purchase order/Work order to PIC/OIC/EIC. Further, Contractor, shall submit agreement on a non-judicial stamp paper of suitable value in a prescribed format provided in the tender within 30 days from the date of Acceptance Further, no payment for the Work done will be made unless contract is signed by the Contractor.

Contractor shall sign the contract consisting of:-

- i) Formal contract agreement on a non-judicial stamp paper in a prescribed format provided in the tender.
- ii) The Notice inviting tender (NIT), all the documents including drawings, if any, forming the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.
- iii) All Standard forms mentioned in the tender document consisting of

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a) Various standard clauses with corrections up to opening date of tender along with annexure thereto.

b) Safety Code mentioned in the tender.

B) Any Agreement, Bank Guarantee, any Hypothecation deed etc. required to be executed under this Contract shall be submitted by the Contractor with proper stamp duty as per the Formats enclosed respectively. However, the Accepting Officer shall have the rights to alter, modify, delete any content in such formats as deemed fit by him.

1.8 LANGUAGE OF CONTRACT & MODE OF CORRESPONDENCE

a) Language of Contract:

The Contract document shall be drawn up in English. All certificates, notices, written orders or letters, to be given by the BEML or the PIC/OIC/EIC to the Contractor, shall be deemed to have been served, if the same are delivered to the Contractor or his Authorised Representative, or delivered or left at or posted by speed post /registered post to the given address of the Contractor or Contractor's registered office or principal place of business and essentially delivering the same by e-mail duly attached with scanned copy of such certificates, notices, written orders or letters and Proof of Dispatch (POD). Such documents shall be deemed to have been received on the day they are left or delivered, or in the case of postal transmission, on the day they would ordinarily have reached but not exceeding 7 days from the date of posting inclusive of day of posting, in any case.

b) Address for communication:

The Contractor shall furnish his postal address/ registered office address which shall also include e-mail address for communication.

c) Change of Address:

Either party may change the nominated address by prior written notice to the other party. However, either party shall not change their email address during currency of the contract without obtaining prior consent from the PIC/OIC/EIC.

1.9 LAWS GOVERNING THE CONTRACT:

The contract shall be governed by the laws in force in India, and the State of Karnataka, to the extent they may apply.

1.10 HANDING OVER OF SITE FOR COMMENCEMENT OF WORK:

The Contractor having signed the contract, the PIC/OIC/EIC will forthwith give him notice to commence the Work by issuing Work order mentioning handing over of Site and the Contractor shall upon receipt of such notice commence the works and carry them on at such point or points and in such portions as directed by PIC/OIC/EIC from time to time. Work shall start on priority basis as per BEML requirement/notification. However, if any portion of site is not made available by BEML

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for any reason whatsoever no claim on account of this towards compensation or otherwise will be entertained. The handing over of Site for carrying on the Works shall not confer any right over work site except temporary possession only for the purpose of the Works under the Contract.

2. SECURITY DEPOSIT

a) The successful Bidder shall be required to furnish security deposit for the fulfillment of contract and the amount shall be 10% of the value of the contract, **including GST Portion to be paid by the contractor through only E-mode BANK GURANTEE (e BG). No waiver can be allowed in this regard. This will supersede other instructions mentioned elsewhere regarding payment mode of security deposit.** Such security deposit shall not entail any interest payment on refund.

b) The Contractor shall submit E-Bank Guarantee (E-BG) and the same shall remain valid for a period up to 3 months beyond the date of completion of all contractual obligations of the contractor. (i.e. up to Contract period + 3 months claim period) i.e. 15 months validity period. If the work completes beyond the stipulated period given, the validity of the e-BG should be extended accordingly.

c) The above **E-mode BANK GURANTEE (e BG)** shall be held by the Company as security for the satisfactory performance of the contract. All compensations or other sums or money payable by the contractor to the Company under the terms and conditions of this contract shall be deducted from this security deposit or from any other sums that shall be due, or shall become due to the contractor by the Company on any account whatsoever and in the event of the security deposit being reduced by reasons of any such deductions the contractor shall within ten days thereafter make good these deductions.

2.1 Claims of Security Deposit:

BEML shall have full rights whatsoever to encash any bank guarantee submitted under this Contract at any time during the validity of the guarantee and the Contractor shall have no right or claim whatsoever in the matter of encashment of the bank guarantee amount by BEML and any disputes/claim whatsoever in this regard shall only be settled by means of Dispute Resolution as provided for in contract and the decision of BEML as to what amount is due to BEML from the said bank against the guarantee and as to Contractor has committed breach of contract or not, shall be final and binding on the guarantor-bank and the Contractor shall have no right to interfere with the same and the bank shall have full rights in terms of the guarantee to make immediate payments against the bank guarantee to BEML without the Contractors consent and without referring the matter to the Contractor.

Notwithstanding the above and in addition thereto, BEML shall make a claim under the performance guarantee (notwithstanding and/or without prejudice to any other provisions in the Contract Agreement) in the event of:

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- i. Failure by the Contractor to pay BEML any amount due, either as agreed by the Contractor or determined under any of the Clauses/Conditions of the agreement, within 30 days of the service of notice to this effect by OIC/EIC.
- ii. BEML on expiry of the contract, shall retain such portion of the said bank guarantee as may be considered sufficient to cover any incorrect or excess payments made on the bills to the Contractor, until the final audit report on the account of Contractor's bill has been received and examined.
- iii. In the event of the contract being determined or rescinded under provision of any of the Clause/Condition of the contract, the e-performance guarantee shall stand forfeited in full and shall be absolutely at the disposal of the BEML.

2.2 REFUND OF SECURITY DEPOSIT:

The above deposit, as the name itself signifies, shall be held as Security for performance of the contract. security deposit shall be refunded to the contractor on written demand from the contractor after the expiry of the DEFECT LIABILITY PERIOD, rectifying all defects noticed during the defect liability period indicated by BEML. with the recommendation of the Chief Engineer, provided the Chief Engineer is satisfied that there are no dues outstanding against the contractor.

- a) Any refund of security deposit shall be made only with the recommendation of the Chief Engineer after completion of Defect Liability period.

3. LIQUIDATED DAMAGES FOR DELAY IN COMPLETION OF WORKS:

- a) In case the Contractor fails to complete the works and clear the site on or before the stipulated time mentioned in the Work order he shall without prejudice to any other right or remedy of the Company in this behalf pay, as agreed Liquidated Damages and not as penalty, pay sum equal to 0.5% of the Contract sum (excluding non-tendered/extra items, if any) for every week's delay subject to maximum of 10% of the total final bill value of the Contract.
- b) Liquidated Damages shall be applicable in the following cases:
 - i) Where the contractor fails to complete the work within the stipulated time;
 - ii) Where the extension of time is granted with levy of LD.
 - iii) Where extension of time is granted without levy of LD but the contractor has failed to complete the work within the extended period.
- c) The amount of Liquidated Damages shall be adjusted or set off against any sum payable to the contractor under this or any other contract/s awarded by the Company.
- d) In case where the contract is subjected to levy of LD, the Chief Engineer shall be the authorised person to issue 'Work Completion Certificate', indicating the LD in the certificate, which shall be final and binding the Company as well as the Contractor concerned.

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4. EXTENSION OF TIME:

The time allowed for execution of the Works as specified in the tender document or the extended time in accordance with these conditions shall be the essence of the contract. The execution of the Work shall commence from such time period as mentioned in Tender/PO or from the date of handing over of the site, notified by the OIC/EIC, whichever is later. If the Contractor commits default in commencing the execution of the Work as aforesaid, the e-performance guarantee shall be forfeited by BEML and shall be absolutely at the disposal of the BEML without prejudice to any other right or remedy available in law

4.1 As soon as possible but within 7 (seven) Working days of award of Work and in consideration of

- a) Schedule of handing over of site as specified in Work order.
- b) Schedule of issue of designs/Drawings as specified in Work order.
- i) The Contractor shall submit a Time and Progress Chart for each mile stone. The OIC / EIC may within 7 (seven) Working days thereafter, if required modify, and communicate the program approved to the Contractor failing which the program submitted by the Contractor shall be deemed to be approved by the Officer -in Charge. The Work programme shall include all details of balance drawings and decisions required to complete the contract with specific dates by which these details are required by Contractor without causing any delay in execution of the Work. The chart shall be prepared in direct relation to the time stated in the contract documents for completion of items of the Works. It shall indicate the forecast of the dates of commencement and completion of various trades of sections of the Work and may be amended as necessary by agreement between the OIC/EIC and the Contractor within the limitations of time imposed in the Contract documents
- ii) In case of non-submission of construction programme by the Contractor, the program approved by the OIC/EIC shall be deemed to be final and binding on the Contractor.
- iii) The approval by the OIC/EIC of such programme shall not relieve the Contractor of any of the obligations under the contract.
- iv) The Contractor shall submit the Time and Progress Chart and progress report using the mutually agreed software or in other format decided by OIC/EIC for the Work done during previous month to the Officer-incharge on or before 5th day of each month. This shall also indicate the equipment & manpower schedule. Contractor shall maintain hindrance register at site wherein details of physical hindrances are recorded and it shall be attested by the Engineer-in-charge or his authorized representative at site, as and when the hindrances have occurred.

4.2 If the Work(s) be delayed by:

- i. Force majeure Clause as defined in NIT, or
- ii. Serious loss or damage caused by fire to the Works, or

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iii. Civil commotion, local commotion of workmen, strike or lockout, affecting any of the trades employed on the Work (by reason not attributable to Contractor), or

iv. Delay on the part of other Contractors or trades men engaged by BEML in executing Work not forming part of the contract, or

v. Any other cause like above which, in the reasoned opinion of the BEML 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 OIC/EIC but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the BEML to proceed with the Works. It is made clear that local commotion, strike or lock-out, etc. of personnel of Contractor or its Sub-contractor shall not entitle any relief to the Contractor.

The Contractor shall have no claim of damages for extension of time granted or rescheduling of milestone/s for events listed in 4.2.

4.3 In case the Work is hindered by the BEML or for any reason / event, for which the BEML is responsible, BEML, if justified, give a fair and reasonable extension of time and reschedule the milestone/s for completion of Work. Such extension of time or rescheduling of milestone/s shall be without prejudice to any other right or remedy of the parties in contract or in law; provided further that for concurrent delays under this sub clause and sub clause (4.2) to the extent the delay is covered under sub clause (4.2) the Contractor shall be entitled to only extension of time and no damages

4.4 Request for rescheduling of Milestones or extension of time, to be eligible for consideration, shall be made by the Contractor in writing for seeking rescheduling of milestones or extension of time to the OIC/EIC, not later than 14 days of the Scheduled date of Completion. The Contractor shall indicate in such a request the period by which rescheduling of milestone/s or extension of time is desired. With every request for rescheduling of milestones, or if at any time the actual progress of Work falls behind the approved programme by more than 10% of the stipulated period of completion of contract, the Contractor shall produce a revised programme which shall include all details of pending drawings and decisions required to complete the contract and also the target dates by which these details should be available without causing any delay in execution of the Work.

In any such case the BEML may give a fair and reasonable extension of time for completion of Work or reschedule the milestones. OIC/EIC shall finalize/ reschedule a particular milestone before taking an action against subsequent mile stone. Such extension or rescheduling of the milestones shall be communicated to the Contractor by the OIC/EIC in writing, within 21 days of the date of receipt of such request from the Contractor in prescribed form. In event of non-application by the Contractor for extension of time OIC/ EIC after affording opportunity to the Contractor, may give, supported with a programme (as specified under 4.4 above), a fair and reasonable extension within a reasonable period of occurrence of the event. Any or all such extension/s, if any, shall be deemed to have been granted under paragraph 3 of Section 55 of the Indian Contract Act, 1872 with right to claim LD, if intended. Contractor shall be required to continue the Works till the decision regarding extension of time is communicated by OIC/EIC.

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4.5 In case the Work is delayed by any reasons, in the opinion of the OIC/EIC, by the Contractor for reasons beyond the events mentioned in Clause 4.2 or Clause 4.3 or Clause 4.4 and beyond the justified extended date; without prejudice to right to take action, BEML may grant extension of time required for completion of Work without rescheduling of milestones. The Contractor shall be liable for levy of liquidated damages for delay for such extension of time.

For all contracts awarded, time is the essence of the contract. The contractor is bound to complete the work within the stipulated time. The Chief Engineer has to assess the delay arising out of default of the contractor. Where the delay is due to default of the contractor, and if there is no financial loss due to such delay, the Chief Engineer can recommend for grant of extension of time by the same authority who accepted the tender/awarded the contract, subject to recording the reasons for granting such extension of time.

5. MEASUREMENT BOOK(MB)

i) OIC/EIC shall, except as otherwise provided, ascertain and determine by measurement the value of Work done in accordance with the contract.

ii) All measurements of all items having financial value shall be entered by the Contractor and compiled in the measurement Book as per the format so that a complete record is obtained of all the items of Works performed under the contract.

iii) All such measurements and levels recorded by the Contractor or his authorized representative along with BEML authorized representative from time to time, during the progress of the Work, shall be got checked by the Contractor from the OIC/EIC as per interval or program fixed in consultation with Officer-in-Charge or his authorized representative. After the necessary corrections made by the OIC/EIC, the measurement sheets shall be returned to the Contractor for incorporating the corrections and for resubmission to the OIC/EIC for the dated signatures by the OIC/EIC and the Contractor or their representatives in token of their acceptance.

iv) Whenever bill is due for payment, the Contractor would initially submit draft measurement sheets after joint measurement and these measurements would be got checked/test checked from the OIC/ EIC.

v) The Contractor shall, thereafter, incorporate such changes as may be done during these checks/test checks in his draft measurements, and submit to the BEML a measurement book, duly bound. The OIC/EIC and/or his authorized representative would thereafter check this MB, and record the necessary certificates for their checks/test checks.

vi) The final, fair measurement book given by the Contractor, duly bound 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 MB and bound, after getting the earlier MB cancelled by the OIC/EIC. The Contractor shall submit two spare copies of such MB's for the purpose of reference and record of BEML.

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vii) The Contractor shall also submit to the OIC/EIC separately his abstract of cost and the bill based on these measurements, duly bound along with two spare copies of the bill. Thereafter, this bill will be processed for payment.

viii) The Contractor shall, without extra charge, provide all assistance with every appliance, labour and other things necessary for checking of measurements/levels by the OIC/EIC or his representative.

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

x) The Contractor shall give not less than seven days' notice to the Officer-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 Officer-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 Officer-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.

xi) The payments to Contractors for the Work done or other services rendered are made on the basis of measurement recorded in the measurement book.

xii) The measurement book is the basis of all accounts of quantities of Work done by Contractor. It should be so written that the transactions are readily traceable.

xiii) OIC/EIC or his authorized representative may cause either themselves or through another officer of the department to check the measurements recorded by Contractor and all provisions stipulated herein above shall be applicable to such checking of measurements or levels.

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

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6. RAR (RUNNING ACCOUNT REMITTANCE) BILLS PAYMENT

(i). Payment will be made as per completion of the stages as indicated in Table - (A) and submission of the bill duly certified by the civil engineering department.

Following documents shall be submitted by the Contractor along with each RAR Bill:

a) Delivery challan /Private property form (PP form) for the materials incorporated in the Work for which bill is submitted for payment.

b) Wage certificate for proper payment to the labourers as per labour laws.

c) Compliance of statutory payments as per law for the labours/ Workers engaged such as ESI, PF remittance challans etc.

d) Test certificates for various materials wherever required as decided by EIC.

e) Laboratory Test certificates if carried out during the period of billing from NABL accredited laboratory to ensure the quality as per the contract specification / standards specified.

f) The theoretical consumption of cement, re-conciliation statement of reinforcement and Structural Steel statements, RMC statement must be enclosed along with each bill for civil Works.

g) RAR Bill shall not be considered having been submitted by the Contractor unless it is in the manner and accompanied by documents as set forth above.

(ii). On submission of RAR bills by Contractor to the OIC/EIC, 50% of the RAR Bill value shall be released within Ten (10) working days after technical scrutiny which shall involve consideration of:

a) Value of Work executed after deducting all previous running accounts payments already paid.

b) Cost of stores issued by BEML if any

c) Charges for electricity and water supplied by BEML if any.

d) Balance mobilization advance with interest recoverable from the Contractor, if any; and

e) Any other dues recoverable by BEML from the Contractor under the present or any other contract.

f) Penalties/compensation if any due to non-compliance of statutory provisions

g) Withholding for the compensation for delay in completion of Work.

h) The balance 25% of the RAR Bill value shall be released after detailed scrutiny by BEML within Twenty-Eight (28) working days.

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(iii). The payment timelines as stated above is on an ideal condition and in the even of any delay in payment, no claims whatsoever due to delays on payment including that of interest shall be payable to the Contractor.

(iv). The payments towards the items ordered as deviation, either due to variation in quantity or due to inclusion of non-tendered item will be allowed in RAR Bill subject to approval of same by the BEML.

(v). The item of Work partially executed / being executed shall be admitted for payment in RAR Bill as per the certification of OIC/EIC. The statement showing rate analysis how part rates are derived is to be enclosed along with bill. A register shall be maintained for this purpose at site. The rate for such item as decided by OIC/EIC is final and binding on the Contractor.

(vi). Any payment made by BEML against an RAR Bill shall be regarded as payment by way of advances against final payment only and shall not preclude the requiring of bad, unsound and imperfect or unskilled Work to be rejected, removed, taken away and reconstructed or re-erected. Any certificate given by the OIC/EIC relating to the Work done or materials delivered forming part of such payment, may be modified or corrected by any subsequent such certificate(s) or by the final certificate and shall not by itself be conclusive evidence that any Work or materials to which it relates is/are in accordance with the contract and specification. In case of any discrepancy, the OIC/EIC shall have the right to alter, modify, reduce or diminish the quantities or classification entered in the Measurement Books, any such interim payment, or any part thereof shall not in any respect conclude, determine or affect in any way powers of the OIC/EIC under the contract or any of such payments be treated as final settlement and adjustment of accounts or in any way vary or affect the contract. In such cases, BEML shall have the right to recover any amount paid in an earlier bill/bill from a subsequent bill/bill and should the amount to be recovered be more than the amount of the subsequent bills, the Contractor shall on demand from the OIC/EIC immediately refund the amount to the BEML within 7 days, failing which he shall have to pay interest 1% per month till the said extra amount is paid back by him.

(vii). Pending consideration of extension of date of completion, RAR Payments can continue to be made as herein provided without prejudice to the right of BEML to take action under the terms of this Contract for delay in the completion of Work, if the extension of date of completion is not granted by the competent authority.

6B. PAYMENT OF PRE - FINAL BILL

RAR Bill post the completion of Work can be admitted for payment and can be considered as Prefinal Bill in the following cases:

I) Where the Final Deviation quantities including NTI are agreed without any protest / reservations by the Contractor, the Contractor has, in writing, accepted the final quantities as per the Pre-Final Bill and Final Deviation Order is pending approval of BEML.

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II) Where the Contractor is not in a position to prepare and submit the Final Bill for various reasons which are attributable to Contractor and Contractor requests for payment of Pre- Final Bill with the valid reasons.

III) In case extension of time is not approved even after completion of the Work, the applicable LD amount shall be withheld and released only after approval of extension of time along with Final Bill.

7. COMPLETION CERTIFICATE AND COMPLETION PLANS

Within ten days of the completion of the Work, the Contractor shall give notice of such completion to the OIC/EIC and within thirty days of the receipt of such notice, the OIC/EIC 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:

i. To be rectified by the Contractor and/or ii. 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 was 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 OIC/EIC. If the Contractor fails 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, BEML may at the expense of the Contractor remove such scaffolding, surplus materials and rubbish etc., and dispose of the same as he(OIC/EIC) 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.

8. PAYMENT OF FINAL BILL

On completion of the Work and recording of measurements of all the items executed including NTI's and deviations, a final deviation statement will be drawn duly representing the actual quantum of Work executed against each item in the BOQ, Non-tendered Items and deviations.

I) On receipt of approved final deviation order from PIC/OIC/EIC, the Contractor shall submit the Final Bill in the prescribed format within three months. To enable the Contractor to do so, the OIC/EIC will furnish to him necessary statements showing recoveries to be made on account of stores issued, hire charges for tools and plant supplied, charges recoverable for electricity and water consumed etc., if any.

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II) Along with submission of the Final Bill, the Contractor shall sign a 'No Claim Certificate' against BEML stating that they do not have any claim or demand in respect of the Contract except for the payment of Final Bill and the Defect Liability Deposit or any other refundable deposits like, retention money, if any etc. If the Contractor does not sign the 'No Claim Certificate', the amount due will not be disbursed to the Contractor pending issue of such No-claim Certificate or settlement of disputes, if any. No interest shall be paid by BEML on any pending dues in case No-claim Certificate is not issued or any dispute is raised by the Contractor.

III) No further or additional claims shall be made by the Contractor after submission of the final bill and any further or additional claims (if any) shall be deemed to have been unconditionally waived and extinguished. The Contractor shall not be entitled to make any claim whatsoever against BEML under or by virtue of or arising out of this Contract, nor shall BEML entertain or consider any such claim, if made by the Contractor, after he has signed a "No Claim Certificate in favour of BEML. The Contractor shall be debarred from disputing the correctness of the item/s covered by "No Claim Certificate". The "No Claim Certificate" furnished by the Contractor shall be treated as the "Discharge Certificate" by the Contractor, which discharges the BEML from all liabilities under the Contract, except to the extent provided in sub-clause (ii) above.

IV) Where the Contractor is not in a position to prepare the final bill, or not submitting the final bill due to whatsoever reasons even after three (3) months from approval of Final Deviation Order, the OIC/EIC may give due notice by registered post/speed post indicating a specific time limit for submission of final bill, which shall not exceed 45 days from the expiry of the said three-month period.

V) If the Contractor does not respond and submit the Final Bill, within the aforesaid period of 45 days, the Officer- in- charge / Engineer In Charge shall be entitled to prepare & process the Final Bill ex-party and the same will be binding on Contractor, and no further claim or submission of any bill (final or otherwise) from the Contractor shall be accepted.

VI) On receipt of the Final Bill duly signed by the Contractor, the same will be scrutinized by the Engineer-in-Charge to see that the claim is in order. He will also attach to the Final Bill, a statement showing the Stores issued for incorporation in Work along with recoveries, if any, a statement showing the theoretical requirement and actually incorporated by the Contractor in the Work, and whether there has been any over – issue / under– issue of stores to the Contractor.

VII) Where either the Contractor has not fully utilized the Stores issued for incorporation in the Work or where the quantities used are less than those theoretically required resulting in Work being below specifications, BEML will examine the case to see what action should be taken against the Contractor.

VIII) Final payment shall be as below:

Completion of Construction period	90% of the total civil works cost.
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Upon completion of 3 years Defect Liability Period	5% of hold amount will be released linking to performance parameters.
Upon completion of 5 years Defect Liability Period	5% of hold amount will be released linking to performance parameters.

8A. PAYMENT OF CONTRACTOR'S BILLS TO BANKS & RECOVERY OF TAXES.

i. All payments to the Contractor shall be made through Electronic Clearing System (ECS) or National Electronic fund transfer (NEFT) or Real time gross settlement (RTGS). The Contractor shall furnish his bank account details, as certified by his Bankers. All amounts payable to the Contractor shall be directly credited to his bank account.

In case, the Contractor is having his account with a bank not having Electronic Clearing System (ECS or NEFT, RTGS), the Contractor is required to open a bank account with the bank having this facility.

All payments to the Contractor shall be made by above means only.

ii. **TAXES**

a) PAYMENT OF GST:

Contractor shall be entitled to reimbursement of GST paid, upon submission of GST Invoice and GST Challan for having paid the same to the Department.

b) PAYMENT OF WELFARE CESS:

It shall be the sole responsibility of the Contractor as employer to ensure compliance of all the statutory obligations under the building and other Construction Workers' (Regulation of Employment and Conditions of Service) Act, 1996 (hereafter referred as "BOCW Act") and the building and other Construction Workers' Welfare Cess Act, 1996 and the rules made thereunder (hereafter referred as "Cess Act"). The Contractor undertakes that it shall apply and obtain registration certificate specifying the scope of work under the relevant provisions of the Construction Workers' Act from the appropriate Authorities prior to commencement of work under the Contract. If at any point of time during the contract period, non-compliance of the provisions of the Construction Workers' Act and the Cess Act, and the rules made thereunder is observed, BEML reserves the right to withhold a reasonable amount from the payables to discharge any obligations on behalf of Contractors. The Contractor shall declare to undertake any liability or claim arising out of employment of building workers and shall indemnify BEML from all consequences / liabilities / penalties in case of non-compliance of the provisions of the BOCW Act and the Cess Act.

c) RECOVERY OF INCOME TAX:

Recovery of Income Tax under Section 194(c) of Income Tax 1961 introduced by the Finance Act 1972 and further Amendments thereon will be made from the gross payments payable at source on all contract Works with value above Rs.10,000/-, at the prevailing rates.

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In addition to above tax recoveries, any statutory recoveries introduced by the Central or State Governments can also be recovered and deposited as mandated by the respective Governments.

9. MATERIALS TO BE PROVIDED BY THE CONTRACTOR

I) The Contractor shall, at his own expense, provide all materials, required for the Works other than those which are stipulated to be supplied by the BEML as mandated in the tender document. The Contractor shall, at his own expense and without delay, supply to the Engineer-in- Charge samples of materials to be used on the Work and shall get these approved in advance. All such materials to be provided by the Contractor shall be in conformity with the specifications laid down or referred to in the contract. The Contractor shall, if requested by the OIC/ EIC furnish proof, to the satisfaction of the OIC/EIC that the materials so comply, including with appropriate laboratory test reports, if required. The OIC/EIC shall within thirty days of supply of samples or within such further period as he may require intimate to the Contractor in writing whether samples are approved by him or not. If samples are not approved, the Contractor shall forthwith arrange to supply to the OIC/EIC for his approval, fresh samples complying with the specifications laid down in the contract. When materials are required to be tested in accordance with specifications, approval of the OIC/EIC shall be issued after the test results are received.

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

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

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

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9A QUALITY CONTROL DURING EXECUTION OF WORK

I) Quality Lab: For field testing of materials and Workmanship, quality lab shall be set-up by the Contractor at Works site. This shall be in conjunction to the approved quality plan.

II) Testing of materials: Testing of materials will be made as per Quality Plan provided in the Contract in the field laboratory established at the site. However, certain tests which cannot be done at site shall be got done at NABL approved laboratory and expenditure on this account shall be borne by the Contractor and no extra claim whatsoever shall be entertained.

III) Regular mandatory test and any additional tests if required, shall be carried out in accordance with the procedure laid down in Indian Standards/ as directed by Engineer-in- Charge by the Contractor at his cost.

IV) A list of mandatory tests to be conducted is indicated in the Quality plan it may be specifically noted that the tests to be conducted are not limited to the mandatory tests alone and additional test if required and directed by the Engineer-In-Charge on any material including the approved Works etc., shall be carried out by the Contractor at his cost.

(V) In the case of non-availability of cube test results for any batch of concrete / structural member, the Engineer may resort to core test or any other destructive/ Semi destructive /non- destructive tests for ascertaining the strength of concrete. If the strength of the concrete is found to be lower than the strength specified, the remedial measures and penal recovery thereof will be regulated as per relevant IS code/ Standards.

VI) The Contractor may specifically note that the testing shall be done in Govt. / Govt. (NABL) approved laboratory only.

VII) Total station, Theodolite, levelling instruments, prismatic compass / chain, steel and metallic tapes and all other surveying and material testing instruments found necessary on the Works shall be provided by the Contractor at his expense for the due performance of this contract as instructed by the Engineer-in-Charge.

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

I) The Works, the subject of the contract, specified and provided for, or that may be necessary to be done to form and complete any part thereof, shall be executed and completed in the best and most substantial manner, with materials of the best and most approved quality of their respective kinds, agreeable to the particulars contained in or implied by the specification, or as referred to and represented by the drawings and memorandum thereon/or as referred to by any of the said further drawings, instructions and directions, and shall be to the full satisfaction of the OIC/EIC.

II) The Contractor shall comply with the provisions of the contract and with the care and diligence execute and maintain the Works and provide all labour and materials, tools and plants including for measurements and supervision of all Works, structural plans and other things of temporary or

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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.

III) The OIC/EIC shall have full liberty at all reasonable times to inspect and examine the Works, materials and Workmanship which to him, may appear defective, unfit or improper for the several purposes to which they are applied, or intended to be applied, or not in accordance with the specifications of the said drawings, memoranda instructions or directions respectively and every such time reject any or all of such Works, materials and Workmanship.

11. DEVIATIONS/ VARIATIONS EXTENT

BEML shall have power

(i) to make alteration in, omissions from, additions to for the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the Work, and

(i) to omit a part of the Works in case of non- availability of a portion of the site or for any other reasons and the Contractor shall be bound to carry out the Works in accordance with any instructions given to him in writing signed by the OIC/EIC and such alterations, omissions, additions shall form part of the contract as if originally provided therein and any altered, additional which the Contractor may be directed to do in the manner specified above as part of the Works, shall be carried out by the Contractor on the same conditions in all respects.

a) Every deviation shall be subject to the limits specified as under:

i) The net value of all deviations including non-tendered items, of the value of work completed, shall not exceed 20% of the approved contract value.

ii) Even in cases where, the net value of all deviations excluding non-tendered items is less than 20%, of the approved contract value, but more than 40% in respect of any individual item, indicated in BOQ,

iii) In case of non-tendered items, the total value of such non-tendered items shall not exceed 5% of the approved contract value. In case the deviations exceed 5% of the approved contract value.

Then shall be treated as amendment to contract. Any variation in above mentioned limit shall be mutually discussed with PIC/OIC/EIC and amendment to contract will be issued.

b) The basis for ascertaining the non-tendered items shall be as follows:

i) The value of all deviations shall be ascertained by measurements, on the basis of the rates or prices for similar work in the bill of quantities of the same contract in so far as such rates or prices apply.

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- ii) Where the rates or prices in Bill of Quantities do not apply, the value shall be based upon rates or prices deduced there from to the extent practicable to do so.
- iii) The rates for Non-Tendered (NT) items shall be based on the SSR rates after proportionate adjustment in comparison with the tendered rates of like items in the contract. The basis to be adopted for working out the NT rate is the comparison of the NT item with similar trade item in the bill of Quantity for which the contractor has quoted.
- iv) Wherever NT items cannot be deduced from the like items quoted in the tender or SSR rates, market rate shall be allowed based on vouchers/invoices as per the actuals including transportation, labour etc., plus 10% overheads and the labour rate shall be taken as per minimum wages in force, based on the recommendations of the Chief Engineer.

The deviations and NT items shall be technically checked and processed by the respective "Engineer-in-charge/Officer-in-charge".

All deviation orders will be signed by the Contractor for their acceptance.

12. FORECLOSURE OF CONTRACT DUE TO ABANDONMENT OR REDUCTION IN SCOPE OF WORK

If any time after acceptance of the tender BEML decides to abandon or reduce the scope of Work for any reason whatsoever and hence not require the whole or any part of the Works to be carried out, the Officer-in-Charge shall give notice in writing to that effect to the Contractor. The compensation, if any payable for such foreclosure of Work will be discussed mutually between BEML and the Contractor and settled after taking into consideration the actual financial loss, if any, suffered by the Contractor on account of foreclosure of the contract, which in no case shall exceed 2% of cost of incomplete work on the date of closure. The Contractor shall have no claim to any payment of compensation or otherwise whatsoever on account of any loss of profit or advantage which he might have derived, but for the foreclosure of the whole or part of the Works or reduction in Scope of work. BEML shall have the option to take over the Contractor's materials or any part thereof, either brought to the site or for which the Contractor is legally bound to accept the delivery from the suppliers.

13. CARRYING OUT PART WORK AT RISK & COST OF CONTRACTOR

If Contractor:

- I) At any time makes default during currency of Work or does not execute any part of the Work with due diligence and continues to do so even after a notice in writing of 7 Working days in this respect from the Officer-in-Charge; or
- II) Commits default in complying with any of the terms and conditions of the contract and does not remedy it or takes effective steps to remedy it within 7 Working days even after a notice in writing is given in that behalf by the OIC/EIC; or fails to complete the Work(s) or items of Work

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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 IC/EIC.

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

a) Take possession of the site and any materials, constructional plant, implements, stores, etc., thereon; and/or

b) Carry out the part Work / part incomplete Work of any item(s) by any means at the risk and cost of the Contractor.

IV) BEML shall determine the amount, if any, recoverable from the Contractor for (a) non-completion of part of the Work or (b) for removal of any item(s) from the Contractor and got executed at the risk and cost of the Contractor, by third parties. BEML shall be entitled to recover such loss / damages from payments due to the Contractor. The liability of Contractor on account of loss or damage suffered by BEML because of action under this clause shall not exceed 10% of the tendered value of the Work.

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

VI) Any excess expenditure incurred or to be incurred by BEML in completing the part Work/ part incomplete Work of any item(s) or the excess loss of damages suffered or may be suffered by BEML as aforesaid after allowing such credit shall without prejudice to any other right or remedy available to BEML in law or as per 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.

VII) If the Contractor fails to pay the required sum as per this clause 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 this action being adopted by the Officer-inCharge, 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.

14. ACTION IN CASE WORK NOT DONE AS PER SPECIFICATIONS

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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 Officer in – charge or his authorized subordinates in charge of the Work and all the superior officers, or any organization engaged by the BEML for Quality Assurance and of the Chief Technical Examiner’s Office, and the Contractor shall, at all times, during the usual Working hours and at all other times at which reasonable notice of the visit of such officers has been given to the Contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing, present for that purpose. Orders given to the Contractor’s agent shall be considered to have the same force as if they had been given to the Contractor himself. If it shall appear to the Officer- in-charge or his authorized subordinates in charge of the Work or his subordinate officers or the officers of the organization engaged by the BEML for Quality Assurance or to the Chief Technical Examiner or his subordinate officers, that any Work has been executed with unsound, imperfect, or unskillful Workmanship, or with materials or articles provided by him for the execution of the Work which are unsound or of a quality inferior to that contracted or otherwise not in accordance with the contract, the Contractor shall, on demand in writing which shall be made within twelve months of the completion of the Work from the Officer-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 Officer-in- Charge in his demand aforesaid, then the Contractor shall be liable to pay compensation at the same rate as under LD Clause of the contract (for non-completion of the Work in time) for this default. In such case the Officer-in charge may not accept the item of Work at the rates applicable under the contract but may accept such items at reduced rates as the authority specified in price bid 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 Officer-in Charge to be conveyed in writing in respect of the same will be final and binding on the Contractor.

15. CONTRACTOR LIABLE FOR DAMAGES, DEFECTS DURING DEFECT LIABILITY PERIOD

I) If the Contractor or his working people or servants break, deface, injure or destroy any part of building in which they may be working, or any building, road, road kerb, fence, enclosure, water pipe, cables, drains, electric or telephone post or wires, trees, grass or grassland, or cultivated ground contiguous to the premises on which the Work or any part is being executed, or if any damage happens to the Work while in progress, from any cause whatever or if any defect, shrinkage or other faults appear in the Work within twelve months after a certificate final or otherwise of its completion shall have been given by the Officer in- Charge as aforesaid arising out of defect or improper materials or workmanship the Contractor shall upon receipt of a notice in writing on that behalf make the same good at his own expense or in default the Officer-in Charge cause the same to be

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made good/ repaired/rectified by other workmen and deduct the expense from any sums that may be due or at any time thereafter may become due to the Contractor, or from his security deposit. The security deposit of the Contractor shall not be refunded before the expiry of twelve months from the actual date of completion indicated in the completion certificate or till the final bill has been prepared and passed whichever is later.

II) The materials as well as the workmanship and finish of the whole of the contract Works shall be best of their kind, and should any materials be brought upon the Site or on the land or property of the Company or on the places where any operations are being carried out in connection with the Works, which are in the judgment of the Officer- in- charge /Engineer in charge of an inferior description and improper to be used in the Works, the said materials shall be removed. All inferior workmanship or finish shall be amended by and at the cost of Contractor forthwith, or within such period or periods as the Officer- in- charge / Engineer in charge direct, and the Contractor shall pull down, amend and reconstruct any Work he may have erected upon an insufficient foundation, or that he may have insufficient cured and protected against immediate and further injury whether arising or likely to arise in the future from weight pressure, action of water or otherwise, on being required to do so by the Officer- in- charge/ Engineer in charge.

15A. SECURITY DEPOSIT AND DEFECT LIABILITY PERIOD (DLP)

I) Except for special nature/ item of Work where separate defect liability period or specific performance is mentioned in the tender document, the defect liability period is Five(05) year.

II) For all the Works from the date of completion as indicated in the completion certificate. During this period the Contractor will be responsible to rectify all the defects noticed and attributable to the Work done by Contractor.

III) If any defects are noticed during this period by BEML, it will be informed to the Contractor in writing to inspect and rectify the defects noticed. In case Contractor fails to attend the defects within a reasonable time as indicated in the intimation letter, OIC/EIC shall proceed ahead with rectification of defects at the risk & cost of the Contractor.

IV) The cost incurred by BEML towards rectification shall be recovered from the defaulting Contractor from the Security Deposit. If this money to be recovered is higher than the Security Deposit, it will be recovered from any amount due to Contractor from any other contract in BEML or by any other means.

V) Prior to completion of DLP, to assess the defects, if any, representative of the Contractor along with OIC/EIC has to carry out a final joint inspection of the completed Works on the previous month to the end of DLP. Findings have to be recorded and certified and necessary corrective action to be taken up by the Contractor for rectification of identified defects if any. OIC/EIC will recommend for release of Security Deposit amount at the end of defect liability period or after rectification of defects whichever is later.

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VI) In addition to conditions as above, Security Deposit amount of the Work shall not be refunded till the Contractor produces a clearance certificate from the OIC/EIC. As soon as the Work is virtually complete, the Contractor shall apply for the clearance certificate to the OIC under intimation to the Engineer-in-Charge. The Engineer-in-Charge, on receipt of the said communication, shall write to the OIC to intimate if any complaint is pending against the Contractor in respect of the Work. If no complaint is pending, on record till after month after completion of the Work and/or no communication is received from the OIC to this effect till six months after the date of completion, it will be deemed to have received the clearance certificate and the security deposit amount will be released if otherwise due.

VII) In case of Works of routine maintenance/ services in nature, terms contract & AMC Works, the security deposit submitted by the Contractors shall be refunded within one month from the date of final payment or within one month from the date of completion of the maintenance contract whichever is earlier.

VIII) Normally the period of maintenance for all the works shall be five year.

IX) Similarly, there could be certain special works for which Defect Liability Period shall not be applicable. For example: survey of land etc.

X) The applicability of Defect Liability Period or otherwise, has to be decided by the Chief Engineer with specific approval of respective Complex Chief

XI) During this period, the contractor shall be responsible to rectify all the defects noticed and attributable to the work done by him in respect of works executed by him. As soon as any defect in the work comes to the notice, the Chief Engineer shall inform the contractor, in writing, to rectify the defect and inform him that in case he fails to do so within a reasonable time, the Company would rectify the defects at his risk and expense as per the conditions of the contract.

XII) If the contractor does not attend to the rectifications in spite of repeated requests, the Company shall proceed at his risk and expense and get the work completed. The cost incurred by the Company shall be recovered from the defaulting contractor. The Company shall forfeit Retention Amount/Security Deposit retained and adjust this amount against the expenses so incurred. The balance amount, if any, after recovering the expenses incurred shall be refunded to the contractor. In case the amount available is insufficient to cover the expenses in full, that portion of the expenditure still remaining unadjusted shall be recovered from any of the subsequent bills due for payment to the contractor against any other contract.

XIII) Even after such adjustments, the amount available is insufficient to cover the expenses in full, the Company reserves the right to take legal course of action to recover such unadjusted amount.

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16. LABOUR LAWS TO BE COMPLIED BY THE CONTRACTOR

I) The Contractor shall obtain a valid license under the Contract Labour (Regulation and Abolition) Act 1970, Contract Labour (Regulation and Abolition) Central Rules, 1971, and other applicable laws/rules before the commencement of the Work from Competent Authority within thirty days of issue of acceptance letter and submit to the Officer-in Charge / Engineer-in-charge. Contractor shall continue to have a valid license until the completion of the Work. The cost of obtaining license i.e., licence fee etc., shall be borne by the Contractor. Contractor shall not commence the Work without obtaining valid labour license. The Contractor shall also submit an Indemnity Bond executed on a appropriate value stamp paper indemnifying BEML against all the statutory requirement of the Labour Department.

II) The Contractor shall also comply with provisions of the Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979.

III) The Contractor shall also abide by the provisions of the Child Labour (Prohibition and Regulation) Act, 1986.

IV) 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 (BOCW) Welfare Cess Act, 1996. Any failure to fulfill these requirements shall attract the penal provisions of this contract arising out of the resultant non-execution of the Work. Emd

16A. ENGAGEMENT OF LABOUR

The Contractor shall not employ any labour below the age of 18 years directly or through petty contractors or sub-contractors for execution of the Work.

16B. SAFETY OF WORKERS & REPORTING OF ACCIDENT

The Contractor shall be responsible for safety of all employees/labour employed by him on Works, directly or through petty Contractors or sub- Contractors and shall report accidents, occurring on Works to the Engineer or the Engineer's representative, and shall make every arrangement to render all possible assistance and to provide prompt and proper medical attention.

In case of fatal accident, it will be Contractor's responsibility to report accident to police keeping the Engineer advised of the same. The compensation for affected Workers or their relatives shall be paid by the Contractor in such cases with utmost expedition in accordance with the Employees' Compensation Act

16C. ACTION IN CASE OF CONTRACTOR NOT FOLLOWING LABOUR LAWS

Should it appear to the Engineer-in-Charge that the Contractor(s) is/are not properly observing and complying with the provisions of the Contract Labour (Regulation and Abolition) Act 1970, and the Contract Labour (R& A) Central Rules 1971, for the protection of health and sanitary arrangements

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for Work-people employed by the Contractor(s) (hereinafter referred as “the said Rules”) the Officer-in-Charge shall have power to give notice in writing to the Contractor(s) requiring that the said Rules be complied with and the amenities prescribed therein be provided to the Work-people within a reasonable time to be specified in the notice. If the Contractor(s) shall fail within the period specified in the notice to comply with and/ observe the said Rules and to provide the amenities to the Work- people as aforesaid, the Officer-in-Charge shall have the power to provide the amenities hereinbefore mentioned at the cost of the Contractor(s). The Contractor(s) shall erect, make and maintain at his/their own expense and as per approved standards all necessary huts and sanitary arrangements required for his/their Work-people on the site in connection with the execution of the Works, and if the same shall not have been erected or constructed, according to approved standards, the Engineer-in-Charge shall have power to give notice in writing to the Contractor(s) requiring that the said huts and sanitary arrangements be remodeled and/or reconstructed according to approved standards, and if the Contractor(s) shall fail to remodel or reconstruct such huts and sanitary arrangements according to approved standards within the period specified in the notice, the Engineer-in Charge shall have the power to remodel or reconstruct such huts and sanitary arrangements according to approved standards at the cost of the Contractor(s).

16D. EMPLOYMENT OF SKILLED/SEMI SKILLED WORKERS

The Contractor shall provide and employ on the Site only such personnel who are technically and otherwise sufficiently skilled and experienced in their respective fields and such foremen and supervisory staff as are competent to supervise the Work, as per the Contract requirements. The Contractor shall provide and employ skilled, semiskilled and un-skilled labour as is necessary for proper and timely execution of the Work.

17. MINIMUM WAGES ACT TO BE COMPLIED WITH

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

18. DISPUTE RESOLUTION AND JURISDICTION:

a) All disputes or differences whatsoever arising between the parties out of or relating to the construction, meaning and operation or effect of the contract or the breach thereof arising during the progress of work or after completion or abandonment thereof shall be mutually discussed and settled amicably by conciliation Committees/ Councils comprising of independent subject experts constituted by BEML, failing which, the dispute shall be settled by arbitration consisting of sole arbitrator appointed by the Company in accordance with the provisions of Arbitration and Conciliation Act 1996 and the arbitration proceedings shall be conducted at the place of awarding of original contract.

b) The court at the place of awarding of contract only shall have jurisdiction to entertain any dispute/matter relating to the contract

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c) In case of any dispute between the Company and any other Public Sector / Government department relating to the interpretation and application of the provisions of the contract, such disputes / differences shall be referred by either party to the arbitration of one of the arbitrators in the Department of Public Enterprises. The Arbitration and Conciliation Act, 1996 and amendment thereof shall not be applicable to this clause. Any party aggrieved by such award, shall make further reference to the Ministry of Law and Justice, Government of India

d) In case BEML challenges the Arbitral Award passed against it, 75% of the award may be paid to the contractor / concessionaire against Bank Guarantee without prejudice to the Final order of the Court in the matter under challenge. The payment may be made into a designated Escrow Account with the stipulation that the amount so released will be used, First, for payment of lenders' dues, second, for completion of the project and then for completion of other projects of BEML, as mutually agreed / decided. Any balance remaining in the Escrow Account subsequent to settlement of lenders' dues and completion of projects of BEML, may be allowed to be used by the contractor / concessionaire with the prior approval of the lead banker and BEML.

e) In case the subsequent court order required refund of the money paid by BEML to the contractor / concessionaire against Bank Guarantee, the amount shall be refunded by the contractor / concessionaire along with appropriate interest. The rate of interest on such refund amount shall be decided by BEML keeping in view the cost of capital to BEML or the rate of interest provided for in the Contract Agreement or the rate of interest awarded under the Arbitral Award under challenge.

19. ARBITRATION

Disputes if any, arising between BEML and the supplier in connection with this Purchase Order or any other matters connected herewith, the same will be mutually discussed and settled, failing which, the disputes shall be referred to a sole arbitrator to be appointed by BEML. The arbitration / proceedings shall be in accordance with the provisions of Arbitration and Conciliation Act 1996 and Rules framed there under. The place of arbitration shall be at Bangalore or any other place mutually decided by and between BEML and the supplier and all arbitration proceedings shall be conducted in English language.

The award of the sole arbitrator shall be final and binding on all the parties.

19A. DURING ARBITRATION

“works/service under this Purchase Order, if reasonably possible, may continue by mutual agreement during the dispute / Arbitration proceedings”.

20. WATER FOR WORKS

I) Contractor should make their own arrangements for supply of water. Water if available only will be supplied by the BEML and the Contractor shall be charged for the quantity of water consumed by him at commercial tariff of the respective area or as indicated in the tender document. The Contractor shall make his own arrangements to tap and store water from the point indicated by the water supply section. The Contractor should also provide a meter. In case the meter is not provided

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or the meter goes out of order, the assessment of water consumption will be based on Rs.100/- per thousand rupees value of Work done priced only in respect of such items where the consumption of water is involved.

II) Further, Contractor may dig borewell with the prior written approval of BEML at his cost. In this case, no recovery shall be made for the water used. On completion of the Work, borewell may be handed over to BEML along with accessories on as is where basis without any claim for the borewell expenses incurred by the Contractor. The Contractor shall obtain all statutory approvals and all statutory payments shall be borne by the Contractor. The quality of the water from the borewell shall be tested by the Contractor by bearing all the costs and water will be permitted to be utilized only after meeting the relevant standards and on approval of OIC/EIC.

21. ELECTRICITY FOR WORKS

The LT power supply if available at the project site, shall have to be tapped off by the Contractor from the tap off point indicated to him by the BEML authorities at his own cost. The Contractor has to lay the cables, provide required joints and terminate to their power supply board which consists of suitable rating energy meter, safety devices like MCB / MCCB / ELCB etc., for control and distribution. The energy will be supplied on chargeable basis based on the prevailing norms set by Electric Supply Company /Board of the respective areas towards temporary power connection for construction purpose. The supply shall not be given unless the temporary electric installation is certified as safe by the EIC/OIC. However, no claim for extension of Work shall be entertained on account of non-availability of power by BEML. The Contractor thus shall have his own back-up arrangement for such circumstances. In case power supply is not available at the project site, the agency shall arrange the same without any extra claims on this account. In case the energy meter is not provided or the energy meter goes out of order, the assessment of electricity consumption will be based on prevailing tariff of the respective city/state.

22. LEVY/TAXES PAYABLE BY CONTRACTOR

I) Unless specifically mentioned other-wise elsewhere in the Contract, all rates quoted in the Bill of Quantities;

(a) Shall be deemed to be inclusive of all types of taxes, duties levies, fees and charges etc., imposed by Central/State Govt. and local bodies Compensation Cess, Labour Cess, Custom Duty, royalties and other levies. It shall also include all other costs including loading, un-loading, insurance, transportation, testing and certification expenses except GST.

(b) GST at prevailing percentage is added in the BOQ at the end or as specified in the BOQ.

(c) Payment of GST on Works Contract is the entire responsibility of the Contractor. Contractor shall be entitled for reimbursement of GST paid, upon submission of GST

Invoice and GST Challan for having paid the same to the Department

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II) The following Acts to be referred hereunder and elsewhere in the tender document as “GST”:

- (a) Central Goods & Services Tax Act 2017 (CGST),
- (b) Integrated Goods & Services Tax Act, 2017 (IGST),
- (c) Union Territories Goods and Services Tax Act, 2017 (UTGST),
- (d) Goods and Services Tax (Compensation to States) Act, 2017 (Compensation Act),
- (e) Karnataka Goods & Service Tax Act 2017 or applicable State’s GST Acts,
- (f) Any other statutory regulation passed by the Central / State Government/s on Goods & Service Tax.
- (g) Any other tax levied by any statutory authority in addition to Goods and service tax and charged in the Tax Invoice raised by the Contractor.

III) Bidder warrants having valid registration under applicable GST. A copy of the registration certificate should be submitted along with the offer.

IV) Contractor’s right to getting payment is subject to submission of a Valid Tax Invoice which would enable the Service Recipient (BEML) to claim Input Tax Credit in compliance with the provisions of the GST. Tax Invoice submitted by the Contractor shall mention the SAC/ HSN Code as applicable, Basic Price, applicable GST Rate and amount and all other essential information required to be mentioned as per the provisions of GST Rules, 2017.

V) Contractor shall warrant the value that is attributable to GST and the corresponding rate of tax that is chargeable is included in the total price charged in the Tax Invoice. The total amount as per the Tax Invoice shall be considered as the final price inclusive of GST and no claim for payments, whether or not, for only taxes or a price inclusive of taxes, shall be admitted at a later stage on any ground whatsoever.

VI) Any tax in the nature of Goods & Service Tax (GST) would be payable, when the invoice submitted by the Contractor is compliant with the provisions of GST law and contains all particulars as per statute.

VII) In case there is an upward revision in the applicable rate of tax (GST) post submission of bid, the Contractor shall submit a copy of the relevant statute/notification evidencing change of applicable rates for claiming payment from BEML as per revised GST rates. Similarly, if there is downward revision of applicable tax rate post submission of bid, the benefit of lower tax liability shall be passed on to BEML.

VIII) Contractor also warrants to duly comply all relevant provisions of the GST Laws including filing returns, paying taxes within the stipulated period so that no hindrance can be faced by BEML to claim Input Tax Credit as per provisions of the GST Law.

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IX) Contractor shall fully indemnify to Service Recipient (BEML) on first demand against any claims, liabilities, actions, demands, Loss, costs and expenses occurred/imposed to the Service Recipient (BEML) on account of his failure to fully/partially discharge the statutory levies in time, or his failure in adherence of the applicable laws in force. For any such non-compliance, BEML reserves the right to withhold the payment until appropriate action is taken in a mutually agreeable manner.

23. TERMINATION OF CONTRACT ON DEATH OF CONTRACTOR

Without prejudice to any of the rights or remedies under the contract, if the Contractor (being an individual, or in case of a Firm or LLP, its partner/s) dies or attains legal disability, BEML shall have the option of terminating the contract without any compensation to the Contractor. BEML shall have the right to get the Work completed by itself, or through any other Contractors or agency.

24. RISK PURCHASE CLAUSE and FORCE MAJEURE CLAUSE:

The time and the date of delivery of the stores stipulated in the PO shall be deemed to be the essence of PO and delivery must be completed not later than the date specified therein. Shall the supplier fail to deliver the stores or any consignment thereof within the period prescribed for such delivery, BEML shall be entitled at their option either;

a) To purchase elsewhere, without notice to the supplier on the account and at the risk and cost of the supplier the stores not delivered or other of a similar description (where stores exactly complying with the description and readily procurable) without cancelling the PO in respect of consignment not due for delivery

or

b) To cancel the purchase order.

In the event of action being taken under clause (a) or (b) above, the supplier shall be liable for any loss, which BEML may sustain on that account but the supplier shall not be entitled to any gain or purchases made against default. As soon as it is apparent that the scheduled dates cannot be adhered to, an application shall be sent by the supplier to BEML, well before the expiry of the delivery period specified in the purchase order. Without prejudice to the foregoing rights, if such failure to deliver in proper time as aforesaid shall have arisen from any cause which BEML may admit as a reasonable ground for an extension of the time (and their decision shall be final) they may allow such additional time as they may consider justified by circumstances of the case.

Delivery required to be made in lots shall be made in lots only and any extra deliveries involved either on account of repeated rejections or variance in supply of lots shall be liable for service charges of 5% of the purchase order value for each extra delivery. c. Force Majeure clause.

Notwithstanding anything contained in the Contract, neither the Supplier nor the Purchaser shall be held responsible for total or partial non-execution of any of the contractual obligations, shall the

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obligation become unreasonably onerous or impossible due to occurrence of a Force Majeure conditions which directly affect the obligations to be performed by the Purchaser or the Supplier. Such events include war, military operations of any nature, blockages, revolutions, insurrections, riots, civil commotions, insurgency, sabotage, acts of public enemy, fires, explosion, epidemics, quarantine restrictions, floods, earthquake, or acts of God, restrictions by Govt. authorities over which the Supplier or the acts on which the Purchaser has no control.

The party claiming to be affected by Force Majeure clause shall notify the other party in writing without delay, within two weeks on the intervention and on the cessation of such circumstance. Extension of time sought by the supplier along with supporting evidence and so granted by the purchaser for the supply/work affected, if any, shall not be construed as waiver in respect of remaining deliveries.

Notwithstanding above provisions, Purchaser shall reserve the right to cancel the order /Contract, Wholly or partly, in order to meet the overall delivery schedule and make alternative arrangements including arrangements with third party for completion of deliveries and other schedules. Purchase may takeover partly processed material at a mutually agreed price.

25. QUOTED RATE TO REMAIN FIRM THROUGHOUT THE CONTRACT

i) The rates as per the accepted Bill of Quantities shall be firm and hold good till the completion of the works, and no additional claim or amount shall be admissible on account of fluctuations in market rates, increase in fees royalties unless specifically provided for in the Contract, under any circumstances. Hence, the Contractor shall agree not to petition or claim for revision of rates tendered by him under any circumstances or at any stage of the Work, either during execution or at the time when the Final Bills are settled.

26. UNDERSTANDING OF SITE CONDITION:

The Contractor shall fully satisfy himself or shall be deemed to have fully satisfied himself as to the nature of the Site, the soil, sub-soil, natural and man-made surroundings, existing structures (if any) at Site or in the vicinity, weather conditions, requirements, availability of resources, third party claimants or occupants (if any), the dimensions, levels, layout, character and nature of all roads, existing drains, sewers, electricity, water, gas or other mains, electric cables and other things as regards any connection they may have with the works of the subject of the Contract. The Contractor shall also inspect the site works and surroundings, the means of access thereto. Contractor shall generally obtain his own information on all matters concerning the Site and works to be executed thereon and of all matter and things which may in any way influence his Tender or the works. No claims for extra works, delay due to site conditions or otherwise will be allowed in consequence of any misunderstanding, error, incorrect information on these points, or if any other inaccuracies in reference thereto, which may appear on the drawings or in the specification nor shall the contract be nullified in consequence of any such misunderstanding, error, incorrect information or inaccuracies.

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27. CONTRACTOR'S LIABILITY AND INSURANCE:

- a) From commencement to completion of the works, the contractor shall take full responsibility taking precautions to prevent loss or damage. He shall be liable for any damage or loss that shall happen to the works or any part thereof.
- b) In addition, the contractor shall indemnify and keep the Company indemnified against all losses and claims for injuries or damages to any person or any property whatsoever which shall arise out of or in consequence of the construction works. For this purpose, the contractor shall take an insurance policy-"contractors all risks insurance"- to cover the risks, as per the Conditions of the Contract. The insurance policy has to be kept valid till the work is completed and the possession handed over to the Company. The policy shall be taken at his cost showing the Company as the 'principal' to simplify the work in the matter of raising claims and settlement thereof.

28. INDEMNIFICATION

Indemnity against all actions of Contractor:

The Contractor shall hold and save harmless and indemnify BEML and its employees, from all actions, suits, proceedings, loss, costs, damages, charges, claims and demands of every nature and description brought against or recovered from BEML and their employees by reason of any act, deed, omission or commission of the Contractor and/or his representative and/or his Employees and/or his sub-contractors in the execution of the works under the Contract. All the sums payable by BEML by way of compensation to any third party/ies, under any of these conditions, shall be recovered from the dues of the Contractor, without reference to the actual loss or damage sustained, and whether or not any damage shall have been sustained.

29. CAR POLICY

I) The Contractor's All Risk (CAR) policy shall be taken for the risk to commence from the date of actual commencement of Work as per Work Order for the Contract Sum till actual completion of Work against fire, Lightning, explosion, impact, flood, inundation, storm, earthquake, subsidence, landslide, theft, burglary, riot and strike, civil war and terrorist damage. The policy compensates individual against death, loss of limbs, loss of eyesight, permanent total disablement, permanent partial disablement and temporary total disablement, solely and directly resulting from accidental injuries. Any item not covered under above policy shall be the responsibility of Contractor. The policies of the Contractor shall remain in force throughout the period of execution of the works except for any specific insurance covers necessary for a shorter period. Before commencing the Work, it shall be obligatory for the Contractor to obtain, at his own cost, insurance cover in the joint name of the Contractor and BEML under the following requirements.

II) Liability for death or injury to any person or loss to any property (other than the Work) arisen out the performance of the Contract.

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III) Construction plant, Machinery and Equipment brought to site by the Contractor\ Any other insurance cover as may be required by the law of the land like Workmen Insurance etc. with Insurance Company approved by the PIC/OIC.

IV) In case of such loss or damage as aforesaid, the money payable under any such insurance shall be received by BEML. This will be subject to:-

(a) Risk covered.

(b) Claims on realization shall be passed to the Contractor according to value of the claims accepted by the insurance company for his damaged portion of Work after deducting 15% towards services rendered by the BEML for processing the claim(s). The amount so disbursed to the Contractor(s) shall be limited to the amount calculated on the basis of his accepted rates in the contract with the BEML.

(c) The Contractor shall also obtain any additional insurance cover as per the requirement of the contract in the event of his contract not having been previously cancelled under contract conditions.

(d) Such insurance shall be one in respect of all works, unless otherwise expressly specified in the tender conditions.

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

30. PROGRESS REVIEW MEETINGS

The Contractor/s shall agree to execute the Work progressively in co-ordination with the concerned OIC/ EIC. Further, Contractor's authorized representative is required to attend progress review meetings regularly on weekly basis. The purpose of a progress review meeting shall be to review the work done, to plan for remaining Work and to deal with the matters related to the Work. The OIC/EIC or his nominee shall record the minutes of the progress review meetings and minutes will be shared with all the attendees. The responsibilities of the parties for actions to be taken is to be decided by the OIC/EIC either at the progress review meeting or after the progress review meeting and stated in writing to all who attended the meeting. Progress review meetings conducted weekly have to be attended by the Project Manager appointed by the successful bidder. Monthly progress review meetings to be attended by the authority signing the contract.

31. APPROVAL OF WORKS BY STAGES:

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I) All works consisting of more than one process shall be subject to examination and approval at each stage by the Officer-in-Charge/ Engineer-in-charge or his nominee thereof and the Contractor shall give due notice in writing to the Officer in-Charge/ Engineer-in charge when such stage is ready. Approval of works by stages shall be recorded in Work / Stage Passing Register. In default of such notice being received, the Officer-in-Charge/ Engineer- in-charge shall be entitled to disallow the Work or any part thereof at any time he may choose and in the event of any dispute, the decision of the Officer-in-Charge/ Engineer in- charge thereon shall be final and conclusive.

II) If any Work is so disallowed, the same shall be redone by the Contractor at his cost to the satisfaction of the Officer-in-charge/ Engineer-in-charge. Also, in the event of failure of the Contractor to give notice, he shall uncover any part of the works and/or make openings in or through the same as the Officer-in-charge/ Engineer-in-charge may direct for his verification and shall make good such part to the satisfaction of the Officer-in-charge at the Contractor's expense.

32. SITE RELATED

32A NIGHT WORKS:

Night Works will be permitted depending on requirement/need basis subject to obtaining prior approval from BEML and other statutory authorities. However, no additional payment will be made for night work. The Contractor shall make adequate lighting and safety arrangements for night working. He shall also be responsible for any claim on account of any injury to or loss of life, of anyone, arising out of inadequate lighting, safety arrangements or due to any other failure of the Contractor.

32B. CONTROLLING OF CONTRACTOR LABOUR & POLICE VERIFICATION

I) The Contractor is to keep all persons under his control and within the boundaries of the Site, and he will be held responsible for the care of the works until their completion and handover, including all works executed and materials deposited on the sites by himself or suppliers, together with all risks arising from weather, carelessness of apprentices, damage or loss by thefts or by any other cause and is to allow for all necessary watching and protective lighting.

II) The Contractor shall submit Police Verification Certificate to move inside BEML premises during execution of Work and shall submit as affidavit for conduct and credibility of the labour force engaged for the Work to the OIC/EIC.

33. BRIBES AND GIFTS:

Any bribe, commission, gift or advantage given, promised or offered by or on behalf of the supplier or his partner, agent or servant or anyone on his or their behalf to any officer, servant, representative or agent of BEML or any person on his or their behalf in relation to the obtaining or to the execution of or any other contract with BEML shall in addition to any criminal liability which the supplier may incur, subject the supplier to the cancellation of the PO and all other contracts with BEML and

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also to payment of any loss or damage resulting from any such cancellation to like extent as is provided in case of cancellation under Clause-15 hereof. Any question or dispute as to the committing of any offence under the present clause shall be settled by BEML in such manner and on such evidence of information as they may think fit and sufficient and their decision shall be final and conclusive.

6 ADDITIONAL CONDITIONS OF CONTRACT

(UNDER WHICH THE WORKS HEREINAFTER DESCRIBED ARE TO BE PERFORMED)

1. INTERPRETATION CLAUSE: In these General Conditions and the Specifications attached, the word 'COMPANY' shall be held to mean 'BEML LIMITED', the word 'CONTRACTOR' shall be held to mean one or more contractor or contractors jointly or generally engaged in the works to which these General Conditions and the specifications relate, and shall include his/their heirs, executors and administrators. The word 'ENGINEER-IN-CHARGE, shall be held to mean a Member of the staff of the BEML to supervise the work. The expression 'SITE OF WORKS, shall be held to mean the extent of land which the Company places at the disposal of the Contractor from time to time for the purpose of executing the contract works. The word 'DRAWINGS' shall be held to mean 'THE PLANS, SECTIONS, ELEVATIONS AND DETAILS OF WORKS' annexed to the contract and such further drawings, as the Engineer in charge may issue from time to time during the progress of the works and shall be held to include tracings and photographic prints. The word SPECIFICATIONS shall be held to include the tender General Conditions, Specifications, Schedule of Prices and Bill of Quantities.

2. CONTRACT NOT TO BE ASSIGNED OR UNDERLET AND CONSEQUENCE OF GRATUITIES BEING GIVEN: The contractor shall not assign or make over the contract to any other person, or underlet it, or make a sub-contract with any workmen or workman for the execution of any part of work(s), but shall employ his own workmen for the labour thereof, who shall be paid by him in wages by the day. And in case the Contractor assigns or makes over the contract, or underlet or make sub-contract, contrary to this clause or either himself or his agents give any gratuity to any employee of the Company, the company shall be at liberty to terminate the contract.

3. TENDER OR AGREED RATE: The contractor shall agree not to petition for revision of rates tendered for by him under any circumstances at any stage of the work, either during execution or when the final claims are settled.

4. In the event of anything evidently necessary to the due and complete performance of the works being omitted to be shown on the drawings or described in the specification or being omitted from the Bill of Quantities through oversight or error, the contractor shall, notwithstanding, execute (in

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the most perfect manner) all such works the same as if they had been severally shown, described and included without being entitled to make any extra claim or charge.

5. The contractor shall satisfy himself or shall be deemed to have satisfied himself as to the nature of the sub-soil, the three dimensions, levels, character and nature of all roads, existing drains, sewers, water, gas or other mains, electric cables and other things as regards any connection they may have with the works the subject of the contract, and he shall also inspect the site of the works and surroundings, the means of access there to and egress there from and shall generally obtain his own information on all matters and things which can in any manner influence his tender, No claims for extra works otherwise will be allowed in consequence of any misunderstandings, error or incorrect information on these points, or of any other in-accuracies in reference thereto, which may appear on the drawings, or in the specification, nor shall the contract be nullified in consequence of any such misunderstanding, error incorrect information or in-accuracies.

6. ENGINEER IN CHARGE'S ORDERS TO COMMENCE WORKS AND AS TO NON-

DELIVERY OF SITE: The Contractor having signed the contract, the Chief Engineer will forthwith give him notice to commence the works and the contractor shall upon receipt of such notice, commence the works and carry them on at such point and points and in such portions as the Engineer in charge may direct.

The Company shall, with the Engineer in charge written order to commence the works, give to the contractor, the use of so much of the site of works, as may in the opinion of the Chief Engineer be required in order to enable the contractor to commence and continue the construction of the works, and shall from time to time as works proceed give the contractor the use of such further portions of such site as the Engineer in charge may from time to time consider proper in that behalf, but the non-delivery in manner aforesaid of the use of such site or any portion thereof shall not vitiate or affect the contract, nor any provision contained in the specification nor entitle the contractor to any increased allowance in respect of money.

7. TIME OF WORKING (APPLIES ONLY FOR FACTORY AREA): As the entry and exit of the workmen into the factory area is controlled by the Security Authorities of the Factory, the contractor should strictly adhere to the timings of entry and exit, laid down by the authorities and the rates quoted are deemed to include for this provision.

8. NIGHT WORKS: The works shall be carried as per applicable labour laws on day and night continuously without extra charge. If bad or treacherous ground be met with or if there be any other causes whatsoever, which in the judgment of the Engineer-In-Charge, requires, it, but no work shall be carried on in the night without the knowledge and sanction of the Engineer-in-charge.

9. WATCHMEN, LIGHTS, ETC., TO BE PROVIDED BY THE CONTRACTOR: The Contractor, shall at his own cost provide night watchmen to all parts of the work where necessary required by the Engineer-in-charge. He shall also keep all open trenches, excavation or other dangerous places properly and sufficiently lighted between sunset and sunrise, and shall provide

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and fix proper fencings and boarding and temporary bridges to protect. The contractor shall also at his own cost erect temporary fences on the site of works where required by the Engineer-in-charge.

10. TEST MATERIALS: All the materials to be used in and on every part of the works shall be subjected from time to time to such tests as the Consultant and Engineer in charge may direct. Such tests shall be performed at the expense of the contractor but the Company shall refund to the Contractor the actual cost of testing any of the materials which are proved to conform with the conditions of the specifications but the samples shall be, in all cases, selected by the Engineer in charge, and supplied by the contractor

as part of the contract. If, at any time, any materials so tested is not equal to the test for such materials, hereinafter specified, the same shall be removed from the site of works, and other materials substituted therefor, but in the absence of any specified test, the decision of the Engineer in charge, shall be final as to whether the said material or materials shall be used in the works, or forthwith removed and other materials substituted.

11. POWER TO VARY WORKS: The Company shall have full power and authority from time to time, and at all times, to order works additional to the contract, and to make and issue such further drawings and to give such further instructions and direction as may appear necessary or proper for the guidance of the contractor and the good and sufficient execution of the contract, and the contractor shall receive, execute, obey and be bound by the said further drawings, instruction and directions, according to the true intent and meaning thereof and as fully and effectively as though they had accompanied, or had been mentioned or referred to in the original drawings and specifications. The company shall also have power to vary or alter the levels or position of any of the works, the subject of this contract, or may order any of the works contemplated thereby to be omitted with or without the substitution, of any other works in lieu thereof, or may order any work, or any portion of work executed or partly executed, to be removed, changed or altered, and if needed that other work shall be substituted in lieu thereof and the difference of expense occasioned by any such increase, diminution or alterations so ordered and directed shall be added to or deducted from the amount of the contract agreeable to the prices for similar works set forth in the Bill of Quantities, or failing which the Schedule of Prices attached hereto, and in the absence of any such similar work being scheduled, the Engineer in charge shall determine the amount to be paid for such additions or deductions. The company will in no case become liable to the payment of any charge in respect of any such conditions, alteration or deviations, unless the instructions for the performance of the same shall have been given in writing and signed by the Engineer in charge, nor unless such instructions distinctly states that the matter thereof is to be subject of an extra or varied charge, in the form of an order hereinafter set forth nor unless the claim thereof shall be made in writing, signed by the Contractor and in the form of claim herein as set forth and properly filled up nor unless such claim be made within the week in which the work is executed and materials used, and before the same shall have been placed out of view, or beyond check of measurement, nor unless the value of any altered or varied works, or any further works shall wherever practicable have been determined and settled before such altered, varied or further works shall have been commenced. Such value in case of dispute shall be ascertained by the Engineer in charge, who shall determine

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in all cases whether such previous determination and settlements were practicable or not, and in all the cases where he shall consider the same to have been practicable, the contractor shall not be entitled to make any claim in respect of such altered, or varied or further works if it shall, in the opinion of the Engineer in charge, if any special instance become necessary to execute any additional or substituted work, either wholly or in part by the day the claim therefor, shall not be recognized unless the contractor shall have delivered to the Engineer-incharge, within one working day, and so on from day to day a true and exact list of the name, occupations, time and wages of the several workmen engaged during the previous day on any and every such works in respect of when a charge 'BY THE DAY' is intended to be made in the next succeeding weekly claim of contractor, Nevertheless, no charge 'BY THE DAY' shall be made unless, in the opinion of the Engineer in charge, it is impracticable or unreasonable to determine the value of the amount of work in manner otherwise provided for in these general conditions.

12. SUSPENSION OF WORK: The Contractor(s) shall suspend the execution of work or any part or parts thereof whenever called upon in writing by the Chief Engineer to do so and shall not resume work thereon until so directed in writing by the Chief Engineer. The Contractor will be allowed by the Chief Engineer an Extension of time (not less than the period of suspension) for completion of the item or group of items of work for which a separate period of completion is given in the contract and of which the suspended work forms part but not other claims in this respect for completion or otherwise, however, shall be admitted. The contractors shall have no claim to any payment of compensation or otherwise, whatsoever on account of suspension of work.

13. WORKS TO BE EXECUTED IN APPROVED MANNER: The works, the subject of the contract, specified and provided for or that they may be necessary to be done to form and complete any part thereof, shall be executed and completed in the best substantial manner, with materials of the best and most approved quality of their respective kinds agreeable to the particulars contained in or implied by the specification or as referred to and represented by the drawings and memoranda thereon or as referred to by any of the said further drawings and memoranda thereon or as referred to by any of the said further drawings, instructions and directions and shall be to the full satisfaction of the Engineer in charge. The Engineer in charge, shall have full liberty at all reasonable time to inspect and examine the works, materials and workmanship, and may every such time reject any or all of such works, materials and workmanship which to him/them or either of them may appear defective, unfit or improper for the several purposes to which they are applied, or intended to be applied, or as not in accordance with the specification or the said drawings, memoranda, instruction or directions respectively.

14. INFERIOR MATERIALS OR WORKMANSHIP TO BE AMENDED: The materials as well as the workmanship and finish of the whole of the contract works shall be best of their kind and should any materials be brought upon the site of works or on any land or property of the company or on the places where the operations are being carried out in connection with the works, which in the judgment of the Engineer in charge, is of an inferior description and improper to be used in works, the said materials shall be removed. All inferior workmanship or finish shall be amended by and at the cost of the contractor forthwith, or within such period or periods as the

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Engineer in charge, may direct, and the contractor shall pull down, amend and reconstruct any work he may have erected upon an insecure or insufficient foundation or that he may have insufficiently secured and protected against immediate and future injuries, whether arising or likely to arise in future from weight, pressure action of water or otherwise, on being required to do so by the Engineer in charge. In case the contractor neglects or refuses to remove such materials or comply with such directions it shall be lawful for the Chief Engineer, on behalf of the company and by its agents, servants and workmen to remove the materials and amend the workmanship and finish, so objected, to, or any part thereof, and to replace the same with such other materials, workmanship and finish as shall be satisfactory to the company and on the certificate of the Chief Engineer to deduct the expense thereby incurred, or to which the company may be put or be liable or which may be incidental thereto, from the amount of any sum or sums due to or become due to contractor, or to recover the same by action at law or otherwise from the contractor as the company may determine.

When it is apparent to the Chief Engineer that defects exist in the work, or that damage or accident has occurred to the works, or that the works are not upheld or maintained in good sound and water tight conditions, or repair or in working order, but the cause thereof is not apparent, a general requisition in writing by the Chief Engineer to the contractor to amend, make good or maintain the works in sound, perfect and water tight conditions shall be under no obligation to specify the work or repair, but such requisition shall be conclusive evidence against the contractor that he is not performing his obligations under the contract.

15. PRECAUTIONS AGAINST INJURY TO PROPERTY ADJACENT TO THE WORK IN PROGRESS: The contractor shall take special care, by the erection of temporary fences and by every other means which circumstances may render necessary, to prevent all injury and damage to or trespass upon the lands, roads, fences or property adjacent to the site of works and shall confine the passage of his workmen to existing public roads, foot paths. He shall likewise pay and satisfy all claims whatsoever and from whomsoever, for temporary occupation, way-leaves, damages, the trespass or otherwise, in reference to the said lands, roads, fences and property adjacent and bear the company harmless from any and all such claims. If any greater extent of land than the site of work be required by the contractor for his operations, he shall obtain and occupy the same at his own cost and charge.

16. PRECAUTIONS AGAINST ACCIDENTS OR INJURY: The Contractor shall, at his own expense, shore, sling, protect, support, alter, restore make good and maintain as may be necessary, all buildings, water and gas pipes, sewers, drains, electric cables and other things which may be disturbed, exposed or injured during the execution of works or in consequence of the execution of the works and shall also provide any extra timbering which may be temporarily required and all labour in fixing and removing the same and shall, at his own expenses provide for the continuous use of all buildings, pipes, sewers, drains electric cable, water sources and other things, the use of which may be liable to interruption during the progress of the work. The Contractor shall at his own expense restore all such buildings, water and gas pipes, sewers, drains, electric cables and other things to the satisfaction of the owners thereof and he shall likewise, at his own expense, construct

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and maintain such works as may be necessary for the due permanent support of all such buildings, pipe, sewers, drains, electric cables and other things met with in the construction of works, and shall indemnify, save, harmless and keep indemnified, the Company and its officers from and against all action, suits, claims, penalties, liabilities, cost, expenses and demands whatsoever, by reasons or on account of damage to such buildings, pipes, sewers, drains, electric cables and other things whether caused by the execution of the contract works or in the insufficiency of the aforesaid permanent support. The Company may deduct the expenses thereby incurred or to which the Company or its Officers may thereby be put or be liable or which may be incidental thereto from, the amount of any sum or sums due or to become due to the contractor or may recover the same by action at law or otherwise from the contractor and the Company may compromise any such action suits or other proceedings, or such terms as it shall see fit and contractor shall thereupon forthwith pay the Company the sum or sums paid by the Company upon the occasion thereof, and shall in every case pay such sum or sums as shall fully indemnify the Company according to the present stipulation.

17. COVERING OF CONSTRUCTION SITE: The Contractor shall, at his own expense, make arrangement to cover/wrap the construction site in mesh material of green colour to prevent the dust from the escaping into the adjoining Properties or premises and atmosphere and also to prevent accidental fall of debris onto the people. The contractor at his own expense should make arrangement to remove the cover after completion of the work.

18. ROYALTIES: The Contractor shall be liable to pay all royalties chargeable on Government or Company materials required for the work.

19. REJECTED MATERIALS: All rejected materials will at once be removed from site by the contractor to such distance as may be desired, failing which the company after giving three days' notice in writing may do so and recover the cost of removal from the contractor.

20. COMPANY'S PLANT: No Company's plant, materials or Labour will ordinarily be lent or hired to the contractor. Exceptional cases must have the approval of the company in writing.

21. SCOPE OF COMPLETION: Completion includes completion of all work in accordance with the plans and specifications, removal of all yard mess accumulated during construction, levelling and cleaning up the site and generally cleaning the whole building or works.

22. ATTENTION:

I) Time will be the essence of the contract and the contractor is to complete the whole of the work in the time stated in the tender, subject to the schedule of conditions.

i)

II) The contractor is to provide at all times during the progress of work and the maintenance period proper means of access, with ladders, gangways, etc., and the necessary attendance to move and adopt as directed for the inspection of their representative (no separate rate will be allowed).

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III) The Contractor is to keep all persons under his control and within the boundaries of the site and he will be held responsible for the care of the works generally until their completion including all works executed and materials deposited in the sites by himself or suppliers, together with all risks arising from weather, carelessness of operatives, damages or loss by thefts or by any other cause, and is to allow for all necessary watching and protective lighting.

23. LABOUR ACTS:

I) The Contractors shall employ labour in sufficient number to achieve the required rates of progress and quality to ensure best workmanship of the degree required under various specifications and to the satisfaction of Engineer-in-charge. The contractors shall remain liable for the payment of all wages or other remunerations to his labourers or employees under the Payment of Wages Act 1936, Minimum Wages Act 1948, Employers liability Act 1938, Workmen's Compensation Act 1923, ESI Act 1948, or any other Acts or enactments relating there to and rules framed there under from time to time. In the event, the contractor fails or neglects to pay any amount due by him under the workman's compensation Act, ESI Act or other Labour Laws, the Company is entitled to withhold the same from any other amount payable by it to the contractor and remit the same to the authority concerned and such payment shall be binding on the contractor.

II) In the event of contract, the contractor shall be responsible for implementing the provision of the contractor Labour Act in to and also responsible for any repercussions arising there from for non-compliance thereof.

III) The intending Tenderer should quote their organization registration/code numbers for the registration with ESI/PF Authorities. It may be noted that other things being equal, preference will be given in the acceptance of tender to firms having independent registration with ESI/PF Authorities.

IV) BEML shall arrange to recover from the contractors bills requisite amounts of both Employer's and Employee's contribution for both ESI and PF calculated on the basis of 25% of the value being taken as the labour cost and recover such amounts from the respective bills and keep the same in suspense account. On production of requisite documentary evidence supporting payment of ESI/PF Authorities/supported by the acquaintance rills, the amount earlier recovered from contractor's bills shall be paid duly adjusting the shortfall in remittance, if any.

V) In the event of any accident/injury/disablement, the contractor shall arrange to pay the requisite compensation legally payable to the concerned employee/dependents and also indemnify to BEML in case of any claim arising therefore later.

VI) CONTRACTOR should employ only ESI Registered workmen on any item of work. If contractors have workman who have not yet been Registered under the ESI they should ensure that the workers have been duly registered before employing them in work.

VII) CONTRACTORS should produce his MUSTER ROLL duly certified by Engineer-in-charge once in a month say before 5th of each month to the Pay roll section, so that the ESI amount can be ascertained and recovered/payment obtained irrespective of the fact whether work order is issued or not.

VIII) If there is any default on the part of the contractor, an estimated amount towards ESI liability including the would-be penalty/damage, will be recovered by the company from the bills of the contractors.

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IX) CONTRACTORS should maintain all registers and records required for ESI, PF Payment of wages, etc., under the statutes and produce them for verification as and when called for by company inspecting Authorities.

24. FAIR WAGES: The Contractor shall not pay less than fair wage to labourers, workmen engaged by him on the work. Fair wages mean wage for the various categories of labour, workmen, fixed from time to time by the labour authorities of the area. The contractor shall ascertain the minimum fair wages prevailing in the area before submitting his tender. The Contractor should also abide by labour regulations in regard to the payment of wages, wage period, fines and deductions from wages, maintenance of wage book, wage slip, publication of scales of wage and other terms of employment, inspection and submission of periodical returns and all other matter relating to labour rule in force.

25. The contractor shall arrange qualified Engineers with experience in similar construction work to be at the work spot throughout the period of construction to ensure correct undertaking and execution of the work as per drawings and specifications.

26. The setting of the TEST TRACK shall be done by the contractor himself. All measurements shall comply with the dimensions noted on the drawings if any. The contractor shall construct centre line pillars and Bench Marks wherever necessary at his own cost and the setting out shall be got checked, approved and certified by the Engineer-in-charge before execution of the work.

27. Foundations shall generally conform to the dimension indicated on the drawings, unless the nature of soil after excavation examined by the Engineer-in-charge, of works necessitates modifications. The foundation trenches for RCC columns and walls after excavation indicated on the drawing shall be got inspected, approved and certificated by the Engineer-in-charge of works before laying concrete.

28. Provision shall be made during the progress of work for embedding Electric conduits etc., wherever necessary as directed. Openings shall be left for service lines, machine foundations, as required and as per instructions of the Engineer-in-charge.

29. Care shall be taken in execution of work not to damage service lines etc., coming in the way of construction. If any damage is caused in the lines, the cost of replacing or repairs shall be borne by the contractor.

30. CONTRACTOR(S) shall provide himself/themselves with requisite number of welding sets, mixers with hoppers, vibrators builders hoist, Tools, meters and testing equipment's, transport vehicles, etc., required for the complete satisfactory execution of work.

31. THE Contractor shall agree to execute the work progressively in co-ordination with the concerned officers or shop supervisors and as directed by Engineer-in-charge.

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32. THE specifications contained in the MES Schedule (referred to in the tender) in appropriate sections shall apply to this contract to the extent applicable, cement coefficient shall also form part of MES Schedule.

32. PROVISION OF FITTING/FIXTURES OF DIFFERENT MAKE: The contractor shall provide the same make of fittings/fixtures specified in the tender documents unless he has quoted for other equivalent for genuine reasons. In case due to exigency of the work and difficult market conditions, the contractor is not able to provide the same make, he shall be allowed to provide equivalent approved make subject to his obtaining the concurrence of the Chief Engineer for the price adjustment as between the quotation and the purchase price for the item involved. The base for reckoning shall be the date of purchase. The contractor shall produce purchase invoice as a proof of expenditure for the items other than those specified in the tender documents allowed for incorporation in the work. Construction Department in respective Divisions/Regional/District Offices shall ensure the reasonableness of the rate in the purchase bill produced by the contractor. The price adjustment shall be the difference between the two makes on the date of purchase.

33. The Company reserves the right to accept the tender in parts i.e. on the basis of lowest quotation in each part or as a whole, at its own discretion and hence it is important that the tenders take sufficient care and quote reasonable rates in each part, so that if one part only is separated and entrusted to one Contractor, he should be able to do it without difficulty. The rates quoted for similar items should be consistent. THE company also reserves the right to accept the lowest or any other tender at its discretion without assigning any reasons whatsoever.

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34. SCHEDULE OF PAYMENTS AT STAGES

(TABLE-A)

Sl No	Description	Individual in % on Contract value in EPC mode	Cumulative on Contract value in EPC Mode
1	Submission & approval of designs, drawings, detailed estimation, BOQ, presentation as required for commencement of the project. Submission of proposed test track layout and master plan for approval of BEML. On submission of proof check of design & drawings by IITs, NITs, IISC. After getting the proof checking done the contractor shall submit corrected and final geometrical design, longitudinal section, cross section, BOQ & drawings in soft copies and five sets of hard copies.	3%	3%
2	Levelling/dozing and land filling of complete test track area were ever required including cleaning and removal of weed/vegetation and disposal of debris /dismantling of steel/ RCC structures/any other materials lying inside are to be deposited at area shown and debris to be taken outside the premises not objected by any local civic authority.	10%	13%
3	Completion of road trials test track subgrade formation.	10%	23%
4	Completion of Sub Base Works (GSB)	12%	35%
5	Completion of Non bituminous Base Works (WMM)	13%	48%
6	Completion of Bituminous base course (Dense Bituminous Macadam)	10%	58%
7	Completion of Wearing Course (BC)	10%	68%
8	Completion 15 Degree Side Slope	5%	73%
9	Completion 22.5 Degree Side Slope	4%	77%
10	Completion of Road Cross Culverts Works.	4%	75%
11	Completion of Road furniture works.	10%	85%
12	Defect Liability Period at the end of 3 years	5%	95%
13	Defect Liability Period at the end of 5 years	5%	100%

Note: Sl. No. 1 to 7 can be claimed on pro-rata work completed. While Sl. No. 8 to Sl. No. 13 will be paid post completion of stage, no part payment will be processed.

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35. LIST OF DRAWINGS TO BE SUBMITTED BY CONTRACTOR SHALL INCLUDE BUT NOT BE LIMITED TO:

1. Drawing of Horizontal Alignment, Vertical profile and Cross section of Road Trial Track (RT Track) & Side Slope Track.
2. General Arrangement Drawing of Road Trial Track (RT Track) & Side Slope Track.
3. General Arrangement Drawing of Pipe Culverts and storm water drains.
4. Structural Drawings of Pipe/Box Culverts and Retaining walls for side slope track.
5. Drawing for Good for Constructions for all works.
6. Drawing of Road Furniture items including traffic signage, road marking, safety barrier, Traffic signal etc.
7. Drawing of Traffic diversion plans and traffic control measures.

7 SPECIAL CONDITIONS OF CONTRACT (SCC)

1. SUFFICIENCY OF PRICED BILL OF QUANTITIES AND TENDER:

On the acceptance of his tender, the Contractor shall forthwith satisfy himself as to the correctness and sufficiency of his tender for the works as well as prices percentage stated in the bill of quantities and the schedule of prices and within seven days of the acceptance of his tender he shall sign the acceptance, which shall be construed and taken as an acknowledgement on his part of his complete satisfaction and acquiescence in the sufficiency of the prices.

2. CONTRACTOR TO EXECUTE CONTRACT WITH COMPANY:

The Contractor shall within thirty days of the issue of purchase order enter into and execute a formal agreement of contract. The Contractor shall not be entitled to make any charges for the perusal of the contract. The contractor shall within ONE month of the issue of acceptance letter submit the detailed work schedule in the form of master plan, monthly plan, weekly work execution plan clearly indicating the various activities. Work shall start on priority basis as per BEML requirement. However, if any portion of site not made available by BEML for any reason whatsoever no claim on account of this will be entertained.

3. ENGINEERS ORDER TO COMMENCE WORKS AND AS TO NON-DELIVERY OF SITE:

The Contractor having signed the contract, the Accepting authority will forthwith give him notice to commence the works and the Contractor shall upon receipt of such notice commence the works and carry them on at such point or points and in such portions as the Engineer may direct. The company shall, with Engineer's written order to commence the works, give to the Contractor the use of so much of the site of works as may, in the opinion of the Accepting authority, be required in order to enable the Contractor to commence and continue to construction of the works, and shall from time to time consider proper in that behalf, but the non-delivery in manner aforesaid of the use of such site, or any portion thereof, shall not vitiate or effect the contract, nor any provision contained in the specification, not entitle the Contractors to any increased allowance in respect of the money

4. SETTING OUT WORKS:

The Contractor shall set out the whole of the works & be responsible for the correctness of the position, levels & dimensions of several works, according to the drawings & written instructions of the Engineer. If at any time during the progress of the works any error shall appear or arise in the position, levels or dimensions of the several works, the Contractor, on being required to do by the Engineer, shall at his own expense remove & amend the work to the satisfaction of the Engineer, notwithstanding that he may have been assisted by the Engineer in setting out the same.

The setting out of the road trials track loop & side slope track shall be done by the Contractor himself. All measurements shall comply with the dimensions noted on the drawings. The Contractor

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shall construct centre line pillars wherever necessary at his own cost and the setting out shall be got checked, approved and certified by the Engineer in-Charge before execution of work.

5. MATERIALS TOOLS ETC., BROUGHT ON TO WORKS BECOME THE PROPERTY OF THE COMPANY DURING CONTINUATION OF CONTRACT:

All materials, tools, implements and other things brought by the Contractor upon the Company's works shall thereupon become, and shall continue to be the absolute property of the company and be considered in its possession, the Contractor having only the right of using the same for the purpose of the contract. After the works have been completed and all obligations under the contract duly fulfilled, the Company shall return to the Contractor the tools, implements and surplus or waste materials then remaining upon the company's works to be removed by him forthwith and cleared away. Nevertheless, the company shall not at any time be liable for the loss of any of the said materials, tools, implements or other things, but the whole of this liability shall fall upon the Contractor, the same as if they had remained in his possession.

6. WORKS TO BE CARRIED WITH AN EXPEDITION FAILING WHICH THE COMPANY MAY EMPLOY CONTRACTORS WITHOUT VITIATING THE CONTRACT:

The Contractor shall commence to carry on the works with due diligence, and as much expedition as the Officer- in- charge /Engineer in charge may reasonably expect, having regard to the specified time of completion of the whole of the works. In case the Contractor fail to do so or neglect to provide proper and sufficient materials or to employ a sufficient number of workmen to execute the works then the Company shall have full power, without vitiating contract, to take the works wholly or in part of the hand of the Contractor, to engage or employ any other person or workmen, and to procure all requisite materials and implements for the due execution and completion of the said works and the costs and charges incurred by the Company in so doing shall be ascertained by the Accepting Officer and be competent for the company to deduct the amount of such costs and charges along with overheads out of any sum or sums due or to become due from the Company to the contractor under this or any other contract.

7. EMERGENCY POWERS:

In the event of any accident or failure occurring in or on the works which in the opinion of the Engineer, requires immediate attention either during the construction or during the period of maintenance, the company may, by their own or other workmen make necessary repairs at the expense of the Contractors.

8. OPENINGS TO BE MADE FOR EXAMINATION OF WORKS:

Should the Engineer require it for his more perfect satisfaction, the Contractor, shall at any period during the continuance of the contract pull down any part of the works, and make such openings, and to such extent, through any part of the works as the Officer in charge / Engineer in charge may

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direct, and the Contractor shall make such works good again to his satisfaction. Should the works be found faulty in any respect the whole of the expenses thereby incurred shall be defrayed by the Contractor, but of otherwise, by the company.

9. SCOPE OF COMPLETION:

Completion includes completion of all works in accordance with plans and specifications, removal of all yard mess accumulated during construction, leveling and cleaning up the site and generally cleaning the whole building or works.

10. FINAL MEASUREMENT:

The final measurement can be through re-measurement of the whole of the work performed, as decided by OIC/EIC if required will be made by the Company's authorized representative at which the Contractor or his accredited agent must be present. For this purpose, a written notice will be sent to him at least three days before the date fixed for the measurement, appointing the day, hour and place of meeting. Should he not attend to this, the measurements will proceed without him, and he will be precluded from making any protest. If a dispute arises between the company and the Contractor as to the Quantity and Quality of work performed involving a sum of larger than Rs.500/- the Contractor may appeal in writing to the company for measurement or reappraisal, as the case may be. If the company considers the Contractor's claims is valid, they may appoint an Officer other than the Officer who made the final measurements and inspection and his report shall be considered as final and binding on the Contractor. The Contractor shall have a representative present when the re-measurement or reappraisal is being made.

11. SIGN BOARD AND HOARDINGS:

The Contractor shall not affix to place any placards or advertisement of any description or permit the same to be affixed or place in or upon any hoarding, gantry, building/structure other than that approved by the OIC/EIC.

12. FOUNDATIONS

Foundations shall generally conform to the dimensions indicated in the drawings, unless the nature of soils after excavation examined by the engineer-In –charge of works necessitates modifications. The foundation trenches for RCC columns and walls after excavation indicated on the drawings shall be got inspected, approved and certified by the Engineer-In-charge of works before laying concrete.

13.DAMAGE TO SERVICE LINE ETC., OF THE COMPANY:

Care shall be taken in execution of work so as not to damage service line etc., coming in the way of construction. If any damage is caused to the line, the cost of replacing or repairs shall be borne by the Contractor. The work schedule shall be submitted on the enclosed activity schedule along with

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the equipment & manpower mobilization schedule envisaged for timely completion of work within the stipulated time for completion of work.

14. PROVISION OF MACHINES, TRANSPORT ETC.:

Contractor shall provide himself with requisite number of welding sets, hoisting equipment, transport vehicles etc., required for the complete satisfactory execution of work. The Contractor shall furnish list of specific equipment's to be mobilized by him, of acceptance of contract as agreed / directed by the Engineer-in-charge.

15. MATERIALS SUPPLIED BY THE CONTRACTOR:

The Contractor shall furnish / produce purchase vouchers and manufacturer's test certificates of Structural Steel and steel from the reputed manufacturers / suppliers. In addition to the testing of materials, in accordance with technical specifications and quality plan enclosed with this tender. However, OIC/EIC shall decide the usage of the same while in-incorporation in the work based on the manufacturers test report and then test certificate obtained from the approved laboratory as per quality plan. i) CEMENT

(a) Cement required for the work when specified in the contract shall be Contractors own supply. The cement shall be of approved INDIAN MANUFACTURE Co., conforming in all respects with the latest Indian Standard specification for Cement including latest amendments as stated in technical conditions and shall be ISI marked.

(b) Prior to commencing the work, the Contractor shall inform the Engineer the brand of cement and the manufacturer's name he proposes to use and if required, shall produce certificates from the firm from whom he obtains the cement. The Engineer reserves the right of rejecting cement of any brand which has not established itself as a high-grade Portland cement and has not for three years or more given satisfactory result in use under climatic or other conditions of exposure similar to those of the works proposed.

(c) Contractor binds to deliver the cement on the work so as to allow ample time for testing in order that if a brand or batch fails at the test there will be time to receive and test other cement before it is required to be used. This is to ensure that there shall be no delay on the works consequent on the rejection of the cement, which does not satisfy in the test from Authorized laboratory. Failing this, the responsibility for such delay will rest on the Contractor.

(d) Immediately after the work order is signed, Contractor shall procure and store at the site of the works such stock of cement as the Engineer directs to do so for satisfactory completion of work. The Contractor shall give to the Engineer-in-Charge notice of the arrival of each consignment of cement on the work and shall give the Engineer sufficient time for testing the same before it is issued on the work. Only cement certified by the Engineer to conform to Indian Standard Specification shall be used on the works. The Contractors shall maintain a register at the work spot for the receipt and use of cement on the work and such entries shall be got attested daily by the Engineer-in-Charge or his authorized representative.

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- (a) Quantity of cement used on the works shall conform to cement co-efficient schedule. If in the event of being discovered that the quantity of cement used is less than the quantity ascertained as herein before provided, the cost of the quantity of cement not so used shall be recovered from the Contractor.
- (b) All rejected cement not conforming to technical specifications shall be removed by the Contractor from the work spot immediately at his own RISK AND COST.
- (c) The cement shall be stored in barrels or bags at the site on a wooden floor or a platform not less than 1' above the ground level staked in rows of 10 bags high 2' clear from the walls in a covered shed affording adequate protection against the weather and moisture from any source.
- (d) After completion of work, the theoretical quantity of cement to be used on work shall be calculated on the basis of cement co-efficient schedule for various items of work involving the use of cement.
- (e) Over the theoretical quantity of cement, a variation of 3% plus/minus shall be allowed.
- (f) In the event of it being discovered that the quantity of cement used is less than the quantity ascertained as herein before provided (allowing variation on minus side as stipulated above). The cost of the cement not so used shall be recovered from the Contractor on twice the basis of Market Rate plus 10% to cover profit and overheads deemed to have been allowed in the tender rate

ii) STRUCTURAL STEEL / REINFORCEMENT STEEL

- a) Mild steel / HYSD / TMT and Structural steel required for the work shall be Contractors own supply. The structural steel / reinforcement steel elements shall be of approved Indian Manufacture conforming in all respects with the appropriate Indian Standard Specification.
- b) Prior to commencing the work, the Contractor shall inform the Engineer the brand of steel and the manufacturer's name he proposes to use and if required, shall produce certificates from the firm from whom he obtains the Structural Steel. The Engineer reserves the right of rejecting Structural Steel / reinforcement steel of any brand.
- c) Contractor binds to deliver the Structural Steel / reinforcement steel on the work so as to allow ample time for testing in order that if a brand or batch fails at the test there will be time to receive and test other Structural Steel / reinforcement steel before it is required to be used. This is to ensure that there shall be no delay on the works consequent on the rejection of the Structural Steel, which does not satisfy in the test. Failing this, the responsibility for such delay will rest on the Contractor.
- d) Immediately after the work order is signed, Contractor shall procure and store at the site of the works such stock of Structural Steel / reinforcement steel as the Engineer directs to do so for satisfactory completion of work. The Contractor shall give to the Engineer-in-Charge notice of the arrival of each consignment of Structural Steel / reinforcement steel on the work and shall give the Engineer sufficient time for testing the same before it is issued on the work. Only Structural Steel /

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reinforcement steel certified by the Engineer to conform to Indian Standard Specification shall be used on the works. The Contractors shall maintain a register at the work spot for the receipt and use of Structural Steel / reinforcement steel on the work and such entries shall be got attested daily by the Engineer-in-Charge or his authorized representative.

- e) All rejected steel not conforming to the appropriate Indian Standard Specifications shall be removed by the Contractor from the work spot immediately at his own risk and cost.
- f) Rates for all items involving use of structural steel / reinforcement steel shall be based on the price of structural steel conforming to IS as mentioned in technical specifications.
- g) Rates for all items involving use of Structural Steel / reinforcement steel conforming to IS as mentioned in technical conditions.
- h) After the completion of work, the theoretical quantity of steel section to be used on works shall be taken as the quantity required as per design or as authorized by the Engineer-in-charge including authorized laps plus 5% wastage due to cutting into pieces. Over this theoretical quantity plus 5% and minus 4% shall be allowed as variation due to wastage being more or less.
- i) In the event of it being discovered that the quantity of steel used is less than the quantity ascertained as herein before provided (allowing variation on the minus side as stipulated above) the cost of the quantity of steel not so used shall be recovered from the Contractor at twice Market Rate plus 10% to cover profit and cartage to site deemed to have been allowed in the tender rates.
- j) The provisions made above are without prejudice to the right of the Company to take action, against the Contractor under the condition of the contract for not doing the work according to the prescribed specifications.

17.FABRICATION OF STRUCTURAL STEEL BY THE BIDDER ONACCEPTANCE OF WORK AND CUTTING & BENDING OF REINFORCEMENTSTEEL.

- a) The tender rate for steel work shall be deemed to include for all works with fabrication drawing. The work "Fabrication" does not however include any manufacturer's job. The shop drawing for Fabrication to be submitted for the approval of OIC/EIC. The Fabrication at site shall confirm to the approved shop Drawings.
- b) The bar bending Schedule for reinforcement steel shall be submitted for the approval of Engineer-in-charge and the work thereafter shall be executed as per the approved drawing.

c) OTHER MATERIALS

All other materials required for the work shall also be supplied by the Contractor.

These shall conform to appropriate Indian Standard Specification and procured from approved manufacturer.

17A. ACCEPTANCE OF TENDER:

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The Company reserves the right to accept tender in parts (i.e. on the basis of the lowest quotation for each part) or as a whole at its own discretion and hence it is important that the Tenderers take sufficient care and quote reasonable rates in each part so that if one part is separated and entrusted to the Contractor he should be able to do it without difficulty. The rate quoted for similar item should be consistent.

18. RIGHT TO ACCEPT THE CONTRACT:

The Company also reserves the right to accept the lowest or any other tender at its own discretion without assigning any reason whatsoever.

19. MODIFICATION OF SPECIFICATIONS:

No modifications or changes of specification in the Bill of Quantities will be accepted & such tenders are liable to be rejected.

20. EARNEST MONEY DEPOSIT:

Earnest Money Deposit amount which a Contractor shall deposit along with the tender shall be equal to:

a) For works, 2% (Two Percent) of the estimated cost or as notified from time to time:

The EMD shall be deposited in the form of pay order / Demand Draft/ Banker'scheque/ Bank Guarantee in favour of BEML Limited, payable at Bangalore. EMD deposited by the Bidder shall not bear any interest to the Contractor.

21.MOVEMENT OF RCC DUE TO TEMPERATURE

To prevent movement of RCC due to temperature difference, the top of wall on which the slab rests should be plastered smooth and spread with a layer of sand before casting the slab. Lintels with Chajja when cast monolithic should be provided with a lug in the centre so as to prevent the ingress of moisture on to the inner face of wall

22. INTERPRETATION

If sectional completion is specified in the contract data, references in the conditions of contract to the works, the completion date, and the intended completion date apply to any section of the work (other than references to the completion date and intended completion date for the whole of the works).

23. SHOW-CAUSE NOTICE

In case where the Competent Authority decides that action against the Contractor is called for, a show-cause notice shall be issued by the BEML, containing the imputation of misconduct. The Contractor should submit within 15 days a written statement in its defence.

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24.PERFORMANCE STANDARDS AND QUALITY ASSURANCE

1. TECHNICAL SPECIFICATIONS

The works in general shall be executed as per relevant specifications amended up to date, unless given otherwise in this tender document and as per direction of Engineer-in-Charge. In case of discrepancy among the specifications / conditions as mentioned above, the precedence given in general condition of contract shall be followed.

2. TESTS TO BE CONDUCTED BY CONTRACTOR AT HIS COST

The material before incorporation in the work shall be informed to BEML along with Manufacturers Test report on direction of OIC/EIC may permit such materials for the work subjected to Laboratory Testing. Any adverse Test results, such material shall be removed from the site immediately and the work carried out shall be demolished / dismantled / removed from the site as directed by OIC/EIC.

3. LIST OF APPROVED VENDORS / MANUFACTURER'S LIST OF APPROVED VENDORS /

SL. No.	Item	Make / Manufacture
1	Ordinary Portland Cement 43/53 Grade (OPC/PPC)	ACC, Ultratech, Ramco, Chettinad, Dalmia
2	Reinforcement Steel (HYSD/TMT)	SAIL, TATA Steel, Vizag Ispat [RINL], Jindal.
3	Structural Steels for use in Structural Members.	SAIL, TATA Steel, Vizag Ispat [RINL], Jindal, JSW, APL APOLLO.
4	MS Pipes	SAIL, TATA Steel, Jindal, Indian Hume Pipe co Ltd., APL APOLLO.
5	Epoxy/PU Flooring & other specialised floorings.	Fosroc, Pidilite, Sika, Dr.Beck, Ardex Endura, Asian, Tikidan, STP, Tremco.
6	Bitumen & Emulsion	IOCL, BPCL, HPCL, MRPL.

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Note:

1. Contractor shall obtain prior approval of BEML before procurement of the Materials from the manufacturers listed above for the work. If any of the above Brands of Materials are not available, Engineer-in-charge shall allow use of other brand material duly approved by OIC/EIC provided they confirm to the requirement of IS as per Technical Specification/Quality Plan.
2. BEML reserves the right to reject or accept any of the make given above without assigning any reasons and contractor is bound to supply other brands in the list.

4. LIST OF TESTING LABORATORIES (NABL APPROVED)

- i) Any NABL Approved Laboratory with the approval of OIC/EIC.
- ii) Other testing: -

MDD test for gravel	MDD at site 300-2 MDD Dry density 97%
Test for Grading-II material & CBR value	CBR \geq 30
Test for Grading-II material	Density level to be specified & checking method
Test for Grading-III material	Density level to be specified & checking method
Concrete of various grades	For every 30 Cu.M of concrete, cube tests to be conducted for 7 days & 28 days strength
Thickness to be checked for roofing sheets	Overlapping minimum 100mm to be maintained.
Steel for tension strength and Fe 500 grade. Brand name is required.	TMT bars to be checked for weight & Tensile strength

The above tests can be conducted at Engineering college at Coimbatore, Tamil Nadu.

5. GENERAL SAFETY CLAUSES

I) General:

The Contractor shall take all safety precautions / measures and ensure safety for the works, he has been contracted to execute. He shall follow all relevant safety codes of BEML/MES/CPWD and IS codes and safety manuals. The Contractor shall indemnify BEML from any consequences arising due to Contractor's failure in respect of safety measures. Some of the more important measures are listed below. The Contractor shall implement any further measures which may be required as per the safety codes of BEML/MES/CPWD/ IS codes etc. and the measures which the Engineer may call for during the execution of the work.

The Contractor shall engage labourers aged 18 years and above. Suitable Technical devices shall be used as much as possible to avoid or limit the loads by manual transport.

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The Contractor shall engage suitably qualified persons for training / instructing working techniques, methods of lifting, putting down, unloading and stacking of different types of loads; with a view to safeguarding health & preventing accidents.

The Maximum permissible weight which may be transported manually by a Male worker shall not be more than 50 Kgs.

As far as possible adult women workers should not be assigned to regular manual transport of loads. Women workers should not be assigned to manual transport of loads during pregnancy which has been medically determined.

Where adult women workers are engaged in the manual transport of loads the maximum weight of such loads should be substantially less than that permitted for adult Male workers.

The firm should use required PPE while executing the work viz., Safety Helmet, Safety Belt, fall restraint, Crawler board, Safety net etc.,

Before start of work a work, permit has to be obtained by the firm which will be valid for one day.

The firm should inspect the work area before starting execution, prepare a risk assessment and get approved by Safety Engg. Department.

The workmen engaged by the firm shall be medically fit, they should undergo Vertigo test along with other tests and submit medical fitness certificate.

II) Scaffolding:

Suitable scaffolds shall be provided for workmen for all work 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 labourer shall be engaged for holding the ladder and suitable footholds and handholds shall be provided on the ladder and the ladder shall be given an inclination not steeper than $\frac{1}{4}$ to 1 ($\frac{1}{4}$ horizontal and 1 vertical).

III) Guard Railing in Scaffolding / Staging / Platforms:

Scaffolding or staging more than 3.25 meters above the ground floor or floor swung or suspended from an overhead support or erected with stationary support, shall have a guard rail properly attached, bolted, braced and otherwise secured at least 1 meter high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such openings as may be so fastened as to prevent it from swaying from the building or structures

IV) Working Platform / Gangway / Stairway:

Working platform, gangways and stairways shall be so constructed that they do not sag unduly or unequally, and if height of a platform or gangway or stairways is more than 3.25 meters above ground level or floor level, it shall be closely boarded, have adequate width and be suitably fenced provided with guard rail as described in 2 above.

V) Access to working platforms and other working places:

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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 5 meters in length. Width between side rails in a rung ladder shall in no case be less than 30 cm. for ladders up to and including 3 meters in length. For longer ladders this width shall be increased at least 6 mm. for each additional 30 cm. of length. Uniform step spacing shall not exceed 30 cm.

VI) Hoisting Machines:

Use of hoisting machines and tackle including their attachments, anchorage and supports shall conform to the following:

Those shall be of good mechanical construction, sound material and adequate strength and free from patent defects and shall be kept in good repair and in good working order.

Every rope used in hoisting or lowering materials or as a means or suspensions 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 shall be in charge of any hoisting machine including any scaffold winch or give signals to operator.

In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or lowering or as means of suspension, safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with safe working load. In case of hoisting machine having a variable safe working load, each safe working load and the condition under which it is applicable shall be clearly displayed on the machine prominently. No part of any machine or of any gear referred to above in this paragraph shall be loaded beyond safe working load except for the purpose of the testing.

Motors gearing, transmission, electric wiring and other dangerous parts of hoisting appliances shall be provided with efficient safeguards; hoisting appliances shall be provided with such means as will reduce to the minimum, risk of accidental descent of load. Adequate precautions shall be taken to reduce to the minimum risk of any part of a suspended load becoming accidentally displaced.

When workers are employed on electrical installations which are already energised, insulating mats, working apparel such as gloves, sleeves and boots, as may be necessary shall be provided. Workers shall not wear any rings, watches and carry keys or other materials which are good conductors of electricity.

Load tests: All cranes, hoisting machines etc. shall be load tested. Contractor shall submit test certificate from competent, authorised person before use.

VII) Demolition works: Before any demolition work is commenced and also during the process of the work:

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

b. No electric cable or apparatus which is liable to be a source of danger over a cable or apparatus used by Contractor shall remain electrically charged.

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- c. 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 a building shall be so overloaded with debris or materials as to render it unsafe.
- d. All blasting materials shall be stored and handled as per guidelines of relevant authorities.

VIII) Barricades:

Contractor shall erect and maintain barricades required in connection with his operation to guard or protect:

- a. Excavation / Hoisting / Lifting areas
- b. Slab Openings
- c. Areas adjudged hazardous by Contractor's or Engineer's Inspection.
- d. Existing property subject to damage by Contractor's operations.
- e. Contractor's employees and those of his sub-Contractors shall become acquainted with BEML / Engineer's barricading practice and shall respect the provisions thereof

IX) Net & Protective Platform:

The Contractor shall provide & maintain closely knitted PVC net all-round tall buildings throughout the construction period. He shall also provide all-round from external face about 1.5 M+ wide temporary platforms at every 6-7th floor covered with welded steel mesh. This shall be maintained & updated throughout the construction period to avoid any accident due to dropping of construction materials/debris. This shall be strictly followed and work shall be permitted only when complied with satisfaction of the Engineer. If the above are not fully taken care of the Engineer reserves the right to get the same carried out through other agency at the risk and cost of the Contractor.

X) Prevention of Fire and Protection:

All combustible waste materials, wood scaling, soiled rags, etc. should be removed daily and burned in suitable areas.

Fire, welding, and flame cutting should not be permitted in combustible areas. Fires and open flame devices should not be left unattended.

Smoking should be prohibited in all flammable material storages, viz. carpentry, paint shops, garages, service stations, etc. "No Smoking" signs should be posted on all such areas. Accumulation of flammable liquids on floor, walks, etc, should be prohibited. All spills of flammable liquids should be cleaned up immediately.

Flammable liquids, lubricants, etc. should be handled and transported in safety containers and drums which can be kept tightly capped. Petrol or other flammable liquids with a flash point below 100 Deg F should not be used for cleaning purposes.

Oxygen cylinders should not be stored with combustible materials.

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All electric installations should be properly earthed. Repairs should not be made on electrical circuits until the circuit has been de-energized.

Fire extinguishers & fire buckets, painted red, should be provided at all fire hazardous locations. Extinguishers should be inspected, serviced & maintained in accordance with manufacturer's instructions. The inspections should be evidenced by notations on the tag attached to the extinguisher. Handling of Hazardous materials shall be as per statutory regulation.

XI) Electrical Equipment:

All temporary and permanent electrical installations, power distribution and supply required for execution of Work shall be carried out conforming to existing industrial and domestic safety rules and regulations. Important specific points to be noted are as under:

Meter room and main switches should be freely accessible at all times and fully protected against all weathers.

Power distribution system shall be identifiable with display marking on switches.

All power distribution shall be carried out with coated, adequately insulated and of appropriate current / load rating cables. It shall be securely routed for this purpose. No loose, naked, hanging wires shall be permitted.

Over load protection devices shall be installed whenever and wherever heavy current / load consuming construction or plant machinery susceptible to hazard is in use and as directed by the Engineer.

Metallic plugs and sockets shall be used in field work. Switch board shall be in close proximity so as to have quick control over the supply.

Proper and adequate earthing connection to be provided for all installation, plant machinery and distribution system.

Hand lamps and inspection lamps shall be adequately insulated and guarded with wire mesh and will have proper plugs for use. Security and illuminator light shall be secured firmly and protected to withstand all weather.

XII) Protective equipment / gears:

All necessary personal protective equipment as considered adequate by the BEML and the Engineer shall be available for use of the persons employed on the site and maintained in a condition suitable for immediate use; and the Contractor shall take adequate steps to ensure proper use of equipment by those concerned.

i) Workers employed on mixing cement concrete shall be provided with protective footwear & protective goggles, hand gloves of polythene type.

II) Those engaged in handling any material which is injurious to eyes shall be provided with protective goggles.

III) Those engaged in welding works shall be provided with welder's protective eye.

IV) The following safety equipment should be provided to workers as required and their use enforced. Rubber boots; hard toe protective safety boots; hard hats & helmets, safety belts; goggles

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for stone/concrete cutters, gas welding aprons, respirator shields, manila ropes and slings for life lines, gloves, flash lights, battery lamps, safety nets, boatswains' chairs, helmets, life and ring buoys. Items of personal wear should be maintained in serviceable condition and should before being reissued to other employees or returned to stores to be cleaned, sterilised, inspected and repaired, if necessary.

Loose and frayed clothing, hand rings, loose watch chains, etc. should not be worn around moving machinery or other sources of entanglement.

XIII) Other Safety Measures:

Every receptacle used for raising or lowering stones, bricks, tiles, slates, or other subjects should be enclosed, constructed or designed so as to prevent the accidental fall of such objects.

All gears, tools, goods or loose material should be properly loaded into the bucket or receptacle in which they are being raised or lowered. If necessary, they should be properly secured or effective precautions should be taken to prevent their fall.

No timber or materials with projecting nails should be used in any work because they can be a source of danger to people.

Adequate precautions shall be taken to prevent danger from electrical equipment.

No materials on any of the sites 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 public accidents and shall be bound to bear expenses of defence of every suit, action or other proceeding at law that may be brought by any person for injury sustained owing to neglects of the above precautions and to pay any damages and costs 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 compromise any claim by any such person.

XIV) First Aid and Industrial Injuries:

i. Contractor shall maintain first aid facilities for his workmen. First aid appliance including an adequate supply of sterilised dressings and sterilised cotton wool should be maintained in a readily accessible place. Appliances should be kept in good order and they should be placed under the charge of a responsible person who should be readily available during the working hours.

ii. Contractor shall make adequate arrangements for ambulance service and for treatment of injuries. Names of those providing these services shall be furnished to BEML prior to start of constructions and their telephone numbers shall be prominently posted in Contractor's field office.

iii. All critical industrial injuries shall be reported promptly to the ENGINEER – IN – CHARGE and a copy of Contractor's report covering each personnel injury requiring the attention of a physician shall be furnished to BEML

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XV) Maintenance:

All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in a safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities shall be provided at or near places of work.

XVI) Enforcement:

To ensure effective enforcement of the rules and regulations relative to safety precautions, arrangements made by the Contractor shall be open to inspection by the Engineer or his representatives and the Inspecting Officers.

XVII) Displays:

These safety provisions shall be brought to the notice of all concerned by display on a notice board at prominent places at the work spot. Persons responsible for ensuring compliance with the Safety Code shall be named therein by the Contractor.

XVIII) Work permits:

Contractor shall take work permits from concerned departments of BEML as per requirements before commencement of the work every day.

The contractor shall at his own expense arrange for the safety provisions in respect of all labour directly or indirectly employed for performance of the works and shall provide all facilities in connection therewith.

IS codes : As applicable to the relevant work (Latest Revisions)

3696-1987 -Safety code for scaffolds and ladders.

4014 (part 2) -1986 Safety regulations for steel tubular scaffolding

3764-1966 Safety code for excavation work

4081-1986 Safety code for blasting and related drilling operation.

4130-1976 Safety code of demolition of building.

4138-1977 Safety code for working in compressed air

4912-1978 Safety requirements for floor and wall openings, railing and toe board

7969-1975 Safety code for handling and storage of building materials

13415-1992 Safety code for protective barriers in and around the building

13416-(part2) – 1992 Recommendations for preventive measures against hazards at workplace- fall prevention

5916-1970 Safety code for construction involving use of hot bituminous material.

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7293-1974 Safety code for working with construction machinery.

8989-1978 Safety code for erection of concrete framed structure

7205 – 1973 Safety code for Erection of Structural steel works



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APPENDICES

8 APPENDIX- A: INTEGRITY PACT AGREEMENT

(To be executed on plain paper and applicable for all tenders of value _ Rs. 1 Crore and above)

INTEGRITY PACT

Between

BEML Limited (BEML) hereinafter referred to as “The Principal”

And

..... hereinafter referred to as “The Bidder/Contractor”

Preamble

The Principal intends to award, under laid down organizational procedures, contract/s for **Construction of 1.4 km (minimum) road trials test track, side slope test track of 15 degree & 22.5 degree inclination angle, pipe culverts and associated works on EPC Basis at BEML limited, Palakkad Complex, Kerala.**

The principal values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness / transparency in its relations with its Bidder(s) and / or Contractor(s). In order to achieve these goals, the Principal will appoint an independent External Monitor (IEM), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above. Section 1 – Commitments of the Principal

(1) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:

- a) No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
- b) The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
- c) The Principal will exclude from the process all known prejudiced persons.

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(2) If the principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions.

Section 2 – Commitment of the Bidder(s)/ contractor(s)

(1) The Bidder(s)/ Contractor(s) commit themselves to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

a) The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

b) The Bidder(s)/ Contractor(s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

c) The Bidder(s)/ Contractor(s) will not commit any offence under the relevant IPC/PC Act; further, the Bidder(s) / Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or documents provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

d) The Bidder(s)/ Contractor(s) of foreign origin shall disclose the name and address of the Agents/ Representatives in India, if any. Similarly, the Bidder(s)/ Contractor(s) of Indian Nationality shall furnish the name and address of the foreign Principals, if any. Further, as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers" shall be disclosed by the Bidder(s)/Contractor(s). Further, as mentioned in the Guidelines all the payments made to the Indian agent/representative have to be in Indian Rupees only. Copy of the "Guidelines on Indian Agents of Foreign Suppliers" is placed at Appendix (A-1).

e) The Bidder(s) / Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

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(2) The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 – Disqualification from tender process and exclusion from future contracts

If the Bidder(s)/Contractor(s), before award or during execution has committed a transgression through a violation of Section 2, above or any other form such as to put his reliability or creditability in question, the Principal is entitled to disqualify the Bidder(s)/Contractor(s) from the tender process or act as per the procedure mentioned in the “Guidelines on Banning of business dealings”.

Section 4 – Compensation for Damages

(1) If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.

(2) If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages of the contract value or the amount equivalent to E-Performance Bank Guarantee.

Section 5 – Previous Transgression

(1) Bidders to disclose any transgression with any other public / government organisation that may impinge on the anti-corruption principle. The date of such transgression, for the purpose of disclosure by the bidders in this regard, would be the date on which cognizance of the said transgression was taken by the competent authority. The period for which such transgression (s) is / are to be reported by the bidder shall be the last three years to be reckoned from date of bid submission. The transgression(s), for which cognizance was taken even before the said period of three years, but are pending conclusion, shall also be reported by the bidders.

(2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or action can be taken as per the procedure mentioned in “Guidelines on Banning of business dealings”.

Section 6 – Equal treatment of all Bidders /Contractors /Sub-contractors

(1) The Bidder(s)/ Contractor(s) undertaker(s) to demand from all subcontractors a commitment in conformity with this Integrity Pact, and to submit it to the Principal before contract signing.

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(2) The Principal will enter into agreement with identical conditions as this one with all Bidders, Contractors and subcontractors.

(3) The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section 7 – Criminal charges against violating Bidder(s) / Contractor(s) / Subcontractor(s)

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or of the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer

Section 8 – Independent External Monitor / Monitors

(1) The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement

(2) The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. It will be obligatory for him to treat the information and documents of the Bidders/Contractors as confidential. He reports to the CMD, BEML.

(3) The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Subcontractor(s) with confidentiality.

(4) The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

(5) As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit non- binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

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(6) The Monitor will submit a written report to the CMD, BEML, within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise submit proposals for correcting problematic situations.

(7) If the Monitor has reported to the CMD, BEML, a substantiated suspicion of an offence under relevant IPC/PC Act, and the CMD, BEML has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.

(8) The word 'Monitor' would include both singular and plural.

Section 9 – Pact Duration

This pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded. If any claim is made/lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/ determined by CMD of BEML

Section 10 – Other provisions

(1) This agreement is subject to Indian Law. Place of performance and jurisdiction is the Corporate Office of the Principal, i.e. Bangalore.

(2) Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

(3) If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members

.

(4) Should one or several provisions of this agreement turn out to be invalid, the reminder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

(5) The bidder shall not approach the Courts while representing the matters to IEMs and he/ she will await their decision in the matter.

(6) In case of joint venture, all the partners of the joint venture should sign the Integrity Pact. In case of sub-contracting, the Principal contractor shall take the responsibility of the adoption of IP by the sub-contractor. It is to be ensured that all sub- contractors also sign IP.

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(7) In the event of any dispute between the management and the contractor relating to those contracts where Integrity Pact is applicable, in case, both the parties are agreeable, they may try to settle dispute through mediation before the panel of IEMs in a time bound manner. If required, the organization may adopt any mediation rules for this purpose.

In case, the dispute remains unresolved even after mediation by the panel of IEMs, the organization may take further action as per the terms and conditions of the contract.

The fees / expenses on dispute resolution shall be equally shared by both the parties.

(8) In the event of any contradiction between the Integrity Pact and its Annexure, the Clause in the integrity pact will prevail

(For & On behalf of the Principal)

(For & On behalf of Bidder/Contractor)

(Office Seal) (Office Seal)

Place-----

Place-----

Date -----

Date -----

Witness 1:
(Name & Address)

Witness 1:
(Name & Address)

Witness 2:
(Name &Address)

Witness 2:
(Name & Address)

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Appendix A-1

(Applicable Agents / Suppliers to Sign, Seal & Upload / Submit)

GUIDELINES FOR INDIAN AGENTS OF FOREIGN SUPPLIERS

1.0 There shall be compulsory registration of agents for all Global (Open) Tender and Limited Tender. An agent who is not registered with BEML LTD shall apply for registration in the prescribed Application-Form available on www.bemlindia.in.

1.1 Registered agents will file an authenticated Photostat copy duly attested by a Notary Public/Original certificate of the principal confirming the agency agreement and giving the status being enjoyed by the agent and the commission/remuneration/ salary/ retainer ship being paid by the principal to the agent before the placement of order by BEML LTD.

1.2 Wherever the Indian representatives have communicated on behalf of their principals and the foreign parties have stated that they are not paying any commission to the Indian agents, and the Indian representative is working on the basis of salary or as retainer, a written declaration to this effect should be submitted by the party (i.e. Principal) before finalizing the order.

2.0 DISCLOSURE OF PARTICULARS OF AGENTS/REPRESENTATIVES IN INDIA, IF ANY:

2.1 Tenderers of Foreign nationality shall furnish the following details in their offer:

2.1.1 The name and address of the agents/representatives in India, if any and the extent of authorization and authority given to commit the Principals. In case the agent/representative be a foreign Company, it shall be confirmed whether it is real substantial Company and details of the same shall be furnished.

2.1.2 The amount of commission/remuneration included in the quoted price(s) for such agents/representatives in India.

2.1.3 Confirmation of the Tenderer that the commission/remuneration if any, payable to his agents/representatives in India, may be paid by BEML LTD in Indian Rupees only.

2.2 Tenderers of Indian Nationality shall furnish the following details in their offers:

2.2.1 The name and address of the foreign principals indicating their nationality as well as their status, i.e, whether manufacturer or agents of manufacturer holding the Letter of Authority of the Principal

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specifically authorizing the agent to make an offer in India in response to tender either directly or through the agents/representatives.

2.2.2 The amount of commission/remuneration included in the price (s) quoted by the Tenderer for himself.

2.2.3 Confirmation of the foreign principals of the Tenderer that the commission/remuneration, if any, reserved for the Tenderer in the quoted price (s), may be paid by BEML LTD in India in equivalent Indian Rupees on satisfactory completion of the Project or supplies of Stores and Spares in case of operation items.

2.3 In either case, in the event of contract materializing, the terms of payment will provide for payment of the commission/remuneration, if any payable to the agents/representatives in India in Indian Rupees on expiry of 90 days after the discharge of the obligations under the contract.

2.4 Failure to furnish correct and detailed information as called for in paragraph-2.0 above will render the concerned tender liable to rejection or in the event of a contract materializing, the same liable to termination by BEML LTD. Besides this there would be a penalty of banning business dealings with BEML LTD or damage or payment of a named sum.

Signature
(For & On behalf of Bidder/Contractor)

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9 APPENDIX – B: COMPLIANCE REPORT OF GENERAL CONDITIONS OF CONTRACT (GCC)

(To be submitted along with Technical Bid)

Bid Invitation No : _____

Firm : _____

Item details : _____

Sl. No.	Terms / Clause	Complied	Not Complied	Remarks
1.	DEFINITIONS & CONDITIONS OF CONTRACT			
2.	SECURITY DEPOSIT			
3.	LIQUIDATED DAMAGES FOR DELAY IN COMPLETION OF WORKS			
4.	EXTENSION OF TIME			
5.	MEASUREMENT BOOK(MB)			
6.	RAR (RUNNING ACCOUNT REMITTANCE) BILLS PAYMENT			
7.	COMPLETION CERTIFICATE AND COMPLETION PLANS			
8.	PAYMENT OF FINAL BILL			
9.	MATERIALS TO BE PROVIDED BY THE CONTRACTOR			
10.	WORK TO BE EXECUTED IN ACCORDANCE WITH SPECIFICATIONS, DRAWINGS, ORDERS ETC			
11.	DEVIATIONS/ VARIATIONS EXTENT			
12.	FORECLOSURE OF CONTRACT DUE TO ABANDONMENT OR REDUCTION IN SCOPE OF WORK			
13.	CARRYING OUT PART WORK AT RISK & COST OF CONTRACTOR			

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14.	ACTION IN CASE WORK NOT DONE AS PER SPECIFICATIONS			
15.	CONTRACTOR LIABLE FOR DAMAGES, DEFECTS DURING DEFECT LIABILITY PERIOD			
16.	LABOUR LAWS TO BE COMPLIED BY THE CONTRACTOR			
17.	MINIMUM WAGES ACT TO BE COMPLIED WITH			
18.	DISPUTE RESOLUTION AND JURISDICTION			
19.	ARBITRATION			
20.	WATER FOR WORKS			
21.	ELECTRICITY FOR WORKS			
22.	LEVY/TAXES PAYABLE BY CONTRACTOR			
23.	TERMINATION OF CONTRACT ON DEATH OF CONTRACTOR			
24.	RISK PURCHASE CLAUSE and FORCE MAJEURE CLAUSE			
25.	QUOTED RATE TO REMAIN FIRM THROUGHOUT THE CONTRACT			
26.	UNDERSTANDING OF SITE CONDITION			
27.	CONTRACTOR'S LIABILITY AND INSURANCE			
28.	INDEMNIFICATION			
29.	CAR POLICY			
30.	PROGRESS REVIEW MEETINGS			

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31.	APPROVAL OF WORKS BY STAGES			
32.	SITE RELATED			
33.	BRIBES AND GIFTS			

Authorized signatory with company seal / stamp



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10 APPENDIX – C: CONTACT DETAILS OF THE SUPPLIER

(To be filled and submitted by supplier along with the technical bid) 1)

1) Authorised Person details.

(a) Name :

(b) Designation :

(c) Telephone :

(d) Fax :

(e) Mobile :

(f) Email :

2) Head Office :

3) Complete address :

including the website :

4) Details of the proposed plant from
where item is to be supplied :

5) Complete address of the Plant
including Website :

6) Contact person details in plant

(a) Name :

(b) Designation :

(c) Telephone :

(d) Fax :

(e) Mobile :

(f) Email :

7) Bank Details:

a) Name of the Bank :

b) Full Address of the Bank :

c) Suppliers Account Number and Type :

d) IFSC/Swift Code :

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11 APPENDIX – D: NIT ACCEPTANCE LETTER

To:
The General Manager (Head - MM)
M/s. BEML LTD, Palakkad,
Kerala

Dear Sir,

We bidder Have examined the tender documents of Bid Invitation No. dated, the receipt of which is hereby duly acknowledged, we, the undersigned, hereby confirming that we read, understood and accepting all the terms & conditions available in the tender. Further, we indicate that upon selection, we will execute the assignment as per the tender terms and conditions.

Signature with date of Authorized signatory

Name: _____

Designation: _____

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12 APPENDIX – E: UNDERTAKING BY BIDDER

This is to certify that _____ (Name of the Firm) has not been banned / black listed / debarred from Trade by any Central /State Govt.

Dept. / Autonomous Institution / PSUs in India.

I / we hereby certify that all the information given above is factual.

Signature with date of Authorized signatory

Name: _____

Designation: _____

Firm's Seal: _____

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13 APPENDIX – F: REQUIREMENT OF KEY PERSONNEL AT PROJECT SITE

Key personnel's and their qualification Appendix F to be certified on the company letter head by the HR Head or Head of the company that the same are available on the payroll of the company.

A	Project Manager (PM)	Postgraduate or Graduate in Civil Engineering with minimum 15 years of similar work experience and designated as Project Manager for at least 1 project with Similar type of Project
B	Dy Project Manager (QA/QC)	Degree in Civil Engineering with minimum 06 years of similar work experience and designated as DPM for at least 1 project with Similar type of Project
C	Site Engineer-02 Nos	Graduate in Civil Engineering with minimum 05 years of similar work experience for at least 1 project with Similar type of Project.
D	Qualified Safety Officer	Any Engineering Graduate with Diploma in Industrial Safety with minimum 3 to 5 years of similar work experience for at least 1 project with Similar type of Project.

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14 ANNEXURE – I: CONTRACT AGREEMENT

WORK ORDER NO: _____

CONTRACT FOR: _____.

THIS AGREEMENT is made and executed on this ____ day of TWO THOUSAND _____
BETWEEN

M/s BEML Limited, a Government Company coming within the meaning of Sec 617 of Companies Act, 1956 having its Corporate office at “BEML SOUDHA”, 4th Main Road, S.R. Nagar, Bengaluru-560 027 through its _____ (*Designation of the authorized official) at _____ (here incorporate the address) represented by _____ (Name of the

Authorized official)

(Hereinafter referred to as ‘BEML’ which expression shall, unless repugnant to context means and includes its successors and permitted assigns) of the First Part.

AND

M/s. _____ (Name of the Contractor) a _____ (Constitution of the Contractor i.e. Firm/Company/LLP, etc) incorporated/registered (delete whichever not applicable) under the provisions of _____ Act, having its Registered Office/Principal place of business (delete whichever not applicable) at _____ (*Designation of the authorized Official) at _____ (herein incorporate the address) represented by _____ (Name of the Authorized Official)(hereinafter referred to as ‘Contractor’, which expression shall unless repugnant to the context means and includes its successors and permitted assigns) of the Second Part Hereinafter, “BEML” and the “Contractor” shall individually be referred to as ‘Party’ and collectively as ‘Parties’.

WHEREAS BEML is a multi-technology heavy engineering company having four manufacturing divisions at Bengaluru, KGF, Mysore and Palakkad and marketing/ regional/district offices across the Country.

Whereas Contractor is a _____ (incorporate brief profile of the Contractor) WHEREAS BEML, floated tender Ref: _____ dated _____ (Hereinafter referred to as the Tender) for _____ at _____ hereinafter called the “WORK”) WHEREAS the Contractor submitted his offer in response to the Tender floated by BEML as above and become the successful tenderer and has agreed to execute the Work as per the terms and conditions of the Tender.

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Consequently BEML issued Work Order No. _____ dated _____ (hereinafter the Work Order) to the Contractor.

WHEREAS the Contractor has duly accepted the Work Order and agreed to execute the Work strictly in accordance with the work order and on the terms and conditions herein for a total sum of Rs _____/- (Rupees _____ only) as consideration for the Work being carried out.

In consideration of the above, 'BEML' and the 'Contractor' agreed to reduce the terms and conditions in to writing as hereinafter mentioned.

SCOPE OF WORK:

The Scope of Work to be executed by the Contractor is as mentioned at Clause _____ to the Tender Document.

CONTRACT PERIOD:

The contract period shall be the period mentioned in the Work Order at Para _____. Time is the essence of the contract. The Contractor shall strictly adhere to the Time Schedule for commencement and completion as stipulated in the Work Order and shall complete the Work in all respect to the complete satisfaction of BEML on or before the Completion date.

PENALTY

In case the work is not completed in the manner mentioned above to the complete satisfaction of BEML in every respect within the time limit stipulated in the Work Order, then the Contractor shall become liable for payment of compensation/penalty for delay in completion of work, in accordance with Clause _____ of the Tender Document /Work Order irrespective of whether extension of time granted or not unless otherwise specifically stated.

The said Penalty payable by the Contractor shall be without prejudice to any other right or remedy available to BEML on account of such delay in completion of work. The amount of compensation might be adjusted or set-off against any sum payable to the Contractor under this or any other contract with BEML. The Chief Engineer, BEML Limited, _____ shall be the authorized person to certify whether the Work has been completed within stipulated time and his certification shall be final and binding on the parties.

PAYMENT

BEML shall make the payment to the contractor in the sums, proportions and manner from time to time in accordance with the Clause(s) _____ of the Tender Document. The payment shall be made after all the statutory deductions as may be applicable

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SECURITY DEPOSIT/BANK GUARANTEE:

The Contractor has furnished non-interest-bearing Security Deposit in accordance with Clause _____ by way of ____ (incorporate the mode). The Contractor agrees to extend the validity of the Security Deposit, wherever required like extension of period of contract or as may be required by the Company. The Company shall have the full power to enforce the Security Deposit in case of on-performance or violation or breach of any of the terms of this Agreement by the Contractor

COMPLIANCE OF STATUTORY PROVISIONS:

The contractor shall comply with all requirements under various administrative orders and statutes including but not limited to Contract Labour (Regulation and Abolition) Act, 1970 and Rules 1971, Minimum Wages Act, 1948, Payment of Wages Act, 1936, Employers' Liability Act 1938, Shops & Establishments Act (relevant to the State), Factories Act, 1948, Employees' State Insurance Act, 1948, Employees Provident Fund and Misc. Provisions Act, 1952, Payment of Bonus Act, 1965, Payment of Gratuity Act, 1972, Employees Compensation Act, 1923, Industrial Disputes Act, 1947, Child Labour (Prohibition & Regulation) Act, 1986, Sexual Harassment of Woman at Workplace (Prevention, Prohibition and Redressal) Act, 2013 or any other relevant Acts or enactments relating thereto and its amendments (State/Central) and rules framed thereunder from time to time as may be relevant while executing the Work and performing the obligations under this Agreement. The Contractor agrees to indemnify BEML for any loss or damage caused to it due to violation/non-compliance of any administrative orders or statutory provisions in respect of/in connection with the Execution of the Work.

All claims arising at the instance or on account of the persons employed by the contractor including but not limited to on account of wages, allowances, PF, ESI, Gratuity or Compensation under the Employee Compensation Act, or otherwise shall be met by the contractor on his own account and the Company shall be kept fully indemnified. BEML shall have no liability whatsoever in that behalf.

NON-COMPLIANCE OF TERMS:

Non-compliance of any of the terms of this Agreement shall amount to breach leading to cancellation of contract, besides other legal actions, including but not limited to recovery of losses to BEML

FALLS CLAUSE:

If the contractor fails to Execute the Work as per Tender Document, Work Order and the Terms and Conditions herein contained, at any time during the currency of the contract or if the BEML has reasons to believe that the Contractor's work is not satisfactory and that the interest of BEML is thereby affected in any way, BEML shall have the right to Execute the Work by itself or through any other agency, in which case the contractor shall make good the loss to BEML including cost and expenses which arises there from. The extra cost being incurred by BEML in this regard should be to the account of the Contractor, which may be adjusted against security deposit and/or deducted from any pending bills or any payment to be made to the contractor or otherwise.

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INDEMNIFICATION

In the event of the non-fulfillment of any of the covenants, terms, agreements, obligations and conditions mentioned in the Tender Document or Work Order or in this Agreement, the Contractor shall pay to BEML all losses, damages, costs, charges and expenses incurred by BEML Limited as result of the Non fulfillment of the obligations under the contract. The decision of BEML shall be final in this regard and the Contractor shall pay the same without any demur and protest.

The Contractor shall be responsible for all or any kind of losses/damages caused to or suffered by BEML or its employees/officers due to any act or negligence of the labour deployed by the Contractor and the Contractor shall make good the said loss same. BEML shall have the absolute right to recover such losses/damages from any and all amounts payable to the Contractor, including pending Bills. The Contractor will ensure that there are no thefts or loss of property/properties by the labourers deployed by the contractor.

CAR POLICY:

Contractor shall take 'Contractor All Risk Coverage Policy' (CAR Policy) to cover all risks, losses, claims for injuries or damage to any person or any property as per the Tender Document/ Workorder more specifically stipulated in clause _____ of the Tender Document. The insurance policy has to be kept valid till the Work is completed in accordance with the Tender Document/ Work Order and to the complete satisfaction of BEML. The contractor has to take policy at his own cost showing BEML as the "Principal" to enable BEML to make the settlement of claims at the earliest.

LICENSES AND PERMISSIONS:

Contractor shall procure all the Licenses, Permissions, Sanctions, etc. as may be required for/in the course of performance of the contract /execution of the Work or as required under statutes. Any lapse in this regard shall be solely attributable to the Contractor and BEML shall in no way responsible for the same. The Contractor undertakes to indemnify BEML in this regard.

SUB-CONTRACT:

The contractor shall not sub-contract, assign or make over the contract to any third party either in full or partially without prior written consent of BEML.

CONFIDENTIALITY:

The Contractor or his employees or agent or anybody engaged by the Contractor to execute the Work shall maintain utmost faith and confidentiality of all information and documents come into their possession or knowledge and shall not divulge such information to any third parties, in any case, without prior written consent of BEML. The Contractor undertakes to indemnify BEML for any loss caused to it by reason of breach of the above obligation by the Contractor or his employees or agent or anybody engaged by the Contractor.

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ENTIRE CONTRACT

Tender Document and Work Order dated _____ shall form part and parcel of this Agreement and in case of inconsistency, the order of precedence will be as follows:

1. This Agreement;
2. Work Order; and
3. Tender document

TERMINATION:

BEML can terminate the contract by giving thirty days written notice in case of the following reasons and if the Contractor fails to rectify the same within the notice period;

- a) Failure of the contractor to commence the work within a stipulated period.
- b) If the performance of the contractor is found to be unsatisfactory or if he fails to give the desired progress of the work or there is breach of terms of the agreement. In this regard, non-performance in whole or in part by the contractor of any obligation due to the reasons with his control shall be treated as breach of the contract.

However, BEML shall have right to terminate the Agreement at any time by giving ____ months' notice in writing, with or without mentioning the reasons.

The Contractor shall have the right to terminate the Agreement in case of breach of the terms and conditions by BEML.

The termination shall not prejudice the rights and obligations accrued on the parties till the effective date of termination.

JURISDICTION& DISPUTE RESOLUTION:

Disputes, if any, between the Parties arising out of or in connection with this Agreement or any matters connected therewith, shall be discussed and amicably settled by the parties through Conciliation by subject experts appointed by BEML.

The unresolved disputes shall be referred to a sole Arbitrator to be appointed by BEML. The arbitration proceedings shall be in accordance with Arbitration and Conciliation Act, 1996 and Rules framed there under, as may be amended from time to time. The courts at Bengaluru alone shall have jurisdiction to try and adjudicate any matter in connection with this Agreement. The language of arbitration shall be English.

(If the Contractor is a Govt. /CPSU, the following Arbitration Clause may be incorporated and above Arbitration Clause may be deleted)

Disputes if any, arising between the Parties, in connection with this Agreement or any other matters connected therewith, the same will be mutually discussed and amicably settled between the parties, failing which, the disputes shall be referred to the sole Arbitrator of Permanent Machinery for

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Arbitration in Department of Public Enterprises to be nominated by the Secretary to the Government of India, in charge of the Department of Public Enterprises. The Arbitration and Conciliation Act, 1996 shall not be applicable to the arbitration under this clause. The award of the Arbitrator shall be binding upon the parties to the dispute, provided, however, any party aggrieved by such Award may make further reference for setting aside or revision of the Award to the Law Secretary, Department of Legal Affairs, Ministry of Law and Justice, Government of India. Upon such reference, the dispute shall be decided by the Law Secretary or the Special Secretary/Addl. Secretary, when so authorized by the Law Secretary, whose decision shall bind the parties finally and conclusively. The parties to the dispute will share equally the cost of Arbitration as intimated by the Arbitrator.

SEVERABILITY AND WAIVER:

If any provision of this Agreement is held to be invalid or unenforceable for any reason, the remaining provisions shall continue in full force without being impaired or invalidated in any way. The Parties shall replace any invalid provision with a valid provision, which must closely approximate the intent and economic effect of the invalid provision.

NOTICES

All Notices and communications shall be sent to the following addresses of the Parties or any other address duly notified in writing from time-to-time by the parties:

BEML :

Contractor :

The Notices issued other than as above shall not be considered as effective notice.

ASSIGNMENT:

The obligations under this Agreement shall not be assigned by either Party to any third party without prior written consent of the other Party.

AMENDMENT:

No Amendment or variation of this Agreement shall be valid unless it is in writing and signed by or on behalf of each of the Parties.

MISCELLANEOUS:

This agreement further witnesses that the Contractor is responsible for any accident or other compensation payable to the workers employed by and working under the control of the Contractor and that the Company SHALL HAVE no sort of liability in the matter, and that any payment would have to be made by BEML, the same shall be reimbursed by the Contractor or otherwise the same shall be recovered from the Bills payable to the Contractor.

The employees/agents of the Contractor in no case will be treated as the employees of BEML and there shall not be any master and servant relationship whatsoever between BEML and

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labour/employees being deployed by the Contractor for the Work. Further, discharging obligations under the Agreement by labour shall not be construed to believe that they are the employees of BEML and shall at all times be the employees of the contractor only. The contractor will be individually and entirely responsible for all and any liabilities in that regard.

All the agreements, letters, documents exchanged between parties, if any, have been merged with this agreement and shall have no effect from the effective date of this agreement.

IN WITNESS WHEREOF, the parties hereto, have set their hands and seal, on this day, month and year herein above mentioned in the presence of the following witnesses.

For BEML

for CONTRACTOR

Witnesses:

Witnesses:

1.

1.

2.

2.

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15 ANNEXURE – II: FORMAT FOR E-PERFORMANCE BANK GUARANTEE

Note:

1. This guarantee shall be furnished by Scheduled Commercial Banks authorised by RBI to issue a Bank Guarantee.
2. This bank guarantee shall be furnished on e-stamp paper value as per prevailing Stamp Act. (At present not less than Rs. 100. /-)
3. The stamp paper shall have been purchased in the Name of the Bank executing the Guarantee.

Bank Guarantee No..... Dated Amount

.....

Valid up to

Claim up to

General Manager (MM)

BEML Ltd.,

Palakkad Complex

Kerala

1. This deed of Guarantee made this day of..... (Month& year) between Bank of..... (Hereinafter called the "Bank") of the one part, and BEML LIMITED (Hereinafter called "the Employer") of the other part.

2. Whereas BEML LIMITED has awarded the contract for..... (Name of work as per PO) (Hereinafter called the "Contract") to..... (Name of the Contractor) (Hereinafter called "the Contractor").

3. AND WHEREAS the Contractor is bound by the said Contract to submit to the Employer a Performance Security for a total amount of..... (Amount in figures and words).

4. Now, We the Undersigned..... (Name of the Bank) being fully authorized to sign and to incur obligations for and on behalf of and in the name of.....(Full name of Bank), hereby declare that the said Bank will guarantee the Employer the full amount of Rs. (Amount in figures and words) as stated above.

5. NOW THEREFORE, We hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor and we hereby unconditionally, irrevocably and without demur undertake to immediately pay to the Employer upon first written demand and without cavil or argument, any sum or sums within limits of.....(Amount of Guarantee) as aforesaid without reference to the Contractor and without your needing to prove or show grounds or reasons for your demand for the sum specified therein. The Bank shall pay to the Employer any money so demanded notwithstanding any dispute/disputes raised by the Contractor in any suit or proceedings pending before any Court, Tribunal or Arbitrator/s relating thereto and the liability under this Guarantee shall be absolute and unequivocal.

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6. This Guarantee is valid till.....(The initial period for which this Guarantee will be valid must be for at least 3-months (three months) longer than the anticipated expiry date of defect liability period / Warranty period. 7. At any time during the period in which this Guarantee is still valid, if the Employer agrees to grant a time extension to the Contractor or if the Contractor fails to complete the Works within the time of completion as stated in the Contract, or fails

to discharge himself of the liability or damages or debts as stated under Para 5, above, it is understood that the Bank will extend this Guarantee under the same conditions for the required time on demand by the Employer and at the cost of the Contractor.

8. The Bank agrees that no change, addition, modifications to the terms of the Contract Agreement or to any documents, which have been or may be made between the Employer and the Contractor, will in no way release us from the liability under this Guarantee; and the Bank, hereby, waives any requirement for notice of any such change, addition or modification to the Bank.

9. The Guarantee here in before contained shall not be affected by any change in the Constitution of the Bank or of the Contractor.

10. The neglect or forbearance of the Employer in enforcement of payment of any moneys, the payment whereof is intended to be hereby secured or the giving of time by the Employer for the payment hereof shall in no way relieve the bank of their liability under this deed.

11. The expressions "the Employer", "the Bank" and "the Contractor" hereinbefore used shall include their respective successors and assigns.

12. Notwithstanding anything contained herein:

a) Our liability under this Bank Guarantee shall not exceed Rs.....
(Rs.....)

b) This Bank Guarantee shall be valid up to.....

c) We are liable to pay the Guarantee amount or part thereof under this Bank Guarantee only & only if you serve upon us a written claim or demand on or before

In witness whereof I/We of the bank have signed and sealed this Guarantee on the.....day of..... (Month & year) being herewith duly authorized.

For and on behalf of theBank.

Signature of Authorized Bank officials.

Name :.....

Designation:

Stamp/Seal of the Bank.....

Signed, sealed and delivered for and on behalf of the Bank by the above named.....in the presence of:

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Witness 1.
Signature.....

Name.....

Address.....

Name.....

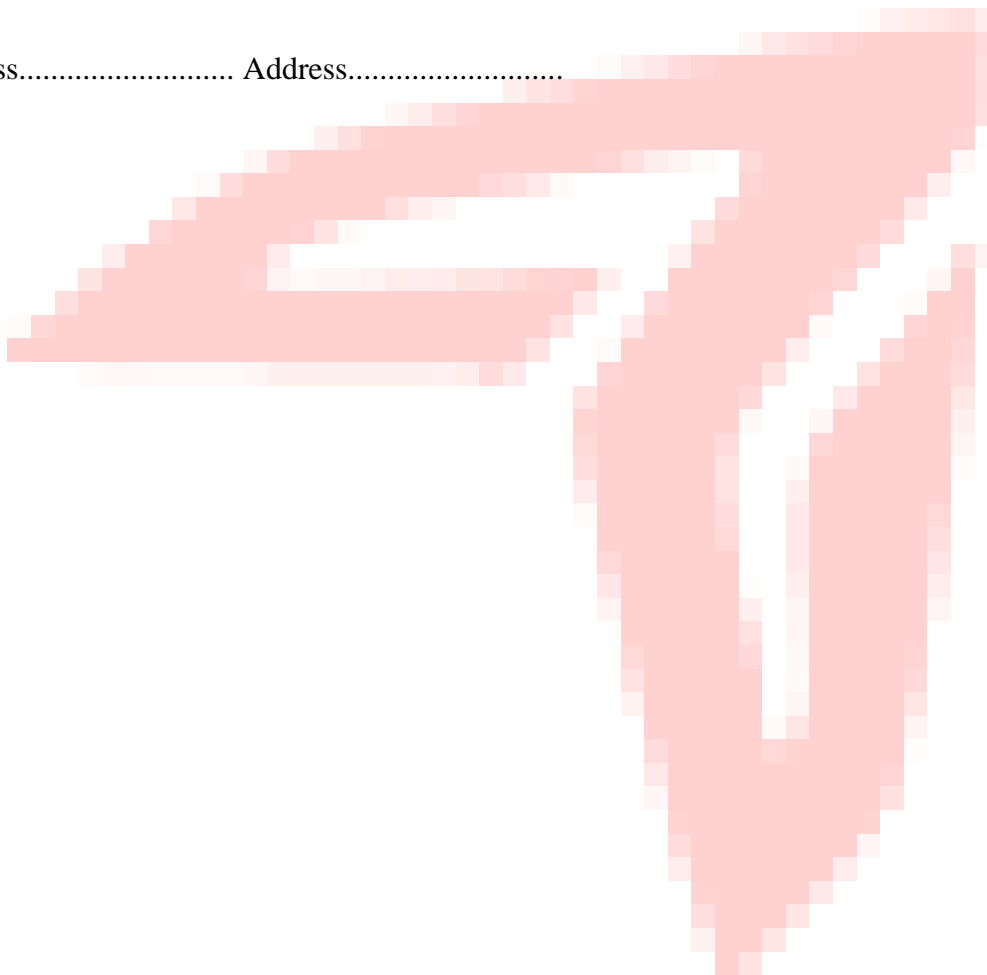
Address..... Address.....

Witness 2.
Signature.....

Name.....

Address.....

Name.....



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16 ANNEXURE – III: FORMAT OF BID GUARANTEE FORM

Ref:

To,
BEML LIMITED
Palakkad Complex
Kerala

Dear Sirs,

In accordance with your 'Tender Enquiry' under your Tender No: dated

M/s..... herein after called the Bidder, with the following Directors on their Board of Directors / partners of the Firm.

- | | |
|----|-----|
| 1. | 2. |
| 3. | 4. |
| 5. | 6. |
| 7. | 8. |
| 9. | 10. |

Wish to participate in the said tender for.....

.....
.....
.....
.....
.....

As an irrevocable Bank Guarantee against Bid Guarantee for an amount of Rs.....
..... (In words and figures) valid for days from.....
..... is required to be submitted by the Bidder as a condition precedent for participation in the said bid, which amount is liable to be forfeited by the BEML Limited (herein after called PURCHASER)

1) the withdrawal or revision of toe offer by the Bidder as a condition within the validity period.

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- 2) Non-acceptance of the 'Letter of Intent / Purchase Order' by the bidder when issued within the validity period.
- 3) Failure to furnish the valid contract performance guarantee by the bidder within one month from the receipt of the Purchase Order and
- 4) on the happening of any contingencies mentioned in the bid documents.

We, theBank at..... Having our Head office at (Local address) Guarantee and undertake to pay immediately on First demand by BEML LIMITED, the amount of Rs.....

.....(in Figure and words) without any reservation, protest, demur and recourse. Any such demand made by the Purchaser shall be conclusive and binding on the Bank irrespective of any dispute or difference raised by the purchaser.

The guarantee shall be irrevocable and shall remain valid up to (This date shall be 60 days after the date for which the bid is valid). If any further extension of this guarantee is required the same shall be extended to such required period (not exceeding one year) on receiving instruction from M/s.....on whose behalf this guarantee is issued.

Claim Period: Up to _____

In witness whereof the Bank, through its authorized officer has set its hand and stamp on thisday of.....at

witness (Signature)

WITNESS

Name in (Block letters)

Designation

(Staff.No.)

(Bank's common Seal) Official

-

(Signature)

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address:

Contact Phone No.:

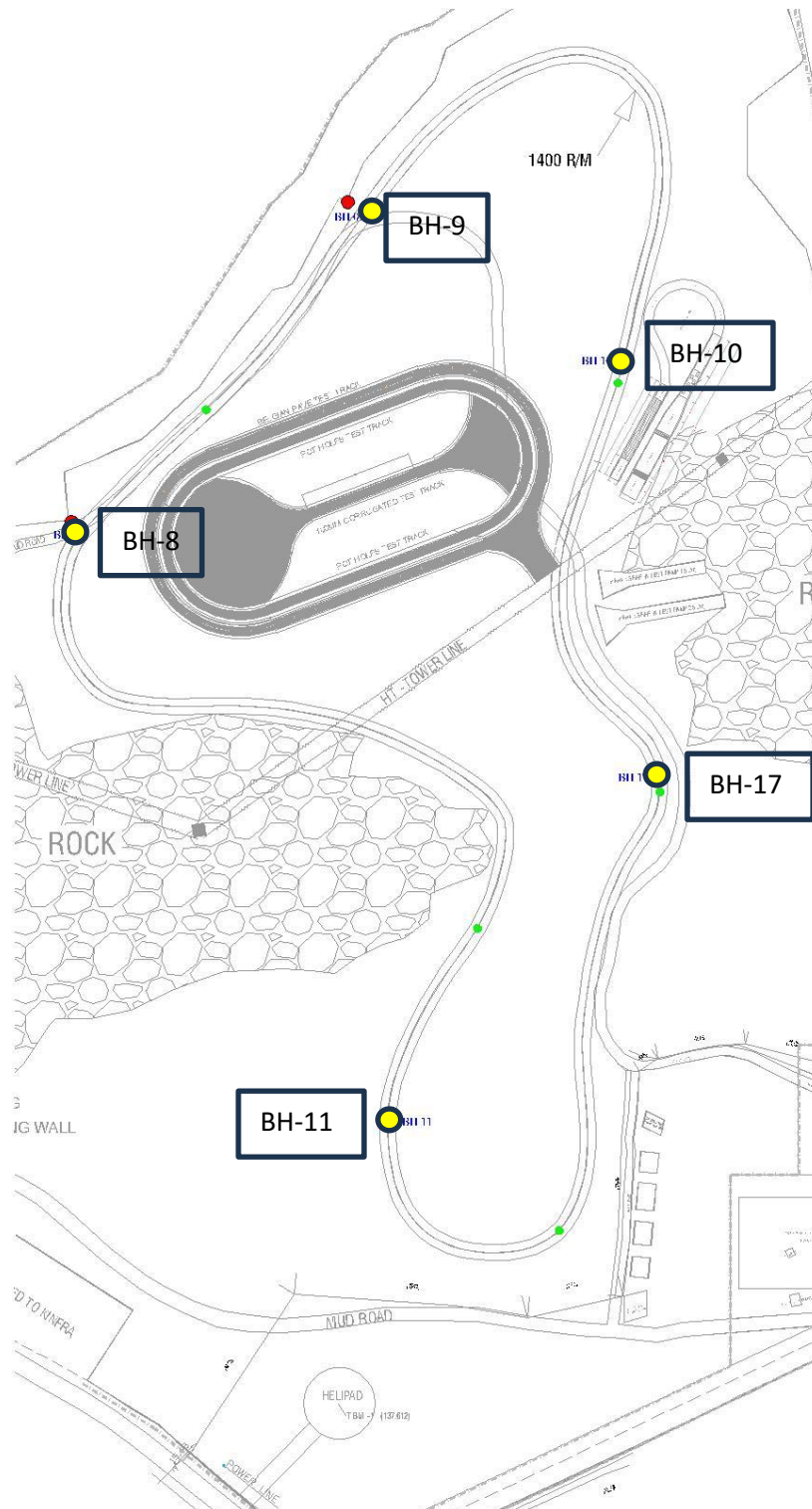
Contact Mail Id:

Attorney as per power of Attorney No Date:



Engineering Procurement & Construction (EPC) of Road Trials Test Track & Side Slope Test Track with Culverts, Drains and associated works at BEML Limited, Palakkad Complex, Kerala

17 ANNEXURE IV - GEOTECHNICAL REPORTS



Engineering Procurement & Construction (EPC) of Road Trials Test Track & Side Slope Test Track with Culverts, Drains and associated works at BEML Limited, Palakkad Complex, Kerala



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Bore Log

Ref: GEO - G - 178 - 2025-26

Name of Project: "SOIL INVESTIGATION FOR THE PROPOSED CONSTRUCTION OF COMPOUND WALL @ BEML LIMITED, PALAKKAD COMPLEX."

Soil Investigation done by: GEODESIGN INDIA PRIVATE LIMITED
Soil Exploration Consultant,
Coimbatore-38


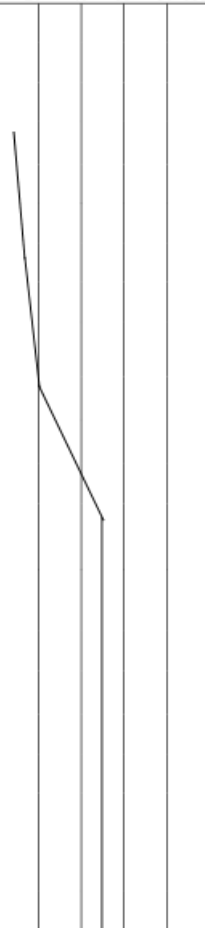

Type of Drilling: Rotary - Mud Circulation
LOCATION - 8

G.W.T-Not met

Bore hole No. : 8

Date of commencement : 25.11.2025

Date of completion : 25.11.2025

Depth below G.L.	Soil Profile	Description of Soil	Thickness of layer (m)	Standard penetration test data					Relative density / Consistency	Graphical representation of penetration resistance					
				Depth at which test is conducted	N – Value- Depth of penetration					0	20	40	60	80	100
					15cm	30cm	45cm	For 30cm							
5.60		Silty Gravel	5.80	1.50	2	4	6	10	Medium						
				3.00	5	7	9	16	Medium						
				4.50	8	9	11	20	Medium						
10.00m		Soft Disintegrated Rock	4.40	6.00	46	50/7	-	>50	V. Dense						
				7.50	>50	-	-	>50	V. Dense						
				9.00	>50	-	-	>50	V. Dense						
				End of Bore hole	10.00	>50	-	-	>50	V. Dense					

Contd...9

Soil Exploration Report For M/s. BEML LIMITED, PALAKKAD COMPLEX.

Engineering Procurement & Construction (EPC) of Road Trials Test Track & Side Slope Test Track with Culverts, Drains and associated works at BEML Limited, Palakkad Complex, Kerala



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Bore Log

Ref: GEO - G - 178 - 2025-26

Name of Project: "SOIL INVESTIGATION FOR THE PROPOSED CONSTRUCTION OF COMPOUND WALL @ BEML LIMITED, PALAKKAD COMPLEX."

Soil Investigation done by: GEODESIGN INDIA PRIVATE LIMITED
Soil Exploration Consultant,
Coimbatore-38

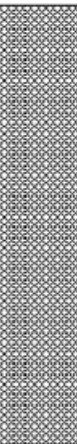
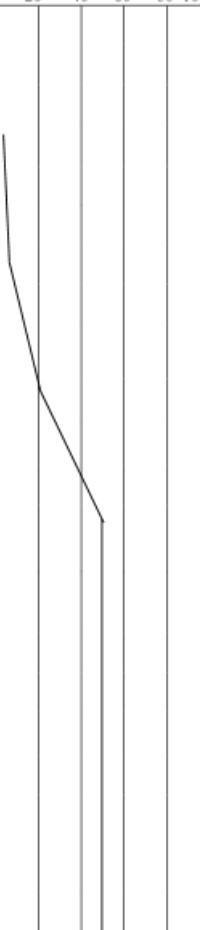

Type of Drilling: Rotary - Mud Circulation
LOCATION - 9

G.W.T-Not met

Bore hole No. : 9

Date of commencement : 26.11.2025

Date of completion : 26.11.2025

Depth below G.L.	Soil Profile	Description of Soil	Thickness of layer (m)	Standard penetration test data					Relative density / Consistency	Graphical representation of penetration resistance					
				Depth at which test is conducted	N – Value- Depth of penetration					0	20	40	60	80	100
					15cm	30cm	45cm	For 30cm							
5.30		Silty Gravel	5.30	1.50	2	3	5	8	Loose						
				3.00	3	5	4	9	Loose						
				4.50	7	8	12	20	Medium						
				6.00	17	50/4	-	>50	V. Dense						
				7.50	>50	-	-	>50	V. Dense						
				9.00	>50	-	-	>50	V. Dense						
10.00m		End of Bore hole		10.00	>50	-	-	>50	V. Dense						

Contd...10

Soil Exploration Report For M/s. BEML LIMITED, PALAKKAD COMPLEX.

Engineering Procurement & Construction (EPC) of Road Trials Test Track & Side Slope Test Track with Culverts, Drains and associated works at BEML Limited, Palakkad Complex, Kerala



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Bore Log

Ref: GEO - G - 178 - 2025-26

Name of Project: "SOIL INVESTIGATION FOR THE PROPOSED CONSTRUCTION OF RT TRACK @ BEML LIMITED, PALAKKAD COMPLEX."

Soil Investigation done by: GEODESIGN INDIA PRIVATE LIMITED
Soil Exploration Consultant,
Coimbatore-38



Type of Drilling: Rotary - Mud Circulation
LOCATION - 10

G.W.T-Not met

Bore hole No. : 10

Date of commencement : 26.11.2025

Date of completion : 27.11.2025

Depth below G.L.	Soil Profile	Description of Soil	Thickness of layer (m)	Standard penetration test data					Relative density / Consistency	Graphical representation of penetration resistance					
				Depth at which test is conducted	N – Value- Depth of penetration					0	20	40	60	80	100
					15cm	30cm	45cm	For 30cm							
1.70		Poorly Graded Gravel	1.70	1.50	18	36	50/2	>50	V. Dense						
		Soft Disintegrated Rock	8.30	3.00	>50	-	-	>50	V. Dense						
				4.50	>50	-	-	>50	V. Dense						
				6.00	50/5	-	-	>50	V. Dense						
				7.50	>50	-	-	>50	V. Dense						
				9.00	>50	-	-	>50	V. Dense						
10.00m		End of Bore hole		10.00	>50	-	-	>50	V. Dense						

Contd...11

Soil Exploration Report For M/s. BEML LIMITED, PALAKKAD COMPLEX.

Engineering Procurement & Construction (EPC) of Road Trials Test Track & Side Slope Test Track with Culverts, Drains and associated works at BEML Limited, Palakkad Complex, Kerala



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11
Bore Log

Ref: GEO - G - 178 - 2025-26

Name of Project: "SOIL INVESTIGATION FOR THE PROPOSED CONSTRUCTION OF RT TRACK @ BEML LIMITED, PALAKKAD COMPLEX."

Soil Investigation done by: GEODESIGN INDIA PRIVATE LIMITED
Soil Exploration Consultant,
Coimbatore-38

Type of Drilling: Rotary - Mud Circulation
LOCATION - 11

G.W.T-Not met

Bore hole No. : 11

Date of commencement : 27.11.2025

Date of completion : 27.11.2025

Depth below G.L.	Soil Profile	Description of Soil	Thickness of layer (m)	Standard penetration test data					Relative density / Consistency	Graphical representation of penetration resistance					
				Depth at which test is conducted	N – Value- Depth of penetration					0	20	40	60	80	100
					15cm	30cm	45cm	For 30cm							
4.20		Silty Gravel	4.20	1.50	4	5	7	12	Medium						
				3.00	5	6	8	14	Medium						
4.80		Poorly Graded Gravel	0.60	4.50	19	40	50/6	>50	V. Dense						
				6.00	>50	-	-	>50	V. Dense						
		Soft Disintegrated Rock	5.20	7.50	>50	-	-	>50	V. Dense						
				9.00	>50	-	-	>50	V. Dense						
10.00m		End of Bore hole		10.00	>50	-	-	>50	V. Dense						

Contd...12

Soil Exploration Report For M/s. BEML LIMITED, PALAKKAD COMPLEX.

Engineering Procurement & Construction (EPC) of Road Trials Test Track & Side Slope Test Track with Culverts, Drains and associated works at BEML Limited, Palakkad Complex, Kerala



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17
Bore Log

Ref: GEO - G - 178 - 2025-26

Name of Project: "SOIL INVESTIGATION FOR THE PROPOSED CONSTRUCTION OF RT TRACK @ BEML LIMITED, PALAKKAD COMPLEX."

Soil Investigation done by: GEODESIGN INDIA PRIVATE LIMITED
Soil Exploration Consultant,
Coimbatore-38



Type of Drilling: Rotary - Mud Circulation
LOCATION - 17

G.W.T-Not met

Bore hole No. : 17

Date of commencement : 01.12.2025

Date of completion : 01.12.2025

Depth below G.L.	Soil Profile	Description of Soil	Thickness of layer (m)	Standard penetration test data					Relative density / Consistency	Graphical representation of penetration resistance					
				Depth at which test is conducted	N – Value- Depth of penetration										
					15cm	30cm	45cm	For 30cm							
										0	20	40	60	80	100
1.70		Poorly Graded Gravel	1.70	1.50	42	50/9	-	>50	V. Dense						
		Soft Disintegrated Rock	8.30	3.00	>50	-	-	>50	V. Dense						
				4.50	>50	-	-	>50	V. Dense						
				6.00	50/5	-	-	>50	V. Dense						
				7.50	>50	-	-	>50	V. Dense						
				9.00	>50	-	-	>50	V. Dense						
10.00m		End of Bore hole		10.00	>50	-	-	>50	V. Dense						

Geotechnical Engineer

Soil Exploration Report For M/s. BEML LIMITED, PALAKKAD COMPLEX.

18 CALIFORNIA BEARING RATIO REPORT-ANNEXURE V



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SOIL EXPLORATION REPORT

For

M/s. BEML LIMITED

Ref: GEO -G - 168 - 2025 - 2026

Date: 27.09.2025

PROJECT NAME

**CALIFORNIA BEARING RATIO TEST REPORT @ BEML LIMITED,
KANJIKODE, KERALA.**



GEODESIGN INDIA PRIVATE LIMITED®

(An ISO 9001 : 2015 Certified Company)

Soil Investigations, SPT Test, DTH, Diamond core drilling, & Grouting works

Old no - 40 , New no - 29 , 8th street , K.K.Pudur, Coimbatore - 38

Ph. 0422 4202452 Mobile : 90433 - 44488

E - mail: geodesign123@gmail.com , Web : www.geodesign.co.in

CALIFORNIA BEARING RATIO TEST REPORT @ BEML LIMITED, KANJIKODE, KERALA

Engineering Procurement & Construction (EPC) of Road Trials Test Track & Side Slope Test Track with Culverts, Drains and associated works at BEML Limited, Palakkad Complex, Kerala



S.NO.	CONTENTS	PAGE NO.
1.	CALIFORNIA BEARING RATIO TEST	3
	1.1 CALIFORNIA BEARING RATIO METHOD	3
	1.2 CALIFORNIA BEARING RATIO TEST RESULTS	5 - 8

CALIFORNIA BEARING RATIO TEST REPORT @ BEML LIMITED, KANJIKODE, KERALA

1. CALIFORNIA BEARING RATIO TEST

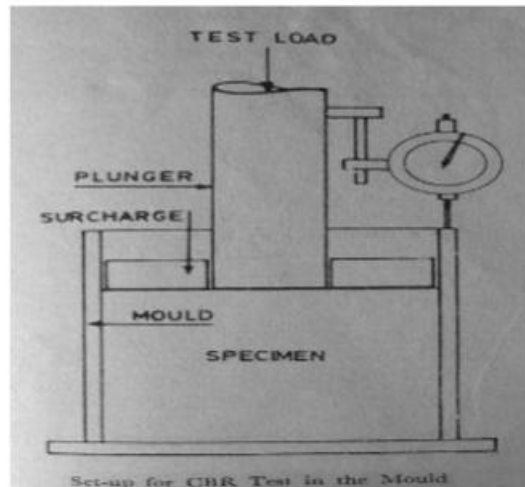
1.1. CALIFORNIA BEARING RATIO METHOD

This is probably the most widely used method for the design of flexible pavements. It combines a load-penetration test performed in the laboratory or in situ with the empirical design chart to determine the thicknesses of pavement and of its constituent layers.

CALIFORNIA BEARING RATIO TEST

The California bearing ratio test was originally devised in 1929 by the California division of Highways(U.S.A) and has since been developed and modified by the U.S. Corps of Engineers. It is a small scale penetration test developed to predict the behavior of subgrade soils and of paving materials in terms of an empirical parameter known as the California bearing ratio, usually abbreviated as CBR. The CBR is defined as the ratio of the test load required to force a cylindrical plunger of 3 in² (19.355 cm²) cross section into a soil mass at the rate of 0.05 in per minute(0.127 cm /min) to the load required for corresponding penetration of the plunger into a standard sample of crushed stone, the latter load being known as the standard load. The ratio is expressed as a percentage. Thus

$$\text{CBR} = [(\text{Test Load})/(\text{Standard load})] \times 100$$



Engineering Procurement & Construction (EPC) of Road Trials Test Track & Side Slope Test Track with Culverts, Drains and associated works at BEML Limited, Palakkad Complex, Kerala

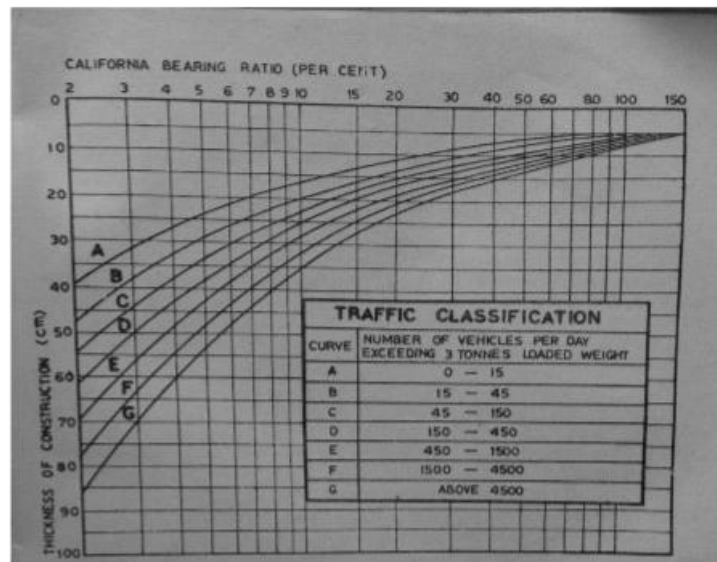


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The CBR is determined Corresponding to both 2.50 mm and 5.0 mm penetrations and the greater of the values is used for design. Generally, the 2.50 mm penetration value is greater. The standard load for 2.50 mm and 5.0 mm penetrations is 1370 and 2055 kg respectively.

Both during soaking and the penetration test the specimen is covered with equal surcharge weights to simulate the effect of overlying pavement or the particular layer under construction. A 5 -lb (2.27kg) weight is considered to be approximately equivalent to 2.5 in (6.3cm) of construction when the test is performed in the mould. In the in-situ CBR tests, each 5-lb weight (used in the form of 25 cm diameter plate with central circular hole for plunger) represents a surcharge equivalent to 2.5 cm of construction.

The results of penetration test are plotted in the form of penetration -load graph. The design curves giving the appropriate thickness of construction required above a material with a given CBR have been developed for different wheel loads and traffic conditions after carrying out the CBR test over a number of years of subgrade, subbase and base materials of both satisfactory and failed road pavements. From the CBR design curves , the thickness can be directly obtained for the CBR value corresponding to the traffic classification.



CALIFORNIA BEARING RATIO TEST REPORT @ BEML LIMITED, KANJIKODE, KERALA

Engineering Procurement & Construction (EPC) of Road Trials Test Track & Side Slope Test Track with Culverts, Drains and associated works at BEML Limited, Palakkad Complex, Kerala



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California Bearing Ratio test (Soaked Condition) Calculation

(Standard Load for 2.50mm and 5.00mm penetration are 1370 kg and 2055 kg respectively)

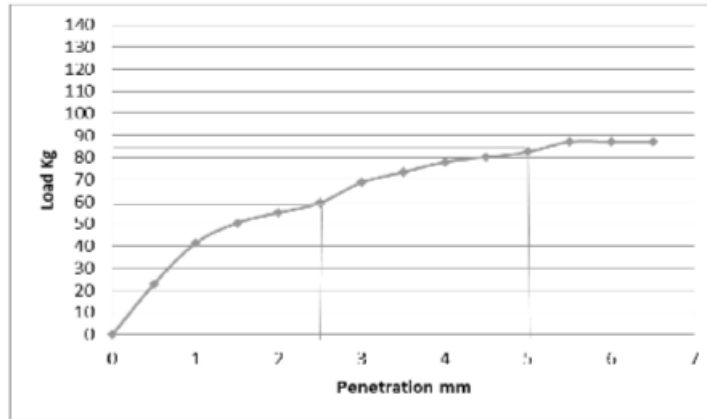
LOCATION – 1

CALIFORNIA BEARING RATIO = (TEST LOAD / STANDARD LOAD) X 100

California Bearing Ratio for 2.5 mm penetration = $(59.63 / 1370) \times 100$ = 4.35 %

California Bearing Ratio for 5 mm penetration = $(82.56 / 2055) \times 100$ = 4.02%

Design California Bearing Ratio = 4.35 %



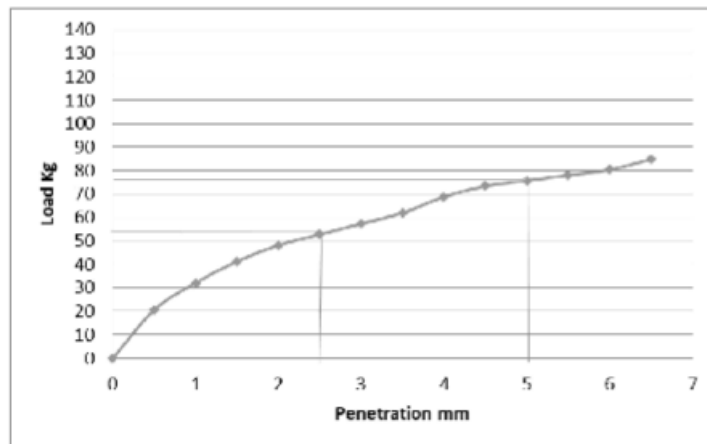
LOCATION – 2

CALIFORNIA BEARING RATIO = (TEST LOAD / STANDARD LOAD) X 100

California Bearing Ratio for 2.5 mm penetration = $(52.75 / 1370) \times 100$ = 3.85 %

California Bearing Ratio for 5 mm penetration = $(75.68 / 2055) \times 100$ = 3.68%

Design California Bearing Ratio = 3.85 %



CALIFORNIA BEARING RATIO TEST REPORT @ BEML LIMITED, KANJIKODE, KERALA

Engineering Procurement & Construction (EPC) of Road Trials Test Track & Side Slope Test Track with Culverts, Drains and associated works at BEML Limited, Palakkad Complex, Kerala

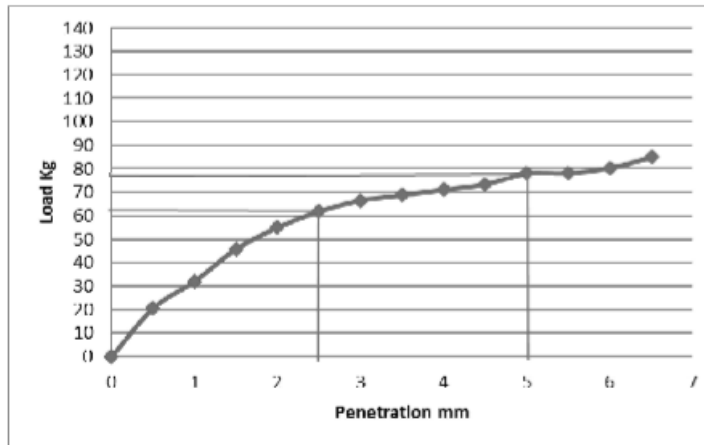
LOCATION – 3

CALIFORNIA BEARING RATIO = (TEST LOAD / STANDARD LOAD) X 100

California Bearing Ratio for 2.5 mm penetration = (61.92 / 1370) x 100 = 4.52 %

California Bearing Ratio for 5 mm penetration = (77.98 / 2055) x 100 = 3.79%

Design California Bearing Ratio = 4.52 %



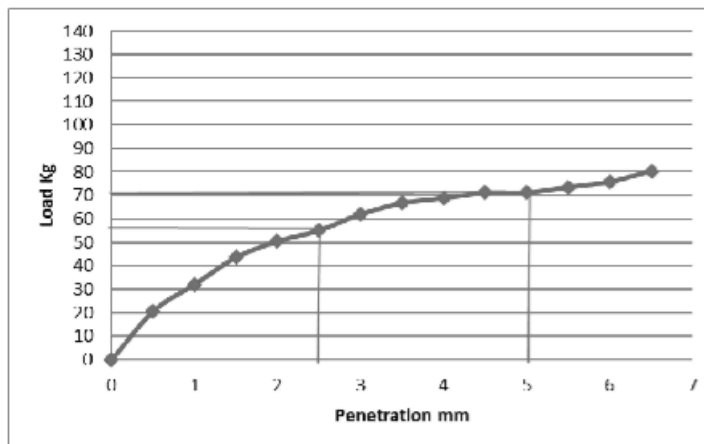
LOCATION – 4

CALIFORNIA BEARING RATIO = (TEST LOAD / STANDARD LOAD) X 100

California Bearing Ratio for 2.5 mm penetration = (55.04 / 1370) x 100 = 4.02 %

California Bearing Ratio for 5 mm penetration = (71.10 / 2055) x 100 = 3.46%

Design California Bearing Ratio = 4.02 %



CALIFORNIA BEARING RATIO TEST REPORT @ BEML LIMITED, KANJIKODE, KERALA

Engineering Procurement & Construction (EPC) of Road Trials Test Track & Side Slope Test Track with Culverts, Drains and associated works at BEML Limited, Palakkad Complex, Kerala



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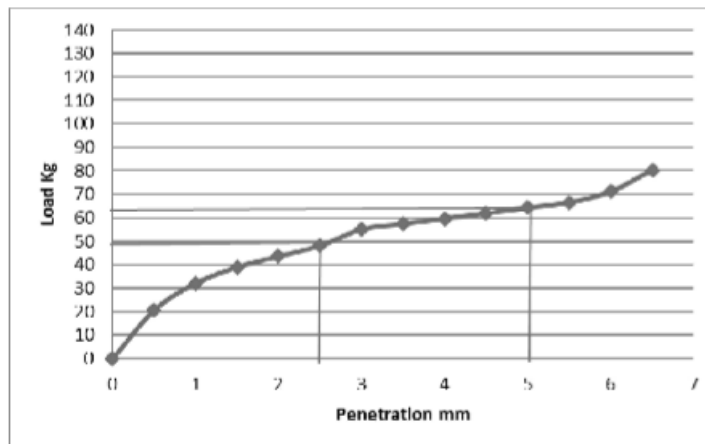
LOCATION – 5

CALIFORNIA BEARING RATIO = (TEST LOAD / STANDARD LOAD) X 100

California Bearing Ratio for 2.5 mm penetration = $(48.16 / 1370) \times 100$ = 3.52 %

California Bearing Ratio for 5 mm penetration = $(64.22 / 2055) \times 100$ = 3.13 %

Design California Bearing Ratio = 3.52 %



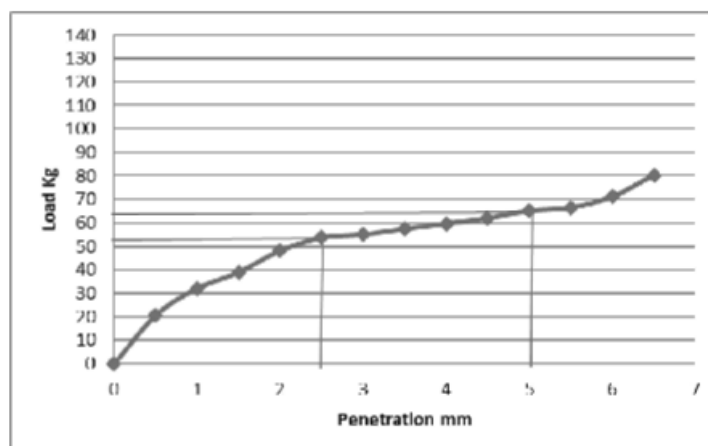
LOCATION – 6

CALIFORNIA BEARING RATIO = (TEST LOAD / STANDARD LOAD) X 100

California Bearing Ratio for 2.5 mm penetration = $(53.66 / 1370) \times 100$ = 3.91 %

California Bearing Ratio for 5 mm penetration = $(65.13 / 2055) \times 100$ = 3.17 %

Design California Bearing Ratio = 3.91 %



CALIFORNIA BEARING RATIO TEST REPORT @ BEML LIMITED, KANJIKODE, KERALA

1.2 CALIFORNIA BEARING RATIO TEST RESULTS

LOCATION	MAXIMUM DRY DENSITY (g/cc)	OPTIMUM MOISTURE CONTENT (%)	4 DAYS SOAKED CBR VALUE FOR 2.5mm PENETRATION (%)
1	1.61	16	4.35
2	1.55	16	3.85
3	1.64	15.5	4.02
4	1.72	17	4.52
5	1.59	15	3.52
6	1.56	17	3.91

**Er.K.P.VETRISELVAN,ME(GEOTECH),MIGS,MISTE.,
GEOTECHNICAL ENGINEER**

Engineering Procurement & Construction (EPC) of Road Trials Test Track & Side Slope Test Track with Culverts, Drains and associated works at BEML Limited, Palakkad Complex, Kerala

19 CHECK LIST ON PREPARATION OF BIDS

Ref. No.	Particulars	Yes / No
1	Have you read and understood various conditions of the Contract and shall abide by them?	
TECHNICAL BID		
2	Have you submitted the EMD / Copy of DD at the address mentioned and uploaded the scanned copy?	
3	Integrity Pact	
4	Have you uploaded the following documents which are to be uploaded with signatures & seal? a) 2022-23 Profit & Loss Statement b) 2023-24 Profit & Loss Statement c) 2024-25 Profit & Loss Statement	
5	Solvency Certificate	
6	Work Completion Certificates and TDS certificate.	
7	Registration with Government Bodies like ESIC, EPF, Labour Laws: Have you attached a Registration copy of each of the certificate?	
8	Have you attached the proof of authorization / Power of Attorney to sign on behalf of the bidder in the Technical Bid?	
9	Copy of certificate of Registration for PAN card, GST No., CIN registration & etc.,	

Engineering Procurement & Construction (EPC) of Road Trials Test Track & Side Slope Test Track with Culverts, Drains and associated works at BEML Limited, Palakkad Complex, Kerala

10	Have you uploaded the following documents which are to be uploaded with signatures & seal? 1) Compliance for scope of work 2) Compliance to BOQ 3) Compliance to GCC 4) Compliance to NIT acceptance letter 5) Compliance to Under taking by Bidder 6) Special condition on requirement of key personnel at Project Site	
FINANCIAL BID		
11.	Has your financial Bid proposal been duly filled and uploaded?	

**** End of document****