

CORPORATION OF CHENNAI
ZONAL OFFICE - VIII



FOR WORKS BELOW 2 CRORE

Z.O.VIII C.NO.B2/ 4097 /22/ 2013

Package- 4 - (5 Road works)

**Construction of Thin Whitetopping (TWT) (C.C. over existing BT surface for
carriage way at various Roads/Streets in ward No 102 Zone VIII**

Signature of the Bidder

Letter of Tender, Schedule and Conditions

(THIS TENDER DOCUMENT IS NOT TRANSFERABLE)

CORPORATION OF CHENNAI

ZONAL OFFICE – VIII

FOR WORKS BELOW 2 CRORE



BID DOCUMENT

TWO COVER SYSTEM

Z.O.VIII C.NO.B2/ 4097 /22/ 2013

Package- 4 - (5 Road works)

Construction of Thin Whitetopping (TWT) (C.C. over existing BT surface for
carriage way at various Roads/Streets in ward No 102 Zone VIII

Price: Rs16, 875/-(Rupees Sixteen Thousand Eight Hundred Seventy Five Only)

Inclusive of Plus S.T. at 10% and SC on ST @ 5%

Signature of the Bidder

Letter of Tender, Schedule and Conditions
(THIS TENDER DOCUMENT IS NOT TRANSFERABLE)

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Section I
CORPORATION OF CHENNAI
ZONAL OFFICE – VIII
TENDER NOTICE

Corporation of Chennai

Sealed Tenders are invited for the following works as per details furnished below

The Tenderers may submit separate tenders for each of the following work/works mentioned below:

Sl. No.	Ref No	Name of work	Approx. value of work Rs. In lakhs	EMD Rs.	Cost of Tender Rs.	Eligible Class	Last Date & Time of Submission
1	Z.O. VIII C.N O.B2 / 4097 /22/ 2013	Construction of Thin Whitetopping (TWT) (C.C. over existing BT surface for carriage way at various Roads/Streets in ward No 102 Zone VIII	153.00	153000	16875	Class I (Registered Road work Contractor) Refer Prequalification Criteria in Bid Document	28.06.2013 at 3.00 P.M.

The Tenders can also be downloaded from website <http://tender.tn.gov.in> and www.chennaicorporation.com or obtained at the Tender Sales Counter, Ripon Buildings. Tenders will be opened on 28.06.2013 at 3.30 p.m Sale of tender will be closed 48 hours before the time fixed for submission of tender. The tender can be dropped in the tender boxes kept in any one of the offices viz., PRO, C.E.(GI),V.O and Tender Sales Counter.

Signature of the Bidder

NOTE: For all the tenders which are more than Rs.10.00 lakhs in value, the tender document can also be downloaded from the websites www.tntenders.gov.in or www.tenders.tn.gov.in. The downloaded tender document shall be submitted without cost of tender document. In case of deviation is found in the tender document submitted by the tenderer from the content mentioned in the websites, his tender shall be liable for rejection at any stage of the contract.

If due date of tender happens to be Public Holiday, the tenders will be received upto .3.00. P.M and opened by .3.30. P.M. on the next Working day.

The Technical bid will be opened on 28.06.2013 at 3.30 PM.

Date & TIME OF OPENING PRICE BID WILL BE INTIMATED LATER AFTER SCRUTINY OF TECHNICAL BID

Signature of the Bidder

Tender Document

TECHNICAL BID

Corporation of Chennai

ZONAL OFFICE – VIII

Package- 4 - (5 Road works)

NAME OF THE WORK

: Construction of Thin Whitetopping
(TWT) (C.C. over existing BT surface
for carriage way at various
Roads/Streets in ward No 102 Zone

E.M.D.AMOUNT

VIII

Rs. **153000/-**

PERIOD OF DOWN LOADING
OF BID DOCUMENT

UPTO 3:00 PM, 26.06.2013

DATE AND TIME FOR PRE
BID MEETING

:

DATE TIME : 3.00 PM

LAST DATE AND TIME FOR
RECEIPT OF BID

:

DATE 28.06.2013 TIME : 3.00 PM

TIME AND DATE OF
OPENING OF TECHNICAL BID

:

DATE 28.06.2013 TIME : 3.30 PM

PLACE OF OPENING OF
TECHNICAL BID

:

Office of the Zonal Officer
ZONAL OFFICE – VIII
Ripon Buildings
Corporation of Chennai
Chennai 600003

OFFICER INVITING BIDS

:

Zonal Officer
ZONAL OFFICE – VIII
Ripon Buildings
Corporation of Chennai
Chennai 600003

CHECK LIST FOR SUBMISSION OF BID

Bidder shall check the submission of relevant details and

Signature of the Bidder

documents as mandated in the tender document, before submission of bids.

Sl. No.	Compliance criteria as per clause		Details	Check
1	15.1		Bid Security (Earnest Money Deposit Whether Bid Security at 1% of the Work value is enclosed? The Earnest Money Deposit shall be either in the form of Demand Draft or a irrevocable Bank Guarantee drawn from any Nationalized/Scheduled Bank in favour of the Commissioner, Corporation of Chennai;	YES / NO
2	3.4 (a) .1		Whether copy of Certificate of registration as Class I contractor(monitory limit above Rs.75.00 lakhs) in any of the Central/State Government Dept./Govt .undertaking is enclosed?	YES / NO
3	3.4 (a) .2		Whether the tenderer in the same name and style as prime contractor have successfully completed contracts (BT or CC Road Works) of not less than 40% of the value of proposed contract in any one year within the last five years (2008-09, 2009-10,2010-11 , 2011-12 & 2012-13)for Government Department/ Board/Government Undertaking enclosed?	YES / NO
4	3.4 (a) .3		Whether Proof for having an annual minimum financial turnover of not less than 40% of the value put to tender in any one financial year in the preceding "five" years (2008-09, 2009-10,2010-11 , 2011-12 & 2012-13) enclosed?	YES / NO
5	3.2 (G) 3.4 (d)		Whether the proof/details of availability of Contractor's Major Equipments proposed for carrying out the works is enclosed?	YES / NO
6	3.2 (G) 3.4 (d)		Whether evidence of adequacy of working capital for this Contract is enclosed? (access to line(s) of credit and availability of other financial resources). (15% of Package tender work value)	YES / NO
7	3.4.4		Assessed Available Bid capacity = (A x N x 2-B)	

8			Whether all the certificates are Notarised	YES / NO
9			Whether the latest TIN return enclosed	YES / NO
10			Whether Qualification information 3 to 3.12 of section III have	

Signature of the Bidder

			been enclosed duly filled in	YES / NO
11			Whether the bidder has signed in all pages of the tender document	YES / NO
12	17.1	Sealing and Marking of bids in case of manual submission		
		a	Whether the Cover Number – 1 super scribed as “ Technical Bid “ contains Bid Security and Pre Qualification Documents . Tender document furnished by Corporation of Chennai to be submitted in Cover-1	YES / NO
		b	Whether the Cover Number – 2 super scribed as “ Price Bid “ contains Price Bid Documents.	YES / NO
		c	Whether these Technical Bid and Price Bid are put in 2 separate envelope is sealed ?	YES / NO
		d	Whether both these sealed envelopes are put in to an outer envelope , sealed, addressing the Bid Authority, superscribing the name of work , list of enclosures, name and address of the bidder . and bear the following identification. Tender for Construction of Thin Whitetopping (TWT) (C.C. over existing BT surface for carriage way at various Roads/Streets in ward No 102 Zone VIII	YES / NO

This Check List is only illustrative and not exhaustive. Hence the bidder is requested to go through the entire document and submit all relevant documents and details.

No Advance payment.

Signature of the Bidder

Section II

INSTRUCTIONS TO BIDDERS (ITB)

A. General

1. Scope of Bid

Corporation of Chennai invites bid for the construction of thin white topping (TWT) pavement as described in the bid data sheet. The work comprises. Construction of thin white topping pavement (150 mm thick).

1.1 The scope of work includes provision of cross pipes for utility crossing along with masonry chamber and encasing of cross pipes.

1.2 Provision of CC layer for profile correction.

1.3 Milling of existing B.T. surface to create bonding of old and new pavement.

1.4 Laying of thin white topping (150 mm thick) conforming to 40 grade of concrete layer.

1.5 Laying of P.C.C. runner beam along the edge of pavement.

1.6 Laying of 80 mm Interlocking Block for utility corridor.

1.7 Rising of utility chamber, sewer chamber etc.

1.8 The Corporation of Chennai invites bids for the construction of works as described in the Bid Data Sheet. The name and identification number of the Contract is provided in the Contract Data.

1.9 The successful Bidder will be expected to complete the works by the completion date stipulated in the Contract Data.

2. Eligible Bidders

2.1 A Bidder shall be any Person, Company, Corporate body, Association, Body of individuals, Group of persons, Limited company, Firm, Organization either single or joint venture from India who are legally competent and entitled for entering into contract as per the law of contract prevailing in India. The Joint venture of Indian and foreign firms are permitted for externally funded Projects like World Bank, ADB etc.

2.1.1 In the case of a Joint venture/Consortium/ Group bidding:

2.1.1.1 There shall be a Lead Bidder. A Lead Bidder shall submit only one bid for the work. He shall not be a member in any other Consortium or joint venture for the same work. There shall be a joint venture or consortium or group agreement executed between the parties exclusively for the project and which shall be legally enforceable by way of attesting by a notary. This agreement shall be submitted along with the Bid.

2.1.1.2 All partners shall be jointly and severally liable for carrying out the work under the contract.

2.1.1.3 The Lead Bidder shall be designated in the Joint venture/Consortium/Group agreement to be submitted along with the Bid. The Lead Bidder shall have the authority to conduct all business for and to act on behalf of any and all partners of the Joint venture/Consortium/Group, during the bidding process and in the event the contract is awarded.

2.1.1.4 The Lead Bidder shall be responsible for the submission of Bid and complete information required as per the described format, pertaining to each firm in the Joint venture/Consortium/Group and completion of contract documents and to furnish evidences admissible as per law. The Lead Bidder shall clearly identify the responsibility of other members of Joint venture/Consortium/Group.

Signature of the Bidder

2.1.1.5. The Bid documents can be purchased by any one of the prospective members of a Consortium/Joint venture/Group but shall be signed by the Lead Bidder as specified in the Joint venture/Consortium/Group agreement which also forms the part of the Bid document.

2.2 The Contractors having registration in the class specified in the tender notice and above in the concerned Department of Corporation of Chennai, or intending Tenderer should be a registered contractor in any of the Centre / State Government Department / Government undertaking are eligible to participate in the Tender. **Provisional Registration shall be done for the successful bidder if he is willing to abide by the rules and regulations of Chennai Corporation and on payment of prescribed fees.**

2.3 Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices in accordance with sub-clause 31.1.

2.4 A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if:

- (a) in case of dispute or mutually agreed separation of the consortium members the lead consortium members can continue to discharge the obligation of contract.
- (b) they or their sister concern have controlling shareholders in common; or
- (c) they or their sister concern receive or have received any direct or indirect subsidy from any of them; or
- (d) they or their sister concern have the same legal representative for purposes of this bid; or
- (e) they or their sister concern have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the Bid of another Bidder, or influence the decisions of the Commissioner regarding this bidding process; or
- (f) a Bidder or their sister concern participates in more than one bid for the same package in this bidding process. Participation by a Bidder in more than one Bid for the same package will result in the disqualification of all Bids in which the party is involved. However, this does not limit the inclusion of the same subcontractor in more than one bid; or
- (g) a Bidder or their sister concern participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid.

2.5 No one or non of a firm or company is eligible to participate in the tender if any one of his or any one or more of the director's of a firm or company is a blood relative of any one of an employee or a public representative of Corporation of Chennai.

3. Qualification of the Bidder

3.1 All Bidders shall provide in Section 3, a preliminary description of the proposed work method and schedule, as necessary.

3.2 All Bidders shall include the following information and documents with their bids in the prescribed format as per Section 3, unless otherwise stated in the Bid Data sheet:

- (a) Copies of original documents defining the constitution or legal status, place of registration, and principal place of business, written power of attorney of the signatory of the Bid to commit the Bidder;
- (b) Total monetary value of construction work performed for each of the last five years;
- (c) The tenderer in the same name and style as prime contractor have successfully completed contracts (BT or CC Road Works) of not less than 40% of the value of proposed contract in any one year within the last five years (2008-09, 2009-10, 2010-11, 2011-12 & 2012-13) for Government Department/Board/Government Undertaking enclosed?

Signature of the Bidder

- (d) Documents for possessing, leasing or hiring of major Equipments & Tools required for laying cement concrete road works to carry out the contract.

Applicable for Cold Milling Work:

Wherever Cold Milling Work is involved, documents for Possessing/ leasing / hiring or an undertaking by the bidder in the prescribed format only for the cold milling machine should be furnished.

- (e) Qualifications and experience of key site management and technical personnel proposed for the Contract;
- (f) Reports on the financial standing of the Bidder, such as profit and loss statements and auditor's reports for the past five years;
- (g) Evidence of adequacy of working capital for this Contract (access to line(s) of credit and availability of other financial resources);
- (h) Authority to seek references from the Bidder's bankers;
- (i) Information regarding any litigation, current or during the last five years, in which the Bidder is involved, the parties concerned, and disputed amount; and
- (j) Proposals for subcontracting components of the works amounting to more than 10 % of the Contract Price.
- (k) The Bidder should have turnover of 0.40 times the work value put to tender in any one financial year in the preceding five years (2008-09,2009-10,2010-11 , 2011-12 & 2012-13).
- (l) The lead consortium members has the responsibility to meet the technical qualifications.

3.3 Bids submitted by a Joint venture of two or more firms as partners shall comply with the following requirements, unless otherwise stated in the Bid Data Sheet:

- (a) The Bid shall include all the information listed in Sub-Clause 3.2 above for each joint venture partner
- (b) If the Bidder is a joint Venture undertaking/Consortium / Group, all the parties need not sign the bid document provided that a Joint Venture/ Consortium / Group agreement, and power of attorney for the person to sign is submitted along with the Bid. The date of signature shall be provided wherever stated
- (c) The Bid by a partnership firm shall contain the full names and addresses of all partners. It shall be signed in the name of the partnership firm by one of the members of the partnership authorized for the purpose or by an authorized representative followed by the name and designation of the person signing.
- (d) Copy of the constitution of firm/ partnership with the name of partners duly attested by a Notary public and the instrument authorizing the persons to sign on behalf of the firm shall be furnished.
- (e) All partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms.

3.4 To qualify for award of the Contract, Bidders shall meet the following minimum qualifying criteria:

- (a)
 - 1. Intending Tenderer should be a Class I Registered contractor (monitory limit above Rs.75.00 lakhs) in any of the central/state Government Dept./Govt .undertaking.
 - 2. Whether the tenderer in the same name and style as prime contractor have successfully completed contracts (BT or CC Road Works) of not less than 40% of the value of proposed contract in any one year within the last five years (2008-09,2009-10,2010-11 , 2011-12 & 2012-13) For Government Department/Board/Government Undertaking enclosed?
 - 3. Whether Proof for having an annual minimum financial turnover of not less than 40% of the value put to tender in any one financial year in the preceding "five" years (2008-09,2009-10,2010-11 2011-12 & 2012-13) enclosed?)

Signature of the Bidder

- (b) Proposals for the timely acquisition (own or Lease) of the essential equipment listed in the Bid Data sheet.
- (c) The Bidder should have the minimum Key Personnel as specified in the Bid Data sheet.
- (d) Liquid asset and/or credit facilities, net of other contractual commitments and exclusive of any advance payment which may be made under the contract, of no less than the amount specified in the Bid Data sheet.

4. Bidders who meet the minimum qualification criteria will be qualified only if their available bid capacity is more than the total bid value. The available bid capacity will be calculated as under:

$$\text{Assessed Available Bid capacity} = (A \times N \times 2 - B)$$

Where

A = Maximum value of construction works executed in any one year during the last **five** years (updated to 2013-14 price level) taking into account the completed as well as works in progress.

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

B = Value, at price 2013-14 level, of existing commitments and on-going works to be completed during the period of completion of the works for which bids are invited.

Note: i) The statements showing the value of existing commitments and on-going works as well as the stipulated period of completion remaining for each of the works listed should be countersigned by the Engineer in charge, not below the rank of the an Executive Engineer or equivalent. .

ii) The value of the Financial Turnover of the Previous Years shall be given a *Weightage* of 10% each per year to bring them to the Price Level of 2013-14.

Weightage is as follows for Annual turnover

2012-13 : 1X Annual turnover

2011-12 : 1.10 X Annual turnover

2010-11 : 1.21X Annual turnover

2009-2010: 1.33 X Annual turnover

2008-2009 : 1.46 X Annual turnover

4. Deleted

5. Cost of Bidding

5.1 The Bidder shall bear all costs associated with the preparation and submission of his Bid, and the Commissioner will in no case be responsible or liable for those costs.

6. Site Visit

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

Signature of the Bidder

B. Bidding Documents

7. Content of Bidding Documents

7.1 The set of bidding documents comprises the documents listed in the table below and addenda issued in accordance with Clause 9:

Section I	Tender Notice
Section II	Instructions to Bidders (ITB)
Section III	Forms of Bid and Qualification Information
Section IV	Letter of Acceptance
Section V	General Conditions of Contract
Section VI	Contract Data
Section VII	Specifications
Section VIII	Drawings
Section IX	Security Forms
Section X	Technical Specifications

7.2 The number of copies of each section supplied to the prospective Bidder and the number of copies to be completed and returned with the Bid is specified in the Bid Data Sheet.

8. Clarification and Pre-Bid meeting

8.1 In any case any Bidder ask for a clarification to the Bid documents before 4 days of the opening of the Bid, the Bid inviting authority shall ensure that a reply is posted on line to the clarifications sought. It is the responsibility of the Tenderer to note down any changes which is posted on line, the Tender Inviting Authority will not be held responsible in this matter.

8.2 A Pre-Bid meeting will ordinarily be conducted not later than 14 days before the last date of submission of Bid. The purpose of the meeting is to clarify the issues and doubts and to answer the question on any matter that may be raised till that date. The Bidder or his official representative is advised to attend the meeting which will be convened by the Bidding authority as specified in Bid Data sheet. The minutes of the meeting including questions raised and responses given by the Commissioner will be furnished on demand. Any addendum, modifications if required based on the Pre-Bid meeting will be posted on line..

9. Amendment of Bidding Documents

9.1 At any time after the issue of the Bid documents and 5 days before the opening of the Bid, the Bid inviting authority may make any changes, modifications or amendments to the Bid documents and shall send intimation of such change to all those who have purchased the original Bid documents. Prospective bidders shall promptly acknowledge the receipt thereof by telex, cable or fax to the Bidding authority. The Bid shall be furnished taking into account the addendum/amendments, if any, issued as mentioned above and any failure in doing so will lead to consequences including rejection of Bid.

C. Preparation of Bids

10. Language of Bid

10.1 All documents relating to the Bid shall be in the language specified in the General Conditions of Contract.

11. Documents Comprising the Bid

11.1 The Bid submitted by the Bidder shall comprise the following:

- (a) The Bid
- (b) Bid Security;
- (c) Priced Bill of Quantities;
- (d) Qualification Information Form and Documents;
- (e) Income Tax clearance certificate and Sales Tax clearance certificate for the current year obtained from the appropriate authority;
and any other materials required to be completed and submitted by bidders, as specified in the Bid Data sheet.

11.2 Alternate design

Signature of the Bidder

- (a) Unless otherwise specified in the design data sheet, alternate design shall not be considered.
- (b) Bidders wishing to offer technical alternatives to the requirement of the bidding document must first price the employer's design as described in the bidding document and shall further provide all information necessary for a complete evaluation of the alternative by the Employer including drawings, design, calculations, technical specifications, breakdown of prices and proposed construction methodology and other relevant details. Only technical alternatives if any, of the lowest evaluated bidder confirming to basic technical requirement shall be considered by the employees.
- (c) Bidders are permitted to submit alternative technical solutions for specified parts of the projects identified in the bid data sheet.

12. Bid Prices

- 12.1** The Contract shall be for the whole works based on the priced Bill of Quantities submitted by the Bidder.
- 12.2** All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause shall be included in the rates, prices, and total Bid price submitted by the Bidder.
- 12.3** The rates and prices quoted by the Bidder shall be subject to adjustment during the performance of the Contract if provided for in the Bid Data sheet and the provisions of the Conditions of Contract. The Bidder shall submit with the Bid all the information required under the Contract Data Sheet and the Conditions of Contract.
- 12.4** If the contractor offers discount / rebate in a particular item, his bid price will be after deducting the discount from the original quoted price. If the contractor offers discount / rebate in the total value of work, his bid price will be same as original quoted rate, after calculating the total amount the discount / rebate amount is to be deducted.

13. Currency

- 13.1** The currency for the purpose of the Bid document shall be the Indian Rupee (INR).

14. Bid Validity

- 14.1** Bids shall remain valid for a period of 90 days unless otherwise specified in the Bid Data sheet.
- 14.2** In exceptional circumstances, the Commissioner may request that the Bidders to extend the period of validity for a specified additional period. The request and the Bidders' responses shall be made in writing. A Bidder may refuse the request without forfeiting the Bid Security. A Bidder agreeing to the request will not be required or permitted to otherwise modify the Bid, but will be required to extend the validity of Bid Security for the period of the extension, and in compliance with Clause 15 in all respects.

15. Bid Security (Earnest Money Deposit)

- 15.1** **The Bidder shall furnish, as part of the Bid, a Bid Security (Earnest Money Deposit) for an amount equal to 1% of the Work Value. The Earnest Money Deposit shall be either in the form of Demand Draft or a irrevocable bank Guarantee drawn from any Nationalized/Scheduled Bank in favour of the Commissioner, Corporation of Chennai; Banker's cheque, or a chalan by remitting cash into the Corporation Treasury, to the credit of deposits which do not bear interest. The Earnest Money will be refunded to the unsuccessful bidder without interest on application after intimation is sent of the rejection of the tender or at the expiration of Bid validity period. Bids not accompanied by the Bid Security will be rejected. The Bid security of the successful Bidder will be returned as per clause 15.2.**
- 15.2** The Bid Security of the successful Bidder will be discharged when the Bidder has signed the Agreement and furnished the required Performance Security.
- 15.3** The Bid Security will be forfeited:
 - (a) If a bidder withdraws his Bid during the period of Bid validity.
 - (b) If a successful Bidder fails to:

Signature of the Bidder

- i) Execute the agreement or
 - ii) Furnish the necessary performance security within the specified time limit of 30 days from the date of issue of letter of acceptance of his bid.
- (c) If the Bidder does not accept the correction of the Bid price, pursuant to Clause 24; or
- (d) in the case of a successful Bidder, if the Bidder fails within the specified time limit to
 - i) Sign the Agreement; or
 - ii) Furnish the required Performance Security.

16. Format and Signing of Bid

- 16.1 The Bidder shall prepare one original of the documents comprising the Bid as described in Clause 11 of these Instructions to Bidders, bound with the volume containing the Form of Bid, and clearly marked "ORIGINAL." In addition, the Bidder shall submit copies of the Bid, in the number specified in the Bidding Data, and clearly marked as "COPIES." In the event of discrepancy between them, the original shall prevail.
- 16.2 The original and all copies of the Bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the Bidder, pursuant to Sub-Clauses 3.2(a) or 3.3(b), as the case may be. All pages of the Bid where entries or amendments have been made shall be initialed by the person or persons signing the Bid.
- 16.3 The Bid shall contain no alterations or additions, except those to comply with instructions issued by the Employer, or as necessary to correct errors made by the Bidder, in which case such corrections shall be initiated by the person or persons signing the Bid.
- 16.4 **The Bid document and Price Bid Documents uploaded in the PDF format should not be changed or converted to any other format while down loading .
The tenderer shall quote their rates only by writing in the indelible ink by manually or by typing after down loading.**

D. Submission of Bids

17. Sealing and Marking of Bids

- 17.1 The Bid shall be submitted in 2 parts simultaneously, addressing the Bid authority and each part shall be in separate sealed covers super scribing cover No, Bid No, Name of work, list of enclosures, name and address of Bidder. The Bidders shall then put the two sealed envelopes into an outer envelope, sealed, addressing the Bid authority, super scribing the name of work, list of enclosures, name and address of the Bidder.

Cover No.1 - Technical Bid

Earnest Money Deposit, Certificates as per clause 11.1 (e) and Prequalification Bid .

This cover should be marked as 'Cover number – 1, Technical Bid', and shall contain, Bid Security and Pre- Qualification documents. Tender document furnished by Corporation of Chennai to be submitted in cover.no.1

Cover No.2 – Price Bid

This cover should be marked as 'Cover number - 2, Price Bid ', and should contain the Price Bid documents .

- 17.2 The Bidder shall be responsible for properly super scribing and sealing the cover in which the Bid is submitted and Bid inviting authority shall not be responsible for accidental/ misplacement/premature opening of the covers that are not properly super scribed and sealed as mentioned in Clause 17.1 before the time appointed for Bid opening.
- 17.3 The filled up Bid documents shall be submitted up to the last date of submission as given in Bid Data sheet. Duly filled in Bid documents shall be put in any one of the Tender boxes provided at the Tender Sales Counter , Office of the Public Relation Officer, Office of Vigilance Department and Office of Chief Engineer/General in the Ripon Buildings, Chennai. Tenders can also be submitted by Post or Courier, provided that the Bid inviting authority shall not be responsible for any delay in transit in such cases.

Signature of the Bidder

- 17.4 The Bid inviting authority may extend the last date of receiving tenders after giving adequate notice to all intending bidders in cases where
- a) The publication of the IFB has been delayed
 - b) The communication of changes, in the Bid document to the prospective Bidders under the clause 8 took time.

- 17.5 The Bidders shall not amend/add/alter any of the Bid conditions, conditions of contract, specifications etc. of his own.

18. Deadline for Submission of Bids

- 18.1 Bids shall be delivered to any one of the tender boxes provided at the Tender Sales Counter , Office of the Public Relations Officer , Office of the Vigilance Department and Office of the Chief Engineer (GEN) in the Ripon Building, Chennai or by post to the Tender Inviting Authority to the address specified in the Bid Data Sheet not later than the time and date specified in the Bid Data sheet..

- 18.2 The Tender Inviting Authority may extend the deadline for submission of bids by issuing an amendment in accordance with Clause 9, in which case all rights and obligations of the Employer and the Bidders previously subject to the original deadline will then be subject to the new deadline.

19. Late Bids

- 19.1 Any Bid received by the Tender Inviting Authority after the deadline prescribed in Clause 18.1 will be returned unopened to the Bidder.

E. Bid Opening and Evaluation

20. Bid Opening

- 20.1 The Pre-Qualification Bid marked as Cover no. 1 will be opened at the time and date outlined in the Bid Data sheet, in the presence of Bidders/Authorized representatives who choose to attend. The Bidders' names, and the presence or absence of Bid Security, and such other details as the Tender Inviting Authority may consider appropriate, will be announced by the Tender Inviting Authority at the opening.

- 20.2 The Price Bid marked as Cover no. 2 of qualified Bidders will be opened by the Tender Inviting Authority, in the presence of Bidders / authorized representatives who choose to attend. The date of opening of the price bid will be intimated to all the Prequalified Bidders after evaluation of the Prequalification Bids by the Tender Inviting Authority.

- 20.3 The Bidders' names, the Bid prices, the total amount of each Bid and such other details as the Tender Inviting Authority may consider appropriate, will be announced by the Commissioner at the opening.

- 20.4 The Employer will prepare minutes of the Prequalification and Price Bid opening, including the information disclosed to those present in accordance with Sub-Clause 20.1 & 20.3.

21. Process to Be Confidential

- 21.1 Information relating to the examination, clarification, evaluation, and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced. Any effort by a Bidder to influence the Employer's processing of Bids or award decisions may result in the rejection of his Bid.

22. Clarification of Bids and Contacting the Employer

- 22.1 From the time of Bid opening to the time of contract award, if any Bidder wishes to contact the Employer on any matter related to the Bid, it should do so in writing.

- 22.2 To assist in the examination, evaluation, and comparison of Bids, the Employer may, at the Employer's discretion, ask any Bidder for clarification of the Bidder's Bid, including breakdowns

Signature of the Bidder

of unit rates. The request for clarification and the response shall be in writing or by cable, telex, or facsimile, but no change in the price or substance of the Bid shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Bids in accordance with Clause 24.

- 22.3** Any effort by the Bidder to influence the Tender Inviting Authority in the Employer's Bid evaluation, Bid comparison or contract award decisions may result in the rejection of the Bidders' Bid.

23. Examination of Bids and Determination of Responsiveness

- 23.1** Prior to the detailed evaluation of Bids, the Employer will determine whether each Bid

- (a) Meets the eligibility criteria defined in Clause 2;
- (b) Has been properly signed;
- (c) Is accompanied by the required securities; and
- (d) Is substantially responsive to the requirements of the Bidding documents.

- 23.2** A substantially responsive Bid is one which conforms to all the terms, conditions, and specifications of the Bidding documents, without material deviation or reservation. A material deviation or reservation is one

- (a) Which affects in any substantial way the scope, quality, or performance of the works;
- (b) Which limits in any substantial way, inconsistent with the bidding documents, the Employer's rights or the Bidder's obligations under the Contract; or
- (c) Whose rectification would affect unfairly the competitive position of other bidders presenting substantially responsive Bids.

- 23.3** If a Bid is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.

24. Correction of Errors

- 24.1** Bids determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows:

- (a) Where there is a discrepancy between the price quoted in figures and in words, the lowest will be taken.

- 24.2** The amount stated in the Bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and, with the concurrence of the Bidder, shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount, the Bid will be rejected, and the Bid Security may be forfeited in accordance with Sub-Clause 15.3(c).

25. Evaluation and Comparison of Bids

- 25.1** The Employer will evaluate and compare only the bids determined to be substantially responsive in accordance with Clause 23.

- 25.2** In evaluating the bids, the Employer will determine for each Bid the evaluated Bid price by adjusting the Bid price by making any correction for errors pursuant to Clause 24.

F. Award of Contract

26. Award Criteria

- 26.1** Subject to Clause 27, the Employer will award the Contract to the Bidder whose Bid has been determined to be substantially responsive to the bidding documents and who has offered the lowest evaluated Bid price, provided that such Bidder has been determined to be

- (a) Eligible in accordance with the provisions of Clause 2, and
- (b) Qualified in accordance with the provisions of Clause 3.

- 26.2** In determining the lowest evaluated price the following practice will be considered:

Signature of the Bidder

- i) The quoted price shall be corrected for arithmetical errors
- ii) In case of discrepancy between prices quoted in words and in figures, whichever is minimum will be taken.

27. Rates to Include The tendered rates for the items should be inclusive of all items of works required for the proper execution of the items (viz) watering, barricading, lighting, watching, safety arrangements in the interest of traffic, safeguarding the underground services etc, and no claim for extra payment on any score will be entertained. The rates to be tendered should be inclusive of sales tax and other taxes in force. 1-28 Preliminary specification etc, in SSRB/TNBP will form part of the Agreement.

28. Employer's Right to Accept any Bid and to Reject any or all Bids

(1) After negotiation with the tenderer and before passing the order accepting a tender as under sub-section(6) of section 10 of the Tamil Nadu Transparency in Tender Act, 1998 if the Tender Accepting Authority decides that the price quoted by such tenderer is higher by the percentage as may be prescribed over the schedule of rates or prevailing market price, he shall reject the Tender.

(2) The Tender Accepting Authority, before passing the order accepting a tender, may also reject all the tenders for reasons such as changes in the scope of procurement, new technologies or substantial design changes, lack of anticipated financial resources, Court orders, accidents or calamities and other unforeseen circumstances.

29. Notification of Award and Signing of Agreement

29.1 The Bidder whose Bid has been accepted will be notified of the award by the Commissioner prior to expiration of the Bid validity period by cable, telex, or facsimile confirmed by registered letter. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") will state the sum that the Commissioner will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").

29.2 The notification of award will constitute the formation of the Contract, subject to the Bidder furnishing the Performance Security in accordance with Clause 30 and signing the Agreement in accordance with Sub-Clause 29.3.

29.3 The bidder shall have to enter into an agreement with the Commissioner within 30 days from the date of receipt of letter of acceptance. The form of agreement will have to be stamped at the stamp office at the cost of the bidder.

29.4 Upon the furnishing by the successful Bidder of the Performance Security, the Commissioner will promptly notify the other bidders that their bids have been unsuccessful.

30. Performance Security (Security Deposit)

30.1 Within 14 days after receipt of the Letter of Acceptance, the successful Bidder shall deliver to the Commissioner a Performance Security. The Performance Security (Security Deposit) will be 2% of the contract amount in the form of National Savings Certificate/ Small savings instrument/deposits/Accounts pledged in favour of Commissioner, Corporation of Chennai; irrevocable Bank Guarantee. However it is open to the Commissioner to insist on higher deposit as per rules in force.

30.2 Failure of the successful Bidder to comply with the requirements of Sub-Clause 29.1 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Bid Security.

Signature of the Bidder

- 30.3** As per the Council Resolution No. 584/86 dated 21.05.86, the percentages of security deposit to be fixed for various percentages of rebates are as following.

Percentage Rebate	Percentage of Security Deposit to be fixed
Up to 10 %	2%
10 to 20 %	3%
20 to 30 %	4%
Above 30%	5%

- 30.4.** As per Council Resolution N. 456/2002, Dt : 28-11-2002 the amount of **Additional Security Deposit** to be paid by the Contractor along with the tender for various percentage of rebate are as follows:

Percentage of rebate	Amount of Additional Security Deposit payable in the form of Demand Draft
5 to less than 15%	2%
15% to 20%	50% of Difference between Office value of work and Tender amount.
above 20%	Same as above

- 30.5** The Contractors has to pay the Additional Security Deposit in the form of Demand Draft drawn in favour of Commissioner while submitting the tender documents. For more than 1 Lakh bank Guarantee will be accepted.
- 30.6** If any of the Contractor has not enclosed Additional Security Deposit for the appropriate value in the form of Demand Draft while submitting tender documents, the tenders of such tenderers will be summarily rejected.
- 30.7** The Demand Draft/Banker's cheque enclosed for the Additional Security Deposit by the unsuccessful Tenders will be returned after obtaining proper acknowledgement and absorbing official procedures..
- 30.8** If percentage of rebate is above 20% tenderer should furnish the break up details, risk, cost and responsibility analysis and produce documents to prove the previous experience and work on hand with performance certificate showing the satisfactory completion of works entrusted in order to substantiate that the quoted rate is workable for complete execution as detailed in tender..

31.a. Adjudicator :

The Commissioner will propose the person to be appointed as Adjudicator under the Contract and stipulated in the Letter of Acceptance.

31.b. Arbitration

In case of any dispute or difference between the parties to the contract either during progress or after the completion of the work or after the termination, abandonment, or breach of contract or as to any matter or thing arising there under except as to the matters left to the sole discretion of the Superintending Engineer/BRR as to the withholding by the Superintending Engineer/BRR of payment of any bill to which the contractor may claim to be entitled, then either party shall forthwith give to the other, notice of such dispute or difference shall be referred to the Arbitrator and the award of such

Signature of the Bidder

Arbitrator shall be Final binding on the parties, progress of work shall not be suspended or delayed on account of the reference of the dispute to arbitration under this clause.

Either party within a period shall be fixed by the arbitration file before the arbitration statement of the case and also shall all documents relating to or having a hearing on the case. The Arbitrator shall not be bound to observe the ordinary rules of procedure applicable to trials before judicial Tribunals nor to hear or receive formal evidence, but may pass an award on the documents and statements of the case filed by the parties or personal inspection or on both. The Arbitrator shall have power to view the subject matter of the dispute with or without the parties or their agents to open review and revise any certificate, opinion decision, requisition or notice have in regard to the matters, expressly examined and to determine all matters in dispute which shall be submitted to him and of which notice has been given as aforesaid, in the same manner as if no such certificate, opinion, decision, requisition, or notice been given.

The expenses of such reference to Arbitration shall be awarded by the Arbitrator in his discretion subject to the condition that the amount of expenses awarded to either party shall not exceed the limits set forth, irrespective of the actual expenses incurred by either party. The arbitrator may determine the amount of expenses to be awarded or direct the same to be shared as between solicitor and client or as party, and party and shall direct by whom and to whom and what manner the same shall be borne and paid.

The limits referred in this clause are 5 % monitory award which does not exceeds Rs. 10,000/-, 3 % on which next Rs.40,000/- or any part thereof, 2 % on the next Rs.50,000/- or any part there of.

32. Corrupt or fraudulent Practices:

The bidder shall observe highest standard of ethics during bidding process and execution of the project.

If the Contractor has engaged in corrupt or fraudulent practices, in competing for or in executing the Contract, the Employer may, after given 14 days notice to the Contractor, to terminate the Contract.

“**corrupt practice**” means the offering, giving, receiving or soliciting of any thing of value to influence the action of a public official in the procurement process or in contract execution.

“**Fraudulent practice**” means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detrimental to the interest of the Employer, and includes collusive practice among Bidders which is detrimental to the Commissioner and includes collusive practice among the bidders (prior to or after bid submission.) designed to establish bid prices at artificial non-competitive levels and to deprive the Employer .the benefits of free and open competition.

The Commissioner will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question

33. Insolvency : If the Contractor is declared insolvent under any applicable law, the Employer may by notice in writing terminate the contract immediately. The contractor shall then demobilize from the site leaving behind, any contractor's equipment which the employer instructs in the notice is to be used until the completion of work

34. Taking Over: The Employer shall notify the contractor when he considers that the Contractor has completed the works stating the date accordingly. Alternatively the Employer may notify the Contractor that the works, are ready for taking over, stating the date accordingly.

35. Contractor's care of the Works : The contractor shall take full responsibility for the care of the works from the Commencement Date until the date of the Employer's notice under clause 35. Responsibility shall then pass to the Employer. If any loss or damage happens to the Works during the above period, the Contractor shall rectify such loss or damage so that the works confirm with the Contract. Unless the loss or damage happens as a result of an Employer's liability the Contractor shall indemnify the Employer, the Employer's, Contractor's Agents and employees against all loss or damage happening to the Works and against all claims or expenses arising out of the Works caused by a breach of contract, by negligence or by other default of the Contractor, his agents or employees.

36. Compensation Events.

The following are Compensation Events unless they are caused by the Contractor.

Signature of the Bidder

- (a) The Authority does not give access to a part of the Site mentioned in the current milestone.
- (b) The Authority modifies the schedule of other contractors in a way which affects the work of the contractor under the contract.
- (c) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of Letter of Acceptance from the information issued to Bidders (including the Site Investigation Reports), from information available publicly and from a visual inspection of the Site.
- (d) The Engineer gives an instruction for dealing with an unforeseen condition, caused by the Authority, or additional work required for safety or other reasons.
- (e) Other contractors, public authorities, Utilities or the Authority do not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.
- (f) Nil
- (g) The effect on the Contractor of any of the Authority's Risks.
- (h) Other Compensation Events listed in the Contract Data or mentioned in the Contract if a Compensation Event would prevent the work being completed before the intended completion date, the intended completion date is extended. The Engineer has to decide by how much the intended completion date has to be extended.

As soon as information demonstrating the effect of each Compensation Event upon the Contractor's forecast. It is to be assessed by the Engineer. If the Contractor's forecast is deemed unreasonable, the decision of the Engineer is final binding on the contractor. The Engineer will assume that the Contractor will react competently and promptly to the event.

The Contractor has to not be entitled to compensation to the extent that the Authority's interests are adversely affected by the contractor not having given early warning or not having cooperated with the Engineer.**G. Bid Data Sheet**

Bid data sheet shall be filled in by the Tender Inviting Authority before issuance of the bidding document

Instructions to Bidders (ITB) Clause Reference	Bid Data
	A. General
(1.1)	Package- 4 (5 Road works) Construction of Thin Whitetopping (TWT) (C.C. over existing BT surface for carriage way at various Roads/Streets in ward No 102 Zone VIII
(3.3)	The qualification data required from bidders in Sub-Clause 3.4 are modified as follows:[nil].....
(3.4)	The qualification criteria in Sub-Clause 3 are modified as follows "nil".....

Signature of the Bidder

3.4 d	The minimum required annual value of work for the successful Bidder in any of the last five years shall be 40% of package tender value																																																																		
(3.4 b) & 3.2 d	The essential equipment to be made available for the Contract by the successful Bidder shall be<i>[insert equipment list]</i>..... <table border="1"> <thead> <tr> <th>Sl. No.</th><th>Particulars of Equipment</th><th>Capacity</th><th>Number</th></tr> </thead> <tbody> <tr> <td>1</td><td>Plate compactor</td><td></td><td>2 nos</td></tr> <tr> <td>2</td><td>Tipper Lorry / Dumper</td><td></td><td>4 Nos</td></tr> <tr> <td>3</td><td>Vibratory Roller</td><td></td><td>1 No</td></tr> <tr> <td>4</td><td>Straight Edge</td><td></td><td>2 Nos</td></tr> <tr> <td>5</td><td>Saw cutting machine</td><td></td><td>1 No</td></tr> <tr> <td>6</td><td>Water Lorry</td><td></td><td>2 Nos</td></tr> <tr> <td>7</td><td>Cold Milling Machine (if cold milling carried out)</td><td></td><td>1 No</td></tr> <tr> <td>8</td><td>JCB / Poclaine</td><td></td><td>1 No</td></tr> <tr> <td>9</td><td>Accelerating beam</td><td></td><td>1 No.</td></tr> <tr> <td>10</td><td>Vaccumasier</td><td></td><td>2 Nos</td></tr> <tr> <td>11</td><td>Needle Vibrators 40mm & 60mm dia needle</td><td></td><td>4 Nos</td></tr> <tr> <td>12</td><td>Groove Cutter</td><td></td><td>4 Nos</td></tr> <tr> <td>13</td><td>Screed Vibrators</td><td></td><td>1 Nos</td></tr> <tr> <td>14</td><td>Air Compressor</td><td></td><td>1 No</td></tr> <tr> <td>15</td><td>Steel shuttering used as a form work preferably in the form of channels</td><td></td><td></td></tr> </tbody> </table>			Sl. No.	Particulars of Equipment	Capacity	Number	1	Plate compactor		2 nos	2	Tipper Lorry / Dumper		4 Nos	3	Vibratory Roller		1 No	4	Straight Edge		2 Nos	5	Saw cutting machine		1 No	6	Water Lorry		2 Nos	7	Cold Milling Machine (if cold milling carried out)		1 No	8	JCB / Poclaine		1 No	9	Accelerating beam		1 No.	10	Vaccumasier		2 Nos	11	Needle Vibrators 40mm & 60mm dia needle		4 Nos	12	Groove Cutter		4 Nos	13	Screed Vibrators		1 Nos	14	Air Compressor		1 No	15	Steel shuttering used as a form work preferably in the form of channels		
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3. The tenderer shall have assured access (through hire, lease and other commercial means) in full working order by means of letter (as applicable) as a standby arrangement from the list of registered R.M.C.Plant approved and authorized by Chennai Corporation

Sl. No.	Particulars of Equipment	Number
1	R.M.C. Plant (Computerized). Capacity min. 60 Cum. per hr. conforming to basic norms as per attached Annexure	1 No.

2. The tenderer shall have assured supply of design mix of M40 Grade concrete by means of registered agreements with reputed RMC Plant companies (approved and authorized by Chennai corporation) (having capacity of min. 60 Cum. per hr. conforming to basic norms as per attached Annexure.

Signature of the Bidder

(3.4c)	Technical Personnel to be deployed by the Contractor for the work.	
	Name of members of technical staff proposed to be employed	Qualifications
	<u>Below 1 crore</u> Project Engineer - 1 No Dy.Project Engineer – 1 No Site Engineer - 2 Nos	BE Civil 15 years Experience BE Civil 5 years Experience B.E/DCE
(3.4d)	<u>1 crore to 2 crore</u> Project Engineer - 1 No Dy.Project Engineer – 1 No Site Engineer - 3 Nos	BE Civil 15 years Experience BE Civil 5 years Experience B.E/DCE
	<u>Above 2 crore</u> Project Engineer - 1 No Dy.Project Engineer – 1 No Site Engineer - 4 Nos	BE Civil 15 years Experience BE Civil 5 years Experience B.E/DCE
	The minimum amount liquid assets and/or credit facilities net of other contractual commitments of the successful Bidder shall be 15% of the package tender work value	

RATE OF PROGRESS

The Attention of the tenderers. is directed to the contract requirements as to the time of beginning work, the rate of progress and the dates for the completion of the whole work and its several parts. The following rate of progress and proportionate value of work done from time to time, as will be indicated by the Exe. Engineer certificate of the value of work done, will be required. Date of commencement of these programmes will be the date on which the site (or premises) is handed over to the contractor.

Signature of the Bidder

Period after date of commencement (1)	Percentage of work completed (based on contract Lumpsum amount) (2)
15 th day	20 %
30th Day	50 %
45th Day	75 %
60th Day	100 %
	The work should be completed in all respects within the period of ...two..... months.

Note : The period to be entered in column (1) for the purpose of defining the rate of progress may be fixed by the Executive Engineer to suit each case.

1. Completion of site clearance	5 th Day
2. Completion of Milling operations and R.C.C Pipe fitting	15 th Day
3.M15 concrete work completion	25 th Day
4.Completion of M40 concrete	45 th Day
5.Completion of Inspection Chamber	50 th Day
6.Completion of Interlocking paver Blocks	55 th Day
7.Erection of name Board and completion of all Works in all respects	60 th Day

	B. Bidding Documents
7.2	The number of copies of the Bid to be completed and returned shall be one copy
	C. Preparation of Bids
(7.2) (16.1)	The number of copies of the Bid to be completed and returned shall be one copy
(12.3)	The Contract [<i>specify "is" or "is not"</i>] subject to price adjustment in accordance with Clause 45 of the Conditions of Contract.

Signature of the Bidder

(14.1)	The period of Bid validity shall be 90 days after the deadline for Bid submission specified in the Bid Data sheet.
(15.1)	The amount of Bid Security (EMD) shall be Rs 153000/-
D. Submission of Bids	
(18.1)	The address for the purpose of Bid submission is Zonal Officer Ripon Buildings Corporation of Chennai Chennai
(17.3)	The deadline for submission of bids shall be 28.06.2013 3.00 P.M
E. Bid Opening and Evaluation	
(20.1)	The opening of the Prequalification Bid shall take place 28.06.2013 3.30 PM at Zonal Officer –VIII Ripon Buildings Corporation of Chennai Chennai
F. Award of Contract	
(30.0)	The Standard Form of Performance Security acceptable to the Commissioner shall be The Performance Security (Security Deposit) will be 2% of the contract amount in the form of National Savings Certificate/ Small savings instrument/deposits/Accounts pledged in favour of Commissioner, Corporation of Chennai; irrevocable Bank Guarantee.

Section III

1. Pre-Qualification Bid Submission Sheet

Date:.....

Invitation for Bid No: **Z.O.VIII.C.NO.B2/ 4097/22 /2013**

To:

The
Corporation of Chennai,
Chennai.

Sir,

1. **Being duly authorized to represent and act on behalf of ...[..... name of the Bidder.....], hereinafter " the Bidder" and having reviewed and fully understand all the bidding information provided, the undersigned hereby applies to be pre-qualified by yourselves as a bidder for the "...[Insert Name of the work]....."**
2. The Bid is made in the full understanding of the following and declares:
 - a) We have examined and have no reservations to the Bidding Document, including Addenda No.(s)..... issued in accordance with ITB Clause 9.

Signature of the Bidder

- b) We, including any subcontractors or suppliers for any part of the contract, do not have any conflict of interest in accordance with ITB Sub-Clause 2.4.
- c) We, in accordance with GCC Sub-Clause & Appendix to Bid, plan to subcontract the following key activities or parts of the works to the following sub contractors.

Name of Sub Contractor	Address	Key activity	Tentative Amount of the sub activity

(if no part to be sub contracted, indicate "none")

- d) We understand that you may accept/ reject any Bidding, cancel the Bidding process at any time and reject all the Bids and that you are not bound either to accept any Bids that you may received without incurring any liability to the Bidders, in accordance with ITB Clause 27.

We understand that your Agency will not be liable for any such actions and will be under no obligation to inform the Bidder of the grounds from them.3. Attached herewith are the following:

- i) Income Tax and Sales Tax clearance certificates for the **last three years** issued by the appropriate authority:
- ii) Demand Draft(*furnish details of the Demand Draft*)..... towards cost of Bid documents in case purchased in the counter..
- iii) Bid Security for Rs..... in the form of:
- Demand Draft(*furnish details of the Demand Draft*).....
 - Chalan(*furnish details of the Chalan*).....
 - Any other Form mentioned in Cl. 15.1 of ITB (*Furnish Details*)

4. Attached to this letter are copies of original documents defining:
- the Bidder's legal status;
 - the principal place of business;
 - the place of incorporation (for Bidders that are corporations) or the place of registration and the nationality of the owner(s) for Bidders that are partnerships or individually owned firms).
5. The Corporation of Chennai and its authorized representatives are hereby authorized to conduct any inquiries or investigations to verify the statements, documents and information submitted in connection with this Bid, and to seek clarification from our bankers and clients regarding any financial and technical aspects. This Prequalification Bid Submission Sheet will also serve as authorization to any individual or authorized representative or any institute referred to in the supporting information to provide such information deemed necessary and requested by the Corporation of Chennai to verify statements and information provided in this Bids, or with regard to the resources, experience and competence of the Bidder.
6. The Corporation of Chennai and its authorized representatives may contact the following persons for further information:

Name, Telephone and Fax No. of person

General and Management Information	
Personnel	

Signature of the Bidder

Technical Enquiries	
Financial Enquiries	

7. Appended to this Bids, we give details of the participation of each party, including capital contribution and profit/loss agreements, to the joint Venture or associations. We also specify the financial commitment in terms of the percentage of the value of the/each contract, and the responsibilities for execution of the/each contract.
8. We confirm that in the event that we submit bid, that as well as any resulting contract will be:
- i) Signed so as to legally bind all partners jointly and severally; and
 - ii) Submitted with a Joint Venture agreement providing the joint and several liabilities of all partners in the event the contract is awarded to us.
9. The undersigned declare that the statement made and the information provided in the duly completed Bids are complete, true, and correct in every detail.

Name:.....

In the Capacity of

Signed

Duly authorized to sign the Bids for and on behalf of

Date

Signature of the Bidder

2. DECLARATION BY THE BIDDER / TENDERER

I/We _____ hereby
declare that I/We am/are not in any way related to any officer who is in charge
of.....

or having control of this work as referred in Clause 2.4 of ITB. I/We agree that if, at
any stage, it is found that this declaration is untrue, the bid security/performance
security paid by me/us will be forfeited and the contract entered will stand cancelled
at the risk and cost of contractor. It is understood that the relationship with the officer
referred to herein will be restricted to those referred in Cl.2.4 of ITB.

Signature of the bidder

Place:

Date:

Signature of the Bidder

3. QUALIFICATION INFORMATION**3.1 PRE QUALIFICATION BID QUESTIONNAIRE**

SI No	Questions	Answers to be furnished by the bidder
1	Name of Firm	
2	Nationality	
3	Head Office Address Postal Telex No Fax No. E-Mail	
4	Type of Organization Individual Partnership Incorporated company	
5	Year & place of establishment	
6	Give brief description of field/areas in which you have executed work. Please furnish details and particulars of such works in the relevant formats attached.	
7	Are you registered with any other Government/ Department / Public undertaking (if yes, give details)	
8	What are your sources of finance (Please give details of bank reference – certificate from bank endorsing your financial stability and certificate to substantiate other sources)	
9	Give the last five years account with auditor's reports, balance sheet, profit and loss account, and income tax clearance certificate.	
10	How much is your paid up capital How much is your working capital How much is your annual turnover for the last five years (Give separately for each year) How much is your net income for the last five years (Give separately for each year)	

 Signature of the Bidder

Corporation of Chennai

SI No	Questions	Answers to be furnished by the bidder
11	Do you intend to associate any other organisation for the works, which you are bidding? If so, give full particulars of that organization separately under each head of questionnaire and forms	
12	Formats (enclosed may filled) Details of Engineers & Managerial Personnel Details of machinery and equipment owned by the Company Present activities in which your firm is engaged as a Main contractor (last five years) Present activities in which your firm is working in Joint Venture (last five years) Material Testing facilities available with the firm	

Note : In the case of Joint venture/consortium/group, the lead bidder shall submit the answers as per the above questionnaire pertaining to each firm in the group.

Signature of the Bidder

3.2 LIST OF EQUIPMENTS PROPOSED TO DEPLOY FOR THE WORK

(To be filled by the Bidder)

ANNEXURE 1

Sl No.	Particulars	Capacity	Number	Own/lease for a minimum period of two years
1.	2 No Plate compactors			
2.	4 Nos Tipper Lorry / Dumper			
3.	1 No Vibratory Roller			
4.	2 Nos Straight Edge			
5.	1 No Saw cutting machine			
6.	2 Nos Water Lorry			
7.	1 No Cold Milling Machine (if cold milling carried out)			
8.	1 No JCB / Poclaine			
9.	1 No Accelerating beam			
10.	2 Nos vaccumasier			
11	4 Nos Needle Vibrators 40 mm & 60mm dia needle			
12	4 Nos groove cutter			
13	1 nos Screed Vibrators			
14	1 no Air Compressor			
15	steel shuttering used as a form work preferably in the form of channels			
16.	R.M.C. Plant (Computerized). Capacity min. 60 Cum. per hr. Conforming to basic norms as per attached Annexure			

- Note:
- 1 Lease / Hire for the equipments should be valid for the period of construction of Roads.
 2. An undertaking to deploy cold milling machine wherever necessary has to be furnished by the bidder in the prescribed format will also be valid.
 3. The tenderer shall have assured supply of design mix of M40 Grade concrete by means of registered agreements with reputed RMC Plant companies (approved and authorized by Chennai corporation) having capacity of min. 60 Cum. per hr. conforming to basic norms as per attached Annexure

Signature of the Bidder

3.3 LIST OF KEY PERSONNEL PROPOSED TO BE DEPLOY FOR THE WORK

SI No	Name	Position	Qualification	Years of Experience in the relevant field

Signature of the Bidder

3.4 APPLICATION INFORMATION SHEET

Application Information	
Bidder's Legal Name	
In the case of Joint Venture/ Consortium/Group, legal name of each partner	
Bidder's actual or intended year of constitution	
Bidder's legal address in country of constitution	
Bidder's authorized representative (name, address, telephone no., e-mail address)	
Attached are copies of the following original documents 1. In the case of single entity, articles of incorporation or constitution of the legal entity named above. 2. Power of attorney to represent the firm or JV/consortium /group named above. 3. In case of JV, power of attorney for lead member of consortium by other JV partner	

Signature of the Bidder

3.5 JOINT VENTURE INFORMATION SHEET
DETAILS OF PARTNER(S) OTHER THAN LEAD PARTNER

Partner	
Partner's legal name	
Partner's year of constitution	
Partner's Legal address in country of Constitution	
Partner's authorized representative (name, address, telephone no; fax and e-mail address)	

Signature of the Bidder

3.6 FINANCIAL STATEMENT (DATA FOR PREVIOUS FIVE YEARS - IN INDIAN RUPEES)**a. Information from Balance Sheet**

Year			
Total Assets			
Total Liabilities			
Net Worth			
Current Assets			
Current Liabilities			

b. Information from Income Statement

Year			
Total Revenue			
Profit before Tax			
Profit after tax			

Attached are copies of financial statements (balance sheets including schedules and income statements) for the last three years, as indicated above, complying with the following conditions

All such documents reflect the financial situation of the bidder

Historical financial statements must be audited by a certified chartered accountant

Historical financial statements must be complete, including all schedules to the financial statements

Note : Bidder and Each member of JV/consortium/group must furnish details separately in this form

Signature of the Bidder

3.7 TOTAL ANNUAL TURNOVER

(Bidder and/or Each member of Joint Venture/consortium/group must fill in this form)

TOTAL ANNUAL TURNOVER FOR THE LAST FIVE FINANCIAL YEARS	
Year	Indian Rupee
Total	

Signature of the Bidder

3.8 PRESENT ACTIVITIES IN WHICH BIDDER FIRM IS ENGAGED AS A LEAD PARTNER

(Each bidder or member of JV/consortium/group must fill in this form)

SI No	Name & Type of project/work which you are presently executing & its execution	Brief technical description	Name & Address of client	Period of contract (as provided in the agreement)	Construction cost of project (in Rs)	Type & amount of portion sublet by you	Year of Starting	Percentage completed works	Name & Address of consultant if any

Signature of the Bidder

3.9 PRESENT ACTIVITIES IN WHICH BIDDER FIRM IS WORKING IN JOINT VENTURE

(Each bidder or member of JV/consortium/group must fill in this form)

Sl No	Name of the project/works and its location (phase of work for which you are responsible)	Brief technical description	Name & Address of client	Period of contract	Construction cost of project (in Rs) (entirely yours)	Year of Starting	Percentage completed works	Name with whom you are in JV	Name & Address of consultant if any

Signature of the Bidder

3.10 PRESENT ACTIVITIES IN WHICH BIDDER FIRM IS WORKING AS PARTNER

(INDICATE PLACE OF WORK FOR WHICH FIRM IS RESPONSIBLE)

(Each bidder or member of JV/consortium/group must fill in this form)

Name of the Project /works and its location (phase of work)	Name & Address of client	Construction cost in Rs./ Entire cost of your portion	Name of main contract ors	Period of contract (as provided in agreement)	Year of Starting	Percentage completed works	Name & Address of consultant if any

Signature of the Bidder

3.11 COMPLETED WORKS IN WHICH FIRM WAS THE LEAD PARTNER

(DURING LAST 5 YEARS)

(Each bidder or member of JV/consortium/group must fill in this form)

SI No	Name & Type of project/ works and its location	Brief technical description	Name & Address of client	Period of contract (as provided in the agreement)	Construction cost of project (in Rs)	Type & amount of portion sublet by you	Year of Starting	Percentage Completed works	Name & Address of consultant if any

Signature of the Bidder

3.12 COMPLETED WORKS IN WHICH FIRM WAS IN JOINT VENTURE

(DURING LAST 5 YEARS)

(Each bidder or member of JV/consortium/group must fill in this form)

Sl No	Name & Type of project/works and its location	Brief technical description	Name & Address of client	Construction cost of Project (in Rs)		Period of contract (as provided in the agreement)	Year of Starting	Year of Completion		Reasons for delay if any	Name & Address of consultant if any
				Entire	yours			Scheduled	Actual		

Signature of the Bidder

3.13 DETAILS OF SUB CONTRACTOR AND THEIR RESPONSIBILITIES

(Applicable in case of subletting)

Sl No	Name & Address of Sub Contractor	Responsibility	Value of work to be sublet.

UNDER TAKING

Under taking should be furnished in a Twenty Rupees Non-Judicial Stamp paper with the Qualification Application and certified by the Notary Public.

I/We the applicant do hereby undertake that I/we will abide by the terms and conditions if any modified by the Tender Inviting Authority in the contract conditions subsequent to submission of Qualification Annexure/price tender or subsequent to execution of the agreement.

Place:

Date : Signature of the bidder with Seal

The above named deponent has understood the contents well and solemnly and sincerely declared and affirmed by the deponent in my presence at ----- and signed before me -----on this day of -----
-----.

Place:

Date:

Signature of the Notary Public with Seal

Signature of the Bidder

Corporation of Chennai

I/We the applicant do hereby undertake that I/we will abide by the terms and conditions set forth in the tender document and am willing to undertake the **Construction of Thin Whitetopping (TWT) Pavement for carriage way at various Road/Streets in Zones –VIII in Corporation of Chennai** at the rate as given in the price bid cover

Place:

Date :

UNDERTAKING TO BE GIVEN BY THE BIDDER WHO DOES NOT POSSESS A COLD MILLING MACHINE

Undertaking should be furnished in a Twenty Rupees Non-Judicial Stamp paper certified by the Notary Public.

I/We the bidder do hereby undertake that I/we will deploy cold milling machine for the cold milling works in the package of road works as per the directions of the Engineer – in – Charge within a week . Failing which I hereby agree to the termination of contract along with forfeiture of security deposit by the Department

Place:

Date :

Signature of the bidder with Seal

The above named deponent has understood the contents well and solemnly and sincerely declared and affirmed by the deponent in my presence at ----- and signed before me -----on this day of -----
-----.

Place:

Date:

Signature of the Notary Public with Seal

Signature of the Bidder

Definitions & Interpretations

1. **Act** means the Tamil Nadu transparency in Tenders Act, 1998 (Tamil Nadu Act 43 of 1998).
2. **Rules** means The Tamil Nadu Transparency In Tender Rules, 2000
3. **Adjudicator:** The Commissioner will propose the person to be appointed as Adjudicator under the contract in the Letter of Acceptance.
4. **Arbitrator:** If a party is dissatisfied with the decision of the Adjudicator or no decision is given within the time set out the party may give notice of dissatisfaction and a dispute which has been the subject of a notice of dissatisfaction has to be finally settled by Arbitral tribunal. The Arbitrator can revise the decision of the Adjudicator. The Arbitral Tribunal consists of 3 Arbitrators, one each to be appointed by the Authority and the Contractor. The third Arbitrator has to be chosen by the two Arbitrators so appointed by the parties and has to act as presiding arbitrator. In case of failure of the two arbitrators appointed by the parties to reach upon a consensus within period of 30 days from the appointment of the arbitrator appointed subsequently, the Presiding Arbitrator has to be appointed by President of the Institution of Engineers (India).
5. **The Authority** (Commissioner) or his authorised representative is the party who Employs the Contractor to carry out the Works
6. **Earnest Money Deposit** means the amount required to be remitted by a bidder along with his bid indicating his willingness to implement the contract.
7. **Bill of Quantities** means the priced and completed Bill of Quantities forming part of the Bid.
8. **BIS** means Bureau of Indian Standards.
9. **Compensation Events** are those defined in Clause -36.
10. **The Completion Date** is the date of completion of the Works as certified by the Superintending Engineer / Zonal Executive Engineer,
11. **The Contract** is the Contract between the Authority and the Contractor to execute, complete, and maintain the Works. It consists of the documents listed in Clause 11.1
12. **The Contractor** is a person or corporate body whose Bid to carry out the Works has been accepted by the Authority.
13. **Tenderer Or Bidder:** Any person , firm or Corporation submitting a tender for the work contemplated, acting directly or through a duly authorized representative.
14. **The Contractor's Bid** is the completed bidding document submitted by the Contractor to the Authority.
15. **Bid Price** : The prices and discounts quoted by the bidder in the letter of bid and in the bill of quantities.
16. **The Contract Price** is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract.
17. **Days** are calendar days; months are calendar months.

Signature of the Bidder

18. **A Defect** is any part of the Works not completed in accordance with the Contract.
19. **The Defects Liability Certificate** is the certificate issued by Superintending Engineer upon correction of defects by the Contractor.
20. **The Defects Liability Period** is the period named **in the Contract Data and calculated from the Completion Date**.
21. **Drawings** include calculations and other information provided or approved by the Superintending Engineer for the execution of the Contract.
22. **The Authority** (The Commissioner) is the party who employs the Contractor to carry out the Works
23. **The Superintending Engineer** is the person named in the Contract Data (or any other) competent person appointed by the Commissioner and notified to the Contractor, to act in replacement of the Superintending Engineer) who is responsible for supervising the execution of the Works and administering the Contract.
24. **The Executive Engineer** is an Executive Engineer of Corporation of Chennai, who will be in charge of work in Corporation of Chennai.
25. The Lead Bidder shall be designated in the Joint venture/Consortium/Group agreement to be submitted along with the Bid. The Lead Bidder shall have the authority to conduct all business for and to act on behalf of any and all partners of the Joint venture/Consortium/Group, during the bidding process and in the event the contract is awarded.
26. **Equipment** is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.
27. **The Initial Contract Price** is the Contract Price listed in the Authority's Letter of Acceptance.
28. **The Intended Completion Date** is the date on which it is intended that the Contractor has to complete the Works. The Intended Completion Date is specified in the Contract Data. The Intended Completion Date may be revised only by the Superintending Engineer by issuing an extension of time.
29. **Materials** are all supplies, including consumables, used by the Contractor for incorporation in the Works.
30. **Plant** is any integral part of the Works that has to have a mechanical, electrical, chemical, or biological function.
31. **The Site** is the area defined as such in the Contract Data.
32. **Site Investigation Reports** are those that were included in the bidding documents and are factual and interpretative reports about the surface and subsurface conditions at the Site.
33. **Specification** means the Specification of the Works included in the Contract and any modification or addition made or approved by the Superintending Engineer.
34. **The Start Date** is given in the Contract Data. It is the latest date when the Contractor has to commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.

Signature of the Bidder

- 35. Subcontractor** is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract, which includes work on the Site.
- 36. Temporary Works** are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works.
- 37. Two-cover system** means a procedure under which the bidders are required to simultaneously submit two separate sealed covers, one containing the Earnest Money (Bid security) and the details of their capability to undertake the tender which will be opened first and the second cover containing the price quotation which will be opened only if the bidder is found qualified to execute the Bid

Signature of the Bidder

Section IV

1. Letter of Acceptance

[Letterhead paper of the Employer]

By Cable/Registered Post with acknowledgement due/

From

To

Letter No.-----

Dt.-----

Sub: **Package- IV (5 Road works)**

Construction of Thin Whitetopping (TWT) (C.C. over existing BT surface for
carriage way at various Roads/Streets in ward No 102 Zone VIII

Ref: Z.O.VIII.C.NO.B2/4097/22 /2013

This is to notify you that your Bid dated *[date]* for execution of the *[name of the Contract and identification number, as given in the Contract Data]* for the Contract Price of *[amount in numbers and words]*, is hereby accepted by our Agency.

- (a) We propose that *[name of the Adjudicator]* be appointed as the Adjudicator.
- (b) You are hereby requested to furnish performance security in the form detailed in Cl. 29.1 of ITB for an amount of Rs.----- within 14 days of the receipt of the Letter of Acceptance. The performance security IN THE FORM OF Bank Guarantee shall be valid up to 2 (Two) years after completion of work certified by the Engineer in Charge. You are requested to sign the Contract within ----- days from the date of receipt of this letter, failing which action as stated in ITB will be taken
- (c) You are hereby instructed to proceed with the execution of the said Works in accordance with the Contract documents.

Authorized Signature: _____

Name and Title of Signatory: _____

Name of Agency: _____

Attachment: Agreement

Signature of the Bidder

2. Contractor's Bid

Description of Work:

[date]

To: [name and address of Employer]

We offer to execute the [name and identification number of Contract] in accordance with the Conditions of Contract accompanying this Bid for the Contract Price of [amount in numbers], [amount in words].

We accept the appointment of [name proposed in Letter of Acceptance] as the Adjudicator.

[or]

We do not accept the appointment of [name proposed in Letter of Acceptance] as the Adjudicator, and propose instead that [name] be appointed as Adjudicator, whose daily fees and biographical data are attached.

This Bid and your written acceptance of it shall constitute a binding Contract between us. We understand that you are not bound to accept the lowest or any Bid you receive.

We hereby confirm that this Bid complies with the Bid validity and Bid Security required by the bidding documents and specified in the Bidding Data.

Commissions or gratuities, if any, paid or to be paid by us to agents relating to this Bid, and to contract execution if we are awarded the contract, are listed below:

Name and address of agent	Amount	Purpose of Commission or gratuity
_____	_____	_____
_____	_____	_____
_____	_____	_____
(if none, state "none")."		

Authorized Signature: _____

Name and Title of Signatory: _____

Name of Bidder: _____

Address: ____

 Signature of the Bidder

3. AGREEMENT

ARTICLES OF AGREEMENT MADE THIS day of

between the Commissioner, Corporation of Chennai (hereinafter called the "Commissioner" which expression shall where the context so admits include his successors in office and assigns) of the one part * of @

(hereinafter called the Contractor- which expressions shall where the context so admits include his heirs, executors, administrators and legal representatives) of the other part.

WHEREAS the Commissioner is desirous of #

and has caused estimate of probably quantities contained in Schedule A, drawings and specifications describing the work to be done to be prepared.

AND WHEREAS the said Schedule A, drawings numbered serially 1 to..... inclusive –(Schedule B) – the preliminary Specifications and Schedule C have been signed signed by or on behalf of the parties hereto

AND WHEREAS the contractor has agreed to the retention by the Corporation of the earnest money of Rupees.....paid. by him when he submitted his tender as security for the due fulfillment of the contract to the satisfaction of the S.E..... DEPT.' E.E..... (zone) Corporation of Chennai (hereinafter referred to as the S.E.....Dept./E.E (Zone.....) or in the alternative S.E.

DEPT./EE(Zone.....) may direct, to deposit as security for the aforesaid purpose cash or currency notes of the value Rs..... to perfect Such security.

AND WHEREAS the contractor has deposited with the S.E. DEPT./E.E. (Zone.....) the sum of Rupees cash as additional security for the due fulfillment of this contract to the satisfaction of the S.E..... DEPT. /E.E..... (zone)

AND WHEREAS the contractor has also signed the copy of the SSRB/TNBP and addenda volume thereto maintained in the DEPT.' Zone of the Corporation of Chennai acknowledgement of being bound by all the conditions of the clauses of the Standard Preliminary Specification and all the Specifications for items of works described by a Standard Specification Number in Schedule 'A'.

AND WHEREAS the contractor has agreed to execute upon and subject to the conditions set forth in the General conditions of contract of T .N.B.P, such other conditions as are contained in all the specifications forming part of this contract (hereinafter referred to as "the said condition") the works as shown upon the drawings and described in the said specifications and set forth in Schedule A as the "Probable quantities" and comply with the rate of progress noted at the end of the Articles of Agreement for a sum of Rupees\$.

or such other sum as may be arrived at under the clause of the standard preliminary specification relating to "payment on lump sum basis or by final measurement at unit prices." Now it is hereby agreed as follows:

In consideration of the payment of the said sum of Rupees.\$....., or such other sum as many be arrived at under the clause of the Standard preliminary specification of relating "payment on lump sum basis or by final measurement at unit prices" the Contractor will, upon and subject to the said conditions, execute and complete the works shown upon the said drawings and described in the said specification and to the extent of probable quantities shown in schedule A with such variation, by way of alterations or additions, to or deductions from the said work and method of payment therefore as are provided for in the said conditions.

Now this Agreement witnesses as follows:

1. In this Agreement, words and expressions has to has the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to, and they has to be deemed to form and be read and construed as part of this Agreement.
2. In consideration of the payments to be made by the Authority to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Authority to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.
3. The Authority hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects wherein the Contract Price or such other sum

Signature of the Bidder

as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract

4. The following documents shall be deemed to form and be read and treated as part and parcel of this Agreement, viz.:
- i) Tender Document including the Contractor's Bid Documents and all other documents furnished by the bidder and submitted as part of the Bid;
 - ii) Conditions of contract (including Additional Conditions of Contract);
 - iii) Specifications;
 - iv) Drawings;
 - v) Bill of Quantities;
 - vi) Letter of Acceptance;
 - vii) Work Order (to be issued)
5. Detailed conditions agreed in the tender document form part of the agreement. The services to be performed, timelines to be met with, penalty clauses for non performance, and the other stipulations will be as furnished herein:

i. **Contract Period:** The Contract period is for 60 days from the date of issue of Letter of Acceptance to the successful contractor.

ii. **Payment Schedule:** Part or complete Payment will be made every month by the Zonal Officer, based on the outturn of satisfactory completion of work in the previous month and value of work executed shall be determined, based on the measurements and check measurements by the Engineer in the M.Book. and certified by Divisional Engineer (TAC) for quality of work.

Milestones and Liquidated Damages: The work will have two milestones for Construction of Thin Whitetopping (TWT) Pavement for carriage way at various Road/Streets in Zones –XII.

- iii. the following milestones have to be met
- a. Minimum 50% of the value of work should be completed by the end of the 30th day, and
 - b. Work should be completed in all respects by the end of the 60th day.

If there is default in meeting either or both these deadlines, Liquidated damages @ 0.1% of the unfinished value of work (in relation to the two milestones) will be levied per day till their completion.

iv. **Machineries:** The bidder should own or lease all machineries required for the work. The detailed list of Machineries as detailed in the Tender document shall be made available at the work site.

v. **Retention Money:** The Corporation of Chennai shall retain a sum equivalent to 5% of the value of the each bill as retention money from each payment due to the Contractor. Out of the 5% of the retention amount, on issue of completion certificate for the work 2.5% will be released to the Contractor, while the balance 2.5% will be retained during defect liability period (ie., 5 years). The retained 2.5% will be released by the Commissioner, Corporation of Chennai, after ensuring no liability in connection with work executed.

vi. **Quality Control & Payment :** Inspections will be carried out by Technical Audit cell Team in order to maintain quality control and payment will be made only after the certification of Divisional Engineer (TAC)

vii. **Fraudulent Practices :** If it is found any time during the tender process, award of contract, or during the contract period, that the Contractor has furnished false certificate or if the Contractor,

Signature of the Bidder

in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for, getting the contract or in the executing the Contract, the Contract will be summarily terminated and Criminal Proceedings will be initiated.

- viii. **Price Adjustment Clause:** Price Adjustment Clause: Price Adjustment Clause as per G.O. 227 , MAWS, dt. 23.11.2009 is applicable for the tenders of Rs.1.00 crore and above, even if the contract period is less than 1 year.
- ix. **Termination of the Contract:** If the work is not completed even 30 days after the contract period (60 Days), the contract is liable for summary cancellation
- x. **Defect Liability Period:** The defect liability period is 5 years.

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

The Common Seal _____
was hereunto affixed in the presence of:

Signed, Sealed and Delivered by the said

in the presence of:

Binding Signature of Employer (Commissioner, Corporation of Chennai) _____

Binding Signature of Contractor _____

**The Common Seal of the Corporation of .
Chennai hereunto affixed in presence of :**

*** Contractor's name**

Name and designation

Signature of the Bidder

Section V

1. Conditions of Contract

A.General

Definitions

1. Boldface type is used to identify defined terms.
2. **Act** means the Tamil Nadu transparency in Tenders Act, 1998 (Tamil Nadu Act 43 of 1998).
3. **Rules** means The Tamil Nadu Transparency In Tender Rules, 2000
4. **Adjudicator:** The Commissioner will propose the person to be appointed as Adjudicator under the contract in the Letter of Acceptance.
5. **Arbitrator:** If a party is dissatisfied with the decision of the Adjudicator or no decision is given within the time set out the party may give notice of dissatisfaction and a dispute which has been the subject of a notice of dissatisfaction has to be finally settled by Arbitral tribunal. The Arbitrator can revise the decision of the Adjudicator. The Arbitral Tribunal consists of 3 Arbitrators, one each to be appointed by the Authority and the Contractor. The third Arbitrator has to be chosen by the two Arbitrators so appointed by the parties and has to act as presiding arbitrator. In case of failure of the two arbitrators appointed by the parties to reach upon a consensus within period of 30 days from the appointment of the arbitrator appointed subsequently, the Presiding Arbitrator has to be appointed by President of the Institution of Engineers (India).
6. **The Authority** (Commissioner) or his authorised representative is the party who Employs the Contractor to carry out the Works
7. **Earnest Money Deposit** means the amount required to be remitted by a bidder along with his bid indicating his willingness to implement the contract.
8. **Bill of Quantities** means the priced and completed Bill of Quantities forming part of the Bid.
9. **BIS** means Bureau of Indian Standards.
10. **Compensation Events** are those defined in Clause - hereunder.
11. **The Completion Date** is the date of completion of the Works as certified by the Authority.
12. **The Contract** is the Contract between the Authority and the Contractor to execute, complete, and maintain the Works. It consists of the documents listed in Clause 2.3 below.
13. **The Contractor** is a person or corporate body whose Bid to carry out the Works has been accepted by the Authority.
14. **Tenderer Or Bidder:** Any person , firm or Corporation submitting a tender for the work contemplated, acting directly or through a duly authorized representative.
15. **The Contractor's Bid** is the completed bidding document submitted by the Contractor to the Authority.

Signature of the Bidder

16. **Bid Price** : The prices and discounts quoted by the bidder in the letter of bid and in the bill of quantities.
17. **The Contract Price** is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract.
18. **Days** are calendar days; months are calendar months.
19. **A Defect** is any part of the Works not completed in accordance with the Contract.
20. **The Defects Liability Certificate** is the certificate issued by Authority upon correction of defects by the Contractor.
21. **The Defects Liability Period** is the period named **in the Contract Data and calculated from the Completion Date**.
22. **Drawings** include calculations and other information provided or approved by the Authority for the execution of the Contract.
23. **The Authority** (The Commissioner) is the party who employs the Contractor to carry out the Works
24. **The Authority** is the person named in the Contract Data (or any other) competent person appointed by the Commissioner and notified to the Contractor, to act in replacement of the Authority) who is responsible for supervising the execution of the Works and administering the Contract.
25. **The Executive Engineer** is an Executive Engineer of Corporation of Chennai, who will be in charge of work in Corporation of Chennai.
26. **Equipment** is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.
27. **The Initial Contract Price** is the Contract Price listed in the Authority's Letter of Acceptance.
28. **The Intended Completion Date** is the date on which it is intended that the Contractor has to complete the Works. The Intended Completion Date is specified in the Contract Data. The Intended Completion Date may be revised only by the Authority by issuing an extension of time.
29. **Materials** are all supplies, including consumables, used by the Contractor for incorporation in the Works.
30. **Plant** is any integral part of the Works that has to have a mechanical, electrical, chemical, or biological function.
31. **The Site** is the area defined as such in the Contract Data.
32. **Site Investigation Reports** are those that were included in the bidding documents and are factual and interpretative reports about the surface and subsurface conditions at the Site.
33. **Specification** means the Specification of the Works included in the Contract and any modification or addition made or approved by the Authority.

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34. **The Start Date** is given in the Contract Data. It is the latest date when the Contractor has to commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.
35. **Subcontractor** is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract, which includes work on the Site.
36. **Temporary Works** are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works.
37. **Two-cover system** means a procedure under which the bidders are required to simultaneously submit two separate sealed covers, one containing the Earnest Money (Bid security) and the details of their capability to undertake the tender which will be opened first and the second cover containing the price quotation which will be opened only if the bidder is found qualified to execute the Bid.

38 Alteration, Additions and Omissions

The Engineer shall make any variation of the form, quality or quantity of the works or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion, be appropriate, he shall have the authority to instruct the Contractor to do and the Contractor shall do any of the following :

- (a) Increase or decrease the quantity of any work included in the Contract,
- (b) Omit any such work (but not if the omitted work is to be carried out by the Authority or by another contractor).
- (c) Change the character or quality or kind of any such work (d) Change the levels, lines, position and dimensions of any part of the works.
- (e) Execute additional work of any kind necessary for the completion of the Works, or
- (f) Change any specified sequence or timing of construction of any part of the works.

No such variation shall in any way vitiate or invalidate the Contract but the effect if any, of all such variations shall be valued in accordance with Clause 52, provided that where the issue of an instruction to vary the works is necessitated by some default of or breach of contract by the Contractor or for which he is responsible, any additional cost attributable to such default shall be borne by the Contractor.

A **Variation** is an instruction given by the Authority which varies the Works. A variation may an alteration/ alterations, addition / additions and omission / omissions.

Instructions for Variations : The Contractor shall not make any such variation without an instruction of the Engineer, provided that no instruction shall be required for increase or decrease in the quality of any work where such increase or decrease is not the result of an instruction given under this Clause, but is the result of the quantities exceeding or being less than those stated in the Bill of Quantities.

The **Works** are what the Contract requires the Contractor to construct, install, and turn over to the Authority, as defined in the Contract Data.

2. Interpretation

- 2.1 In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Authority will provide instructions clarifying queries about these Conditions of Contract.

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2.2 If sectional completion is specified in the Contract Data, references in the Conditions of Contract to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works).

2.3 The documents forming the Contract shall be interpreted in the following order of priority:

- (1) Agreement,
- (2) Letter of Acceptance,
- (3) Contractor's Bid,
- (4) Contract Data,
- (5) Conditions of Contract,
- (6) Specifications,
- (7) Drawings,
- (8) Bill of Quantities, and
- (9) any other document listed in the Contract Data as forming part of the Contract.

3. Language and Law

3.1 The language of the Contract and the law governing the Contract are stated in the Contract Data.

4. Decision of Authority

4.1 Except where otherwise specifically stated, the Authority will decide contractual matters between the Authority and the Contractor in the role representing the Authority.

5. Delegation

5.1 The Authority may delegate any of his duties and responsibilities to his sub-ordinates, except to the Adjudicator, after notifying the Contractor, and may cancel any delegation after notifying the Contractor.

6. Communications

6.1 Communications between parties that are referred to in the Conditions shall be effective only when in writing. A notice shall be effective only when it is delivered.

7. Subcontracting

7.1 The Contractor may subcontract with the approval of the Authority, but may not assign the Contract without the approval of the Authority in writing. Subcontracting shall not alter the Contractor's obligations. Any fault identified during the execution of work carried out by the sub-contractor, the contractor will be liable to rectify the defects as per the direction of the Authority.

8. Other Contractors

8.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Authority between the dates given in the Schedule of Other Contractors, as referred to in the Contract Data. The Contractor shall also provide facilities and services for them as described in the Schedule. The Authority may modify the Schedule of Other Contractors, and shall notify the Contractor of any such modification.

9. Personnel

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- 9.1 The Contractor shall employ the key personnel named in the Schedule of Key Personnel, as referred to in the Contract Data, to carry out the functions stated in the Schedule or other personnel approved by the Authority. The Authority will approve any proposed replacement of key personnel only if their relevant qualifications and abilities are substantially equal to or better than those of the personnel listed in the Schedule.
- 9.2 If the Authority asks the Contractor to remove a person who is a member of the Contractor's staff or work force, stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.

10. Contractor's Risks

- 10.1 The Contractor carries the risks which this Contract states are Contractor's risks.

11. Contractor's Risks

- 11.1 From the Starting Date until the Defects Correction Certificate has been issued, the risks of personal injury, death, and loss of or damage to property (including, without limitation, the Works, Plant, Materials, and Equipment) which are not Authority's risks, but are of Contractor's risks.

12. Insurance

- 12.1 The contractor shall have to provide a minimum insurance of man power and equipments. This insurances cover should start from the date of starting of work and should be valid upto the end of execution period. The responsibility of timely payment of the premium as well as that of lodging claims as and when situation arises, will be that of contractor. All insurances which the contractor requires to enter into under the contract shall be effected with an insurer or insurers and in terms approved by the Authority.

12.2 Accident or Injury to Contractor's Employees

The department shall not be liable for or in respect of any damages or compensation payable by law in respect of or in consequences of any accident or injury to any person in the employment of the contractor (other than accident or injury as may be attributed to the department or its employees) & the contractor shall indemnify the department against all such damages and compensations and against all actions, suits, claims, cost or expenses arising there from. The contractor shall insure against such liabilities and shall continue such insurance during the whole of the time that any persons are employed by him on the works

12.3 Remedy on Contractor's Failure to Insure

If the contractor fail to effect and keep in force the insurances referred to or any other insurance which he may be required to effect under the terms of the contract then and in any such case the department may effect and keep in force any such insurance and pay such premiums as may be necessary for the purpose and from time to time deduct the amount so paid by the department as aforesaid from any moneys due or which may become due to the contractor or recover the same as a debt due from the contractor.

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

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

- 12.6 Alterations to the terms of an insurance shall not be made without the approval of the Engineer in -Charge.

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

13. Queries about the Contract Data

13.1 The Authority will clarify queries on the Contract Data.

14. Contractor to Construct the Works

14.1 The Contractor shall construct and install the Works in accordance with the Specifications and Drawings.

15. The Works to Be Completed by the Intended Completion Date

15.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the Program submitted by the Contractor, as updated with the approval of the Authority, and complete them by the Intended Completion Date.

16. Approval by the Authority

16.1 The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the Authority, who is to approve them if they comply with the Specifications and Drawings.

16.2 The Contractor shall be responsible for design of Temporary Works.

16.3 The Authority's approval shall not alter the Contractor's responsibility for design of the Temporary Works.

16.4 The Contractor shall obtain approval of third parties to the design of the Temporary Works, where required.

16.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Authority before this use.

17. Safety

17.1 The Contractor shall be responsible for the safety of all activities on the Site.

18. Discoveries

18.1 Anything of historical or other interest or of significant value unexpectedly discovered on the Site shall be the property of the Authority. The Contractor shall notify the Authority of such discoveries and carry out the Authority's instructions for dealing with them.

19. Possession of the Site

19.1 The Authority shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date stated in the Contract Data, the Authority will be deemed to have delayed the start of the relevant activities, and this will be a Compensation Event.

20. Access to the Site

20.1 The Contractor shall allow the Authority and any person authorized by the Authority access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out.

21. Instructions, Inspections and Audits

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- 21.1 The Contractor shall carry out all instructions of the Authority which comply with the applicable laws where the site is located.
- 21.2 The Contractor shall permit the Corporation to inspect the Contractor's accounts and records relating to the performance of the Contractor and to have them audited by auditors appointed by the Corporation, if so required by the Corporation.

22. Disputes

- 22.1 If the Contractor believes that a decision taken by the Authority was either outside the authority given to the Authority by the Contract or that the decision was wrongly taken, the decision shall be referred to the Adjudicator within 14 days of the notification of the Authority's decision.

23.Procedure for Disputes

- 23.1.** The Adjudicator shall give a decision in writing within 28 days of receipt of a notification of a dispute.

23.2 . The Adjudicator shall be paid daily at the rates specified in the contract data together with reimbursable expenses of the type specified in the contract data and cost shall be divided equally between the Authority and the Contractor, whatever the decision is reached by the Adjudicator .Either party may refer a decision of the Adjudicator to an Arbitrator within 30 days of the Adjudicator's written decision. If neither party refers the dispute to the Arbitration within the above 30 days, the Adjudicator's will be final and binding.

- 23.3 .** The Arbitration shall be conducted in accordance with the arbitration published by the Government of Tamil nadu and in the place shown in the conditions of the contract.

24. Replacement of adjudicator.

- . Should the Adjudicator resign or die, or should the Authority and the Contractor agree that the Adjudicator is not functioning in Accordance with the provisions of the contract, a new Adjudicator will be jointly appointed by the Authority and the Contractor. In case of disagreement between the Authority and the Contractor, within 30 days, the Adjudicator shall be designated by the Appointing Authority , designated in the contract data at the request of either party, within 14 days of receipt of such request.

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B. TIME CONTROL

25. Program

25.1 Within the time stated in the Contract Data, the Contractor shall submit to the Authority for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the works.

25.2 .An update of the program shall be a program showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work, including any changes to the sequences of the activities.

25.3. The contractor shall submit to the Authority for approval an updated Program at intervals no longer than the period stated in the contract data. If the Contractor does not submit an updated program within this period, the Authority may withhold the amount stated in the Contract Data from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program has been submitted.

25.4. The Authority's approval of the program shall not alter the Contractors' obligations. The contractor may revise the program and submit it to the Authority again at any time. A revised Program shall show the effect of Variations and Compensation events.

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26. Extension of the intended completion date.

- 26.1** If the delay is due to the failure attributable to the contractor, the Authority I have the powers to decide whether to grant extension or not on the request for extension or time from the contractor. If the extension is granted under such circumstances, the contractor shall not be paid any revised rates or extra rates due to extension of time. The quoted rates in the contract shall prevail during the extension period. The contractor shall have to pay liquidated damages as per contract date for the beyond extended period.
- 26.2** If the delay is due to the failure attributable to the department or due to force, the Authority shall have the power to decide whether extension of time is to be given or not on request from the contractor of extension of time is given, the contractor shall not be paid extra rate or revised rate due to extension of time. The quoted rates in the contract shall prevail during extension period. The contractor has to pay liquidated damages as per contract data for the beyond extended period.

27. Delays Ordered by the Authority

- 27.1** The Authority may instruct the Contractor to delay the start or progress of any activity within the Works.

27.2 Damages for Delays and Non Completion

If the contractor fails to complete the works within the period Specified in the Contract Data or within any extended time allowed by the Authority, due to failure attributable to the contractor, the contractor shall pay or allow the Corporation to levy the amount mentioned in the table below as liquidated and ascertained damages for every day beyond the said date or extended time as the case may be during which the works shall remain unfinished. Liquidated and ascertained damages will be levied at the rate of 0.05% (zero point zero five percentage) of the contract value of the work for each day. The total liquidated and ascertained damages will be levied upto a maximum of 5% (five percentage) of the value of the contract and if the contractor fails to complete the work even then, action will be taken to terminate the contract and execute the work at his risk and cost as per provisions of the general conditions of contract of T.N.B.P.

28. Management Meetings

- 28.1** Either the Authority or the Contractor may require the other to attend a management meeting. The business of a management meeting shall be to review the plans for remaining work and to deal with matters raised in accordance with the early intimation procedure.
- 28.2** The Authority shall record the business of management meetings and provide copies of the record to those attending the meeting and to the Authority. The responsibility of the parties for actions to be taken shall be decided by the Authority either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.

29. Early Intimation

- 29.1.** The Contractor shall intimate the Authority at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price or delay the execution of the Works. The Authority may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate shall be provided by the Contractor as soon as reasonably possible.
- 29.2.** The Contractor shall cooperate with the Authority in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Authority

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C. Quality Control

30. Identifying Defects

- 30.1.** The Authority shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Authority may instruct the Contractor to search for a Defect and to uncover and test any work that the Authority considers may have a Defect.

30.2. Tests

- 30.3.** If the Authority instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, or not the contractor shall pay for the test and any samples.

30.4 Correction of Defects

- 30.5.** The Authority shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion, and is defined in the Contract Data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.
- 30.6.** Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the time framed by the Authority, the defects has to be rectified.

31. Uncorrected Defects

- 31.1.** If the Contractor has not corrected a Defect within the time specified in the Authority notice, the Authority will assess the cost of having the Defect corrected, and the Contractor will have to pay this amount.

D. Cost Control

32.. Bill of Quantities

- 32.1** The Bill of Quantities shall contain items for the construction, installation, testing, and commissioning work to be done by the Contractor.

33. Changes in the Quantities

- 33.1.** Payment to the contractor will be made for the actual quantities only of the work, performed or materials furnished accordance with the contract, and Tender Accepting Authority shall be ordinarily permitted to vary the quantity finally ordered only to the extent of 25 % either way of requirement indicated in the tender documents. The payment will be made as per originally approved rate.
- 33.2** If requested by the Authority, the Contractor shall provide the Authority with a detailed cost breakdown of any rate in the Bill of Quantities.

34. Variations

- 34.1.** All Variations shall be included in updated Programs produced by the Contractor.

35. Payments for Variations

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35.1. The Contractor shall provide the Authority with a quotation for carrying out the Variation when requested to do so by the Superintending Engineer. The Authority shall assess the quotation, which shall be given within seven days of the request or within any longer period stated by the Authority and before the Variation is ordered.

35.2 If the work in the Variation corresponds with an item description in the Bill of Quantities and if, in the opinion of the Authority, the quantity of work above the limit stated in Sub-Clause 36.1 or the timing of its execution do not cause the cost per unit of quantity to change, the rate in the Bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of work.

35.3 If the Contractor's quotation is unreasonable, the Authority may order the Variation and make a change to the Contract Price, which shall be based on the Authority own forecast of the effects of the Variation on the Contractor's costs.

35.4 If the Authority decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.

35.5 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early intimation.

36. Cash Flow Forecasts

36.1 When the Program is updated, the Contractor shall provide the Authority with an updated cash flow forecast.

37. Payment Certificates

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- 37.1** The Contractor shall submit to the Authority monthly statements of the estimated value of the work executed less the cumulative amount certified previously.
- 37.2** Payment will be made to the contractor under the certificates to be issued at reasonable frequent intervals by the Authority. Within fourteen days of the submission of each certificate an intermediate payment will be made of a sum equal to 90 percent of the value of the work, as so certified and the balance of 10 percent will be withheld and retained as a security for the due fulfillment of the contract. Under the certificate to be issued by the Authority on completion of the entire works, the contractor will receive the final payment of all the moneys due or payable to him under or by virtue of the contract except security deposit, provided there is no recovery from or forfeiture by the contractor to be made. No certificate of the Authority shall be considered conclusive evidence as to the sufficiency of any work or materials or correctness of measurements to which it relates, nor shall it relieve the contractor from his liabilities to make good defects as provided by the contract. The Contractor when applying for a certificate shall prepare a sufficiency certificate to the satisfaction of the Authority to enable the Authority or the Executive Engineer or the Assistant Executive Engineer to check the claim and issue the certificate.
- 37.3** The value of work executed shall be determined by the Authority
- 37.4** The value of work executed shall comprise the value of the quantities of the items in the Bill of Quantities completed.
- 37.5** The value of work executed shall include the valuation of Variations and Compensation Events.
- 37.6** The Authority may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

38. Payments

- 38.1.** Payments shall be adjusted for deductions for advance payments, retention and other recoveries in terms of the contract and deduction at source of taxes as applicable under the law.
- 38.2** If the amount certified is increased in a later certificate or as a result of an award by the Adjudicator or an Arbitrator, the Contractor shall be paid interest upon the delayed payment as set out in this clause. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute.
- 38.2.** Items of the Works for which no rate or price has been entered in will not be paid for by the Authority and shall be deemed covered by other rates and prices in the Contract.

39.Tax

- 39.1.** The rates quoted by the contractor shall be deemed to be inclusive of the Sales Tax, Duties and other levies on materials that the contractor will have to pay for the performance of the contract, and the Authority will reform such duties in regard to reduction of taxes at source as per law applicable. Any variation in taxes , duties and levies during the currency of contract shall be borne by the contractor.

40. Currencies

- 40.1** All payments shall be made in Indian Rupees.

41. Price Adjustment

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41.1 Contract price shall be adjusted for increase or decrease in rates and price of labour , materials, fuels and lubricants in accordance with the following principles and procedures.

a) The price adjustment shall apply for the work done from the start date given in the contract . data up to the end of the initial intended completion date or extensions granted by the Engineer and shall not apply to the work carried out beyond the stipulated time for reasons attributable to the contractor.

b) The price adjustment shall be determined during each quarter.

c) Following expressions and meanings are assigned to the work done during each quarter.

R = Total value of work done during the quarter. It would include the value of materials on which secured advance has been granted , if any , during the quarter , less the value of materials in respect of which the secured advance has been recovered, if any during the quarter. It will exclude value of works executed under variations for which price adjustment will be worked separately based on the terms mutually agreed..

Adjustment for labour component.

(1) Price adjustment for increase or decrease in the cost due to labour shall be paid in accordance with the following formula.

$$V_L = 0.85 \times P_1 / 100 \times R \times (L_1 - L_0) / L_0$$

V_L = increase or decrease in the cost of work during the quarter under consideration due to changes in rates for local labour.

L_0 = the average consumer price index for industrial workers for Chennai centre for the quarter preceding the date of opening of bids as published by labour Bureau, Ministry of Labour, Govt. of India.

L_1 = The average consumer price index for industrial workers for Chennai centre for the quarter under consideration as published by Labour bureau , Ministry of labour Govt. of India.

P_1 = Percentage of labour component of the work.

41.3. Adjustment for Cement component

(ii) Price adjustment for increase or decrease in the cost of cement procured by the Contractor shall be paid in accordance with following formula.

$$V_c = 0.85 \times P_c / 100 \times R \times (C_1 - C_0) / C_0$$

V_c = increase or decrease in the cost of work during the quarter under consideration due to changes in the rates for cement.

C_0 = The all India average wholesale price index for cement for the quarter preceding the date of opening of bids as published by the Ministry of Industrial Development , Ministry of Industrial Dev Govt. of India, New-Delhi.

C_1 = The All India Average wholesale price index for cement for the quarter under consideration as published by the Ministry of Industrial Dev. Govt. of India, New-Delhi .

P_c = Percentage of cement component of the work.

41.4. Adjustment for steel component

(III). Price adjustment for increase or decrease in the cost of steel procured by the contractor . shall be paid according to the following formula.

$$V_s = 0.85 \times P_s / 100 \times R \times (S_1 - S_0) / S_0$$

V_s = Increase or decrease in the cost of work during the quarter under consideration due to changes in the rates for steel.

S_0 = The all India average wholesale price index for steel (bars & rods) for the quarter preceding the date of opening of bids as published by the Ministry of industrial Development, Gov. of India., New-Delhi.

S_1 = The All India average wholesale price for steel (Bars & rods) for the quarter under consideration as published by Ministry of Industrial Dev. , New-Delhi.

P_s = Percentage of steel component of the work.

Note: For the application of this clause , index of bars & rods has been chosen to represent steel group.

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41.5. Adjustment of POL (Fuel and Lubricant) component..

(V) Price adjustment for increase or decrease in cost POL (fuel and lubricant) shall be paid in accordance with the following formula.

$$V_f = 0.85 \times P_f / 100 \times R \times (F_i - F_o) / F_o$$

V_f = Increase or decrease in the cost of work during the quarter under consideration due to changes in rates for fuel and lubricants.

F_o = The average official retail price of high Sped Diesel (HSD) at the existing consumer pumps of IOC at Chennai on the day 30 days prior to the date of opening of bids.

F_i = THE average official retail price of HSD at the existing consumer pumps of IOC at Chennai for the 15th day of the middle calendar month of the quarter under consideration.

P_f = Percentage of fuel and lubricants component of the work.

Note : For the application of this clause ,the price of High speed Diesel Oil has been chosen to represent fuel and lubricants group.

41.6. Adjustment for Plant and Machinery spares component.

(VI) Price Adjustment for increase or decrease in the cost of plant and machinery spares procured by the Contractor shall be paid in accordance with the following formula.

$$V_p = 0.85 \times P_p / 100 \times R \times (P_i - P_o) / P_o$$

V_p = Increase or decrease in the cost of work during the quarter under consideration due to changes in the rates for plant and machinery spares.

P_o = The All India average wholesale price index for heavy machinery and parts for the quarter preceding the date of opening of bids as published by the Ministry of Development, Government of India, New-Delhi.

P_i = The All India average wholesale price index for heavy machinery and parts for the quarter under consideration as published by the Ministry of Development, New-Delhi.

P_p = Percentage of plant and machinery spares component of the work.

Note : For the application of this clause , index of Heavy Machinery and Parts has been chosen to represent the plant and machinery spares group.

41.7. Adjustment of local materials

(VII) Price adjustment for increase or decrease in cost of local materials other than cement, steel, bitumen and POL , procured by the contractor shall be paid in accordance with the following formula.

$$V_m = 0.85 \times P_m / 100 \times R \times (M_i - M_o) / M_o$$

V_m = Increase or decrease in the cost of work during the quarter under consideration due to changes in rates for local materials other than cement, steel, bitumen and POL.

M_o = The All India average price index (all commodities) for the quarter preceding the date of opening of bids as published by the Ministry of Industrial Development , Government of India, New-Delhi.

M_i = The All India average price index (all commodities) for the quarter under consideration as published by the Ministry of Industrial Development , Government of India, New-Delhi.

P_m = Percentage of local material component (other than cement, steel, bitumen and POL) of the work.

41.8. The following percentages will govern the price adjustment for the entire contract.

Labour – P_l . 25%

Cement -- P_c 45 %

Steel - P_s 2 %

POL - P_f 5 %

Plant And Machinery Spares – P_p 5 %

Other Materials - P_m 18 %

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42. Retention

- 42.1** The Authority shall retain from each payment due to the Contractor the proportion stated in the Contract Data until Completion of the whole of the Works.
- 42.2** On completion of the whole of the Works, half the total amount retained shall be repaid to the Contractor and half when the Defects Liability Period has passed and the Authority has certified that all Defects notified by the Authority to the Contractor before the end of this period have been corrected.
- 42.3** On completion of the whole Works, the Contractor may substitute retention money with an "on demand" Bank guarantee

43.. Liquidated Damages

- 43.1** The Contractor shall pay liquidated damages to the Authority if he fails to execute and complete the work within the period of completion, at the rate per day stated in the Contract Data for each day that the Completion Date is later than the Intended Completion Date. The total amount of liquidated damages shall not exceed the amount defined in the Contract Data. The Authority may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's liabilities.
- 43.2** If the Intended Completion Date is extended after liquidated damages have been paid, the Authority shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The Contractor shall be paid interest on the overpayment, calculated from the date of payment to the date of repayment, at the rates specified in Sub-Clause 41.1.

44. No Advance payment.

44.1 No Mobilization Advance.

5. Securities.

- 45.1** The Performance Security shall be provided to the Authority not later than the date specified in the Letter of Acceptance and shall be issued in an amount and form specified in Clause 30 of ITB. The Performance Security shall be valid upto 28 days from the date of expiry of defect liability period mentioned in the Contract Data.

Finishing the Contract

47. Completion

- 47.1** The Contractor shall request the Authority to issue a certificate of Completion of the Works, and the Authority will do so upon deciding that the work is completed.

48. Taking Over

- 48.1** The Authority shall take over the Site and the Works within seven days of the Authority issuing a certificate of Completion.

49. Final Account

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

50. Operating and Maintenance Manuals

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

50.2 If the Contractor does not supply the Drawings and/or manuals by the dates stated in the Contract Data, or they do not receive the Authority approval, the Authority shall withhold the amount stated in the Contract Data from payments due to the Contractor.

51. Termination

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

51.2 Fundamental breaches of Contract shall include, but shall not be limited to, the following:

- (a) the Contractor stops work for 28 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Authority;
- (b) the Authority instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within 28 days;
- (c) the Authority or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
- (d) a payment certified by the Authority is not paid by the Authority to the Contractor within 84 days of the date of the Authority certificate;
- (e) the Authority gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Authority;
- (f) the Contractor does not maintain a Security, which is required; and
- (g) the Contractor has delayed the completion of the Works by the number of days for which the amount of liquidated damages upto a maximum of 5 % of the value of the Contract unless otherwise specified in the Contract Data.
- (h) if the Contractor, in the judgment of the Authority has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

51.3 When either party to the Contract gives notice of a breach of Contract to the Authority for a cause other than those listed under Sub-Clause 57.2 above, the Authority shall decide whether the breach is fundamental or not.

51.4 Notwithstanding the above, the Authority may terminate the Contract for convenience.

51.5 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.

52. Payment upon Termination

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- 52.1** If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Authority shall issue a certificate, for the value of the work done and Materials ordered less advance payments received up to the date of the issue of the certificate less other recoveries due in terms of the contract less taxes to deducted at source as per applicable law and less the percentage to apply to the value of the work not completed, as indicated in the Contract Data. Additional Liquidated Damages shall not apply. If the total amount due to the Authority exceeds any payment due to the Contractor, the difference shall be a debt payable to the Authority.
- 52.2** If the Contract is terminated for the Authority convenience or because of a fundamental breach of Contract by the Authority, the Authority shall issue a certificate for the value of the work done, Materials ordered, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works, and less advance payments received up to the date of the certificate.
- 53. Property**
- 53.1** All Materials on the Site, Plant, Equipment, Temporary Works, and Works shall be deemed to be the property of the Authority if the Contract is terminated because of the Contractor's default.
- 54. Release from Performance**
- 54.1** If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Authority or the Contractor, the Authority shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which a commitment was made.

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2. Special Conditions of Contract

1. GENERAL

- 1.1 The following special conditions of contract shall supplement the conditions of contract. Whenever there is a conflict, the provision herein shall prevail over the conditions of contract and / or those elsewhere.
- 1.2 The numbers given under each sub head represents the clause No. in conditions of Contract.
- 1.3 The bidder shall inspect the site and quarries and satisfy himself about the availability of the quality and quantity of materials required for the work.
- 1.4 The contractor shall make his own arrangements to procure all materials required for the work.
- 1.5 The Contractor shall make his own arrangements for water supply required for the work, at his own cost.
- 1.6 The Contractor shall make his own arrangements to obtain electricity for consumption on the work, at his own cost.

2. LABOUR

The Contractor shall unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.

The Contractor shall, if required by the Engineer in charge, deliver to the Contractor, a return in detail, in such form and at such intervals as the Engineer in charge may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the site and such information, respecting Contractor's Equipment as the Engineer in charge may require.

3. COMPLIANCE WITH LABOUR REGULATIONS

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

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The Employees of the Contractor and the subcontractor in no case shall be treated as the employees of the Employer at any point of time.

Some major Labour Laws applicable to Establishments engaged in Construction Work

- a. ***Workmen Compensation Act 1923 :***
 - b. ***Payments of Gratuity Act 1972 :***
 - c. ***Employees P.F. and Miscellaneous provisions Act 1952 :***
 - d. ***Maternity Benefit Act 1951 :***
 - e. ***Minimum Wages Act 1948 :***
 - f. ***Payment of Wages Act 1936 :***
 - g. ***Equal Remuneration Act 1979 :***
 - h. ***Payment of Bonus Act 1989 :***
 - i. ***Industrial Disputes Act 1974 :***
 - j. ***Industrial Employment (Standing Orders) Act 1946 :***
 - k. ***Trade Unions Act 1926 :***
 - l. ***Child Labour (Prohibition and Regulation) Act 1986 :***
 - m. ***Inter – State Migrant Workmen’s (Regulation of Employment & Conditioning of Service) Act 1979 :***
 - n. ***The Building and Other Construction Workmen (Regulation of Employment and Condition of Service) Act and the cess Act of 1996 :***
 - o. ***Factories Act 1940 :***
4. **ARBITRATION** (GCC Clause 24.3)

The procedure for arbitration will be as follows:

- 4.1 If either party is dissatisfied with the decision of the Adjudicator, the party concerned, may within thirty days after receiving the decision of the Adjudicator shall notify to the Commissioner, of his intension to go in for arbitration. Within 30 days of receipt of notice from the Contractor/ Employer of his intention to refer the dispute to arbitration the Commissioner shall send to the Contractor / Employer, a list of five officers of the rank of a Superintending Engineer or of a higher rank who are not connected with the work for selection and appointment of arbitrators.

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- 4.2** In event of dispute or difference arising between the Employer and a contractor relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Arbitration and Conciliation Act, 1996. The arbitration tribunal shall consist of 3 arbitrators, one each to be appointed by the Employer and the Contractor. The third Arbitrator shall be chosen by the two Arbitrators so appointed by the Parties and shall act as presiding arbitrator. In case of failure of the two arbitrators appointed by the parties to reach upon a consensus within a period of 30 days from the appointment of the arbitrator appointed subsequently, the presiding Arbitrator shall be appointed by the Indian Council of Arbitration.
- 4.3** If one of the parties fails to appoint its arbitrator in pursuance of sub-clauses above within 30 days after arbitrator by the other party, then the presiding Arbitrator shall be nominated by Indian Council of Arbitration shall appoint the arbitrator. A certified copy of the order of the President of the institution of Engineers(India).
- 4.4** Arbitration proceedings shall be held at Chennai, India, and the language of the arbitration proceedings and that of all documents and communications between the parties shall be English.
- 4.5** The decision of the majority of arbitrators shall be final and binding upon both parties. The cost and expenses of Arbitration proceedings will be paid as determined by the arbitral tribunal. However, this expenses incurred by each party in connection with the preparation, presentation, etc., of its proceedings as also the fees and expenses paid to the arbitrator appointed by such party or on its behalf shall be borne by each party itself.
- 4.6** In the event the value of the contract is up to Rs.5 Crores, the disputes or difference arising shall be referred to the Sole Arbitrator. The Sole Arbitrator should be appointed by agreement between the parties, failing such agreement, the appointing authority is the Indian Council of Arbitration.
- 4.7** Performance under the contract shall continue during the Arbitration proceedings and payments due to the contractor by the owners shall not be withheld, unless they are the subject matter of the arbitration proceedings such as, but not limited to matters related to quality of work.
- 4.8** Neither party is entitled to bring claim to arbitration unless the same is made before the expiration of 30 days after defect liability period.

5. Income Tax

During the course of contract period deductions of Income Tax shall be made as per the rule in the force of the gross amount of each bill or as directed by the Income Tax department from time to time and such Income Tax amounts shall be remitted to Government of India.

6. Sales Tax

Valid Sales Tax Clearance or exemption certificate should be produced before the payment of final bill, otherwise the final payment to the contractor will be withheld.

7. TESTS ON MATERIALS AND FINISHED ITEM OF WORK

- 7.1** Charges for carrying out all the tests specified in specification on materials and finished item of works should be borne by the contractor.
- 7.2** Charges for carrying out all the tests other than those specified in specification on materials and finished item of work should be borne by the contractor / Employer as below:
- a) If the materials / works pass the tests, the charges will be borne by the employer.
 - b) If the materials / works fail the tests, the charges will borne by the contractor.

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- 7.3** The Contractor should establish a field laboratory at the work site to carryout all tests specified as well as not specified in the specification both for materials and finished items of work in the presence of the Engineer.

8. PAYMENT

- 8.1** Payment for the work done by the contractor will be based on measurements recorded at various stages of the work by the Engineer or Officer authorized by the Engineer. The Contractor or his authorized agent or representative shall be present at the time of recording of each set of measurements and sign the measurement book or leveling field book in token of their acceptance.
- 8.2** If for any reason the Contractor or his authorized agent is not available, and the work is suspended by the Engineer to avoid recording of measurements in the absence of the Contractor or his authorized agent, the department shall not entertain any claim from the contractor for any loss incurred by him on this account. If the Contractor or his authorized agent or representative does not remain present at the time of such measurement may be taken in his absence and shall be deemed to be accepted by the Contractor.
- 8.3** Any amount due to the department from the Contractor arising out of the Contract will be received from the bills of the Contractor. If sufficient amount is not available in the bills the same will be recovered under Revenue Act or from the amount due to the Contractor under any other Contract

9. Extension of Time

Granting extension of time shall be governed as under:

- 9.1** If the delay is due to the failure attributable to the Contractor, the Engineer shall have powers to decide whether to grant extension or not on the request for attention of time from the Contractor. If the extension is granted under such circumstances, the Contractor shall not be paid any revised rates or extra rate due to extension of time. The quoted rates in the contract shall prevail during the extension period. The Contractor has to pay liquidated damages as per contract data for the extended period.
- 9.2** For this fixed price contract, if the delay is due to failure attributable to the department, or due to force, the Engineer shall have the power to decide whether extension of time is to be given or not on request from the contractor. If extension of time is given, the contractor shall not be paid extra rate or revised rate due to extension of time. The quoted rates in the contract shall prevail during extension period.

10. Fundamental Breach of Contract:

The Contractor becoming insane or imprisoned shall be deemed as a fundamental Breach or Contract.

11. Extra Item of Works

Extra item of work shall not vitiate the contract. The contractor shall be bound to execute extra items of works as directed by the Engineers.

12. Employment of Project Manager and Other Key Personnel

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Other Key Personnel as furnished in the Contract.

13. Contract Period

The contract period is continuous from start date to intended completion date including monsoon and non-monsoon seasons without any break.

14. Inconvenience to Public

The contractor shall not deposit materials at any site which will cause inconvenience to Public. The Engineer may direct the Contractor to remove such materials or may undertake the job at the cost of the Contractor.

15. House and Hutments

The Contractor should arrange to provide accommodation for his staff & Labourers he needs, at his own cost. The Contractor shall make his own arrangements for supply of food-grains and other provisions to his staff and laborers including controlled commodities. If women are employed in more than 50 at a place, the Contractor shall arrange the crèches at his own cost.

16. Water Supply

It is the responsibility of the Contractor to make his own arrangements for water supply and drainage for the work site, in his own cost. The distribution system measures for purification of water, shall be the responsibility of the Contractor and shall be accordance with rules and regulations of the Public Health Department. No compensation will be allowed to the Contractor in this account.

17. Watching and Lighting:

The Contractor shall in connection with the works, provide and maintain at his own cost all lights, guards, fencing and watching when and wherever necessary or required by the Engineer or Engineer's Representative, or by any duly constituted authority for the protection of the works, or for the safety and convenience of the public or others. The Contractor shall make his own arrangements to obtain electricity for consumption on the works at his own cost.

18 Construction Plant

The Contractor shall provide and install at his own cost all necessary construction tools and plant, equipment, machinery and shall use such methods and appliances for the performance of all the operations connected with the work comprised under the contract as will secure a satisfactory quality of work and rate of progress which will ensure the completion of the work within the time specified.

19. Reference Marks and Bench Marks

19.1 The basic central lines, reference points and bench marks will be fixed by the Department.

19.2 The Contractor shall establish at his own cost, at suitable points, additional reference lines and bench marks as may be necessary. The Contractor shall remain responsible for the sufficiency and accuracy and of all his bench marks and reference lines. He shall take precaution to see that the lines, points and bench marks fixed by the Department are not disturbed by his work and shall make good to any such damages.

20. Setting out Works

The Contractor shall be responsible for the correct setting out of all works at his cost. The Contractor shall execute the work true to alignment, grade and levels as shown in the drawings and as directed by the Engineer and shall check these at frequent intervals. The Contractor shall provide all facilities like labour and instruments, and shall co-operate with the departmental officers to check all alignments, grades, levels and dimensions, such checking shall not absolve the contractor of his own responsibility in maintaining the necessary of the work.

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21. Use and Care of Site

The Contractor will be permitted to use without charge, the site and the lands shown for execution of work, labour, staff colonies, site offices, workshops or store and for related activities. The Contractor shall not commence any operation on such lands, except with the approval of the Engineer. If these lands are not adequate, the Contractor may have to make his own arrangements for additional lands at his own cost. The Contractor shall not demolish, remove or alter the structures, trees or other facilities on the site without prior approval of the Engineer.

The rubbish shall be removed from the site as it accumulates. All surface and soil drains shall be kept in a clean, sound and workmen like state. All the means of the Contractor's operations shall be cleared before returning them to the Department. The Contractor shall make good any damage or alteration made to property or land handed over to him before these are returned.

22. Protection of adjoining Premises

The Contractor shall protect adjoining sites against structural, decorative and other damages that could be caused by the execution of these works and make good at his cost any such damages.

23. Local Roads

In addition to the existing public roads, near the site of works and the roads constructed by the Government in the works area, the Contractor may construct and maintain additional roads as required at his own expenses and as per the directions of the Engineer.

24. Work during Night or Sundays and Holidays

No work shall be done on holidays or during nights without the written permission Superintending Engineer /Zonal Executive Engineer and the Contractors shall comply with the provision of the Factories Act, if and so far they are applicable.

The contractor shall give prior information to the Police Department, if necessary, for carrying out the work during night hours.

25. There shall be a defect liability for **5 years period (60 months)** The contractor shall be liable to maintain the road during the defect liability period, which shall include any repairs, rectification of any part or portion of the project road immediately without waiting for any notice or intimation and shall include:

- i. Surface deteriorations shall be rectified as directed

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Section VI
Contract Data

1. The Employer is Commissioner , Corporation of Chennai The Engineer in Charge is Executive Engineer Zone

The name and identification number of the Contract is

Z.O.VIII.C.NO.B2/ 4097/22 /2013

Package- 4 (5 Road works)

**Construction of Thin Whitetopping (TWT) (C.C. over existing BT surface
for carriage way at various Roads/Streets in ward No 102 Zone VIII**

The adjudicator appointed jointly by the Employer and Contractor is (Name and Address of the Adjudicator).

The Works consist of **Package- 4 (5 Road works)**

**Construction of Thin Whitetopping (TWT) (C.C. over existing BT surface
for carriage way at various Roads/Streets in ward No 102 Zone VIII**

The Start Date shall be issue of notice to proceed the work
The Intended Completion Date for the whole of the Works shall be two **months** from the commencement of work

MILESTONE DATES

Sl. No.	Description of Work	Milestone I	Milestone II	Milestone III	Milestone IV
		20% in 15 days	50% in 30 days	75% in 45 days	100 % work should be completed in 60 days

2. The Contractor shall submit a revised Program for the Works within Seven/ days of delivery of the Letter of Acceptance.
3. The Site Possession Date shall be Zonal Office - Corporation of Chennai
4. The Site is located at *[location]* and is defined in drawings No: Nil]

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5. The Defects Liability Period is Five years
6. The language of the Contract documents is *[language]*.English
The law that applies to the Contract is the law of *[law]*.
7. Appointing Authority for the Adjudicator: *[name of Authority]*.
8. Arbitration will take place in accordance with *[rules and regulations]*.
9. The Contract "*is*" subject to price adjustment in accordance with Clause 41 of the Conditions of Contract.
10. The liquidated damages for the whole of the Works are *0.1% of contract value* per day till it reaches the maximum value of 5% (five percentage) of the contract value of the work.
11. The Corporation of Chennai shall retain a sum equivalent to 5% of the value of the each bill as retention money from each payment due to the Contractor. Out of the 5% of the retention amount, on issue of completion certificate for the work 2.5% will be released to the Contractor, while the balance 2.5% will be retained during defect liability period (ie., 5 years). The retained 2.5% will be released by the Commissioner, Corporation of Chennai, after ensuring no liability in connection with work executed.

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Section VII

GENERAL TECHNICAL SPECIFICATIONS

1. SPECIFICATIONS FOR CONSTRUCTION OF THIN WHITE TOPPING:

1. Thin White topping (TWT)

PCC overlay of thickness greater than 100 mm and less than 200 mm is classified as Thin White topping (TWT). The bond between the overlaid PCC and underlying bituminous layer is often a consideration but it is not mandatory. The bonding consideration may be ignored in the design. High strength concrete with fibres are commonly used. Joints are at shorter spacing of 0.6 to 1.25m .

Salient features of UTWT/TWT

The development of an effective bond between PCC overlay and the existing bituminous pavement is critical to the performance of UTWT/TWT because the strength of the existing bituminous pavement is being relied upon to carry part of the traffic load.

- (i) Extensive surface preparation to promote significant bonding between the concrete overlay and the bituminous pavement is required. Some times chiseling may also be tried gently at certain locations where milling is difficult to make the bituminous surface rough. (Excessive roughened surface, however, should be avoided as this could enhance the frictional forces)
- (ii) Use of short joint spacing (generally between 0.6 m and 1.25 m). Square spacing (e.g. about 1.0 m x 1.0 m) are preferred. Rectangular spacing wherever given should have a ratio not exceeding 1.2 between the long and the short arms.
- (iii) The minimum thickness of hot mix bituminous pavements 75mm(net excluding the milled thickness) for both the cases of UTWT and TWT. However, it is preferable to have this minimum thickness of 100 mm or more to ensure a reliable stormwater bituminous base.

2. MATERIALS

2(a). Cement

Any of the following types of cement capable of achieving the design strength may be used with prior approval of the Engineer:

- (i) Ordinary Portland Cement, 33 Grade IS:269
- (ii) Ordinary Portland Cement, 43 Grade, IS:8112
- (iii) Ordinary Portland Cement, 53 Grade, IS:12269
- (iv) Ordinary Portland Pozzolana Cement, IS:1489
- (v) Portland Blast Furnace Slag Cement, IS:455

Preferences should however, be to use 43/53 Grade cement, as the grade of required concrete is M40. Lesser cement content means less water and, therefore, less chances of shrinkage cracks. While using 53 Grade Cement, fly ash up-to 20% by weight of cementations material may be added (to facilitate cutting too many saw joints with some additional time).

2(b). Admixtures

Admixtures conforming to IS:6925 and IS:9103 may (up-to 2% by weight of cement as per IS: 456) be used to improve workability of the concrete or extension of setting time, on satisfactory evidence that they will not have any adverse effect on the properties of concrete with respect to strength, volume change and durability.

2(c). Air entraining agents

The air entraining agents may be added up-to 6.5% to increase the durability of the pavement in freezing and thawing regions.

2(d). Fibres

These shall be of steel/polypropylene/polyester/polyethylene/nylon fibres and shall be uniformly dispersed in the concrete mass. These shall be added at the time of preparation of concrete. The synthetic fibres are normally 0.20 to 0.40 % of the weight of cement whereas the steel fibres content shall be as per IRC:SP-46. The synthetic fibres are slender and elongated filaments in the form of bundles, networks, strands of manufactured material that can be distributed thoroughly in the freshly mixed concrete. (as per ASTM C1116)

The diameter of polymeric fibres normally varies from 10-70 micron and specific gravity is in the range of 0.91 - 1.34. The melting point of these fibres shall not be less than 160°C. The aspect ratio generally varies from 200-2000.

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Fibre reinforced concrete shall be free from fibre balls when delivered. Tolerance in slump may be ± 15 mm for a slump of less than 50 mm and ± 25 mm for a slump greater than 50 mm but less than 100 mm. The tolerance in mixing time shall be + 3 s for time of mixing upto 15 s, and ± 5 s for time of mixing of more than 15s. For more details on specifications of fibres and their testing, ASTM C 1116 and ASTM 1399 may be referred.

2(e). Aggregates

Aggregates for pavement concrete shall be natural material complying with IS:383 with a Los Angeles (LA) Abrasion/Aggregate Impact Value (AIV) not more than 35%. The limits of deleterious materials shall not exceed the requirements set out in IS:383

The aggregates shall be free from chert, flint, chalcedony or silica in a form that can react with the alkalis in the cement. In addition, the total chlorides content expressed as chloride ion content shall not exceed 0.06% by weight and the total sulphate content expressed as sulphuric- (SO₃) shall not exceed 0.25% by weight of dry aggregates.

2(f). Coarse aggregates

Coarse aggregates shall consist of clean, hard, strong, dense, non-porous and durable pieces of crushed stone or crushed gravel and shall be devoid of pieces of disintegrated stone, soft, flaky, elongated, very angular or splintery pieces. Aggregates should normally be rough textured and cubical in shape. Use of modern crushing technology for producing aggregates is considered desirable. The maximum size of coarse aggregates shall not exceed 31.5 mm in case of TWT/Conventional White topping and 25 mm in case of UTWT. The flakiness index of aggregate shall be less than 40%.

No aggregate which has water absorption more than 2 % shall be used in the concrete mix. The aggregates shall be tested for soundness in accordance with IS:2386(Part V). After 5 cycles of testing, the loss shall not be more than 12% . If sodium sulphate solution is used or 18% if magnesium sulphate solution is used. If aggregates are doubtful or alkali aggregate reactivity, IS:456 may be referred. If aggregates are not free from dirt, the same may be washed and drained for at least 72 hours before batching. In such a situation the absorbed moisture content shall be carefully taken into account while calculating water content in them .

2(g). Fine Aggregates

The fine aggregates shall consist of clean natural sand or crushed stone sand or a combination of the two and shall conform to IS:383. Fine aggregates shall be free from soft particles, clay, shale, loam, cemented particles, mica and organic and other foreign matter. The fine aggregates shall not contain substances more than the following:

Clay lumps 4.0%

Coal and lignite 1.0%

Material passing IS sieve 4.0%

No.75 micron

Although IS:383 permits the fines passing 75 microns upto 15% in case of crushed sand. This provision should be used with caution. The mix produced in the laboratory and the field should be satisfactory in all respects and should comply with the requirement of Specifications.

2(h). Water

Water used for mixing and curing of concretes shall be clean and free from injurious amount of oil, salt, acid, vegetable matter or other substances harmful to the finished concrete. It shall meet the requirements stipulated in IS:456. Potable water is generally considered satisfactory for mixing and curing.

2(i). Mineral Admixtures

In case of Conventional White topping, Ultra-Thin White topping and Thin White topping following materials may be added as mineral admixtures as per their availability:

(i) Fly ash grade I (as per IS 3812-2003)

(ii) Granulated blast furnace slag (as per IS: I 2089)

(iii) Silica fume (as per IS: 15388-2003

and IS:45 6-2000 I.R C:SP:70)

The silica-fume as per design is used where high performance concrete is the requirement of the design. It shall be added in suitable doses normally @ 3-10 % by weight of cementations material.

To improve the ductility and fatigue resistance of high performance high strength concrete, polymeric fibres may be added in the concrete 0.2-0.4 % by weight of cement and/or steel fibres as per IRC:SP:46. Polymeric fibres shall have water absorption less than 0.3% and shall not affect the properties of concrete (i.e reduction in the strength not more than 5%). Entrapped air content in the concrete shall not be more than 3 % except where freezing and thawing is taking place. At such locations, provision shall be regulated by Para 2 (b).

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Use of above additional materials including admixtures and air entraining agents in the conventional concrete/ improves the following properties of concrete:

- (i) Improvement in toughness,
- (ii) Reduction in shrinkage cracks
- (iii) Long term mechanical properties,
- (iv) High early strength,
- (v) Ease of placement ,cohesiveness and consolidation,
- (vi) Volume stability and longer life,
- (vii) Less abrasion and least permeability,
- (viii) Improvement in load transfer at the joints due to improved aggregate interlocking
- (ix) Improvement in bond between aggregate - cement mortar and existing bituminous layer with fresh concrete.

3. MIXPROPORTIONING AND STRENGTH OF CONCRETE

3(a) Following designed concrete mixes may be used for construction of all types of white topping (Conventional TWT/UTWT):

- i) Conventional cement concrete,
- ii) Fibre Reinforced concrete using fibres viz. polypropylene, polyethylene, nylon, polyester, steel (IRC:SP:46 etc .
- iii) High Performance concrete using silica fume up-to 3-10 %by weight of cementations material with and without using fly ash (upto 20 %) or slag up to 70% by weight of cement, (IRC:SP:70)
- iv) High performance fibre reinforced concrete using specified fibres and mineral admixtures as per IS: 456 using a doze of chemical admixture @ upto 2.% by weight of cement.

4. Concrete mixes used are so proportioned that the concrete mix generally produces concrete of minimum characteristic compressive strength M40 at 28 days. The high performance concrete is essential for fast track construction which is achieved by using early setting cements with micro silica as an essential additive. The cardinal principle is that two third of the concrete strength should be developed within a period of 48 hours.

3(b) UTWT/TWT projects are generally constructed with concrete of mix, having lower water/cementation, less than 0.40. It is, however, preferable to have a water /cement ratio around 0.28 to 0.30. The workability /slump requirement (25-50 mm) may be conveniently achieved by the use of high range water reducers (super plasticizers). The same mix proportions may be adopted in case of Conventional white topping with precautions of curing,, ambient temperature, slump and temperature of concrete.

When designing concrete pavements, the flexural strength (modulus of rupture) of concrete is used rather than its compressive strength, as concrete fails in flexure rather than in compression. The mixes shall be designed as per IRC:44 or IS 10262. The minimum flexural strength or modulus of rupture (Third point loading) of the concrete shall be 45 kg/ cm² for responding to the minimum grade of concrete i.e. M40 at 28 days. It is, however, preferred to have a flexural strength of 50-60kg/cm²(third point Loading).

Table 1: Typical Mix Proportions

Sl.No.	Ingredients	Weight in kg
1	Ordinary Portland Cement 43 or 53 Grade	440
2	Coarse Aggregate	941
3	Fine Aggregate (Natural)	596
4	Polymeric Fibres	0.9
5	Water	170 litre or Kg
6	Water/Cement Ratio	0.28(desirable but not more than 0.40

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7	Fly ash	88 kg
8	Silica fume	59 kg
9	Chemical Admixture	0.5 % by weight of cement (desirable. but not more than 2%)

Note: 1. Crushed sand may also be used conforming to IS: 383- 1970

Note:2 As per IS:383 permissible limit of 150 micron IS sieve is increased to 20%

Note: 3 Crushed sand blended with river sand can also be used.

4 Surface Preparation

Milling: The existing bituminous surface is milled to obtain a uniform surface. Milling can be used to remove surface distortion like cracks in the top portion and adjust cross slopes. The removal of thickness should be between 25 to 50 mm. Milling can also be selectively used with direct placement to treat the isolated stretch suffering from distortion in the project road. Milling is not mandatory.

Placement of Levelling Course: Sometimes a levelling course of bituminous mix is used to produce a uniform surface for paving. A levelling course typically consists of minimum 50 mm of Bituminous Macadam (BM)/Dense Bituminous Macadam (DBM). Exact quantity will depend upon the undulations. When the distortion/rutting depth exceeds more than 50 mm, the option of milling as an economical alternative may be evaluated.

4(a). Inlays

Concrete pavements are sometimes placed in a trench milled out of a thick asphalt pavement, in the form of concrete inlays. This is used where it is desired to remove and replace only the deteriorated lane (s). It is also effectively used where minimum vertical clearance requirements of structures like road-over-bridges preclude raising of the existing level of the road. In such cases, sufficient depth of the old pavement is milled out so that the concrete is levelled with, or only slightly higher than the existing shoulder or adjacent asphalt lane.

For White topping in the form of inlays, thickness design and jointing practices to be adopted are the same as followed in case of normal pavement design practices as per IRC:58 and IRC:15. Dowels or reinforced concrete pavements for such inlays, may be used, particularly, where heavy traffic and wet climatic conditions exist.

5 STEPS OF CONSTRUCTION

i) Milling: The milling of the existing asphalt pavement provides removal of rutting, a roughened surface to enhance the bonding between the new concrete overlay and the existing asphalt pavement. The depth of milling (25-50 mm) depends upon the types and severity of distressed specially the depth of rutting or other surface distortions and the available thickness of asphalt pavement. Hand grinding/light chiselling may also be used gently for making the roughness in top surface of asphalt pavement at difficult locations. In case of non availability of the required machinery, a profile correction course of bituminous macadam (of minimum thickness 50 mm) may be laid over existing bituminous pavement after applying tack coat as per MORT&H Specifications so as to have a net bituminous thickness of 75 mm.

ii) Repair to Existing Pavement: The milled pavement shall be repaired in respect of cracks and wherever the cracks are too many indicating failure of sub grade, the pavement shall be replaced and simultaneously the subgrade will also be recomputed, if the sub grade soil in the pocket is treacherous. Existing bituminous layer after milling shall be in good condition to minimize more reflection cracks or sympathetic cracks. If locally any distress/ defects/ cracks are observed, these shall be repaired/s earliest using properly designed dense bituminous mixes. The top of milled surface and repaired portion shall be in level with each other. The cracks shall be repaired first with hot bitumen of any suitable grade, before laying PCC and the surface is then boomed by compressed air/vacuum pump to remove debris prior to placing of concrete. The surface of the asphalt is flushed with water to aid in cleaning, before overlay is applied.

iii) Cleaning: After milling or providing the profile correction course, atop the existing IRC:SP:76-2008 asphalt pavement, the top surface is cleaned to ensure bonding between the existing asphalt

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pavement and the new concrete overlay. Different methods of cleaning to remove foreign particles are given as:

- * Air blasting/vacuum cleaner
- * Power booming
- * Water blasting
- * Sand blasting
- * Chiseling

iv) Placing, Finish, Texturing and Curing using Conventional Paving Techniques and Materials:

After the milling operation/laying profile correction course, form work using steel channels or girder are fixed and stability of these is ensured simultaneously. Cement slurry may be applied before placement of PCC. Concrete is placed, finished and cured using conventional paving techniques and materials. After the laying of PCC, runner beam shall simultaneously be provided without causing vibration/disturbance to the newly laid UTWT/TWT. Use of kerb stone as form work is not preferred. Use of semi mechanized method, slip form paver or fixed form paver may be adopted as per IRC:15 based on size of project and availability of the space and equipment. Curing compound/ water should be applied twice the normal rate, because UTWT/TWT is thin concrete slab which has high surface area to volume ratio and can loose surface moisture rapidly due to evaporation.

The timing of the texturing operation is important. If done too early or too late, the desired skid resistance will not be obtained. The best time for texturing is just after the water sheen has disappeared and just before the concrete becomes non-plastic. For low speed, municipal or urban projects, a burlap drag, turf drag, or coarse broom texture is sufficient from lower side to upper side. For high-speed interstate and other primary routes, tining provides excellent long-term skid resistance.

v) **Drainage:** Drains, inlets and manholes must be raised to match the elevation of the new pavement. Drainage pipe shall be below the drainage layer if provided. The slabs around the manhole shall preferably be with reinforced cement concrete (RCC) using nominal reinforcement of 10 mm dia plain bars at 150 mm c/c at neutral axis.

6. JOINTS

The ratio of the length (longest dimension to width) shortest dimension of any given panel is recommended to be not more than 1.20. Following types of joints are being adopted in the construction of conventional rigid pavement. In the case of UTWT/TWT, construction of these joints is slightly modified because of small size panel and bonding or partial bonding of UTWT/TWT layer with the sub base layer:

- i) Contraction Joints
- ii) Expansion Joint
- iii) Construction Joint
- iv) Longitudinal Joints

6(a). Initially, joint may be cut with in 6- 18 hours (depending upon the grade of concrete being used and admixtures added) to a depth of 1/3 of the slab's depth and of width 3-5 mm.

6(b). Tie bars are designed to withstand tensile stresses only. The maximum tension in the tie bars across any joint is equal to the force required to overcome friction between pavement and subgrade, from the joint in question to the nearest free joint. The term free joint is applied to any type of pavement joint that has no tie bars or bonded reinforcement across in it.

6(c). Dowel bars are mechanical load transfer devices built as an integral part of certain transverse joints to permit the joint to open and close but to hold the slab ends on each side of the joints as nearly as possible at same elevation. The deflection of one slab under the load is resisted (through the dowel) by the others lab which, in turn is caused to deflect and thrust to carry a portion of the load imposed upon the first slab.

6(d). In case of UTWT/TWT, the pavement is divided into relatively short panels by contraction joints which are so spaced, to prevent formation of intermediate cracks. In case of UTWT when thickness is too less, and due to high 'k' value of the existing asphalt pavement, provision of the use of dowel bars may be omitted. However, where pavement joins structure such a bridge and rail road track, at the intersection with other pavement or for any butt type joints viz construction joints/ longitudinal joints, 3nos. plain tie bars(steel) of 10 mm dia and of length 300 mm at spacing of 30 cm c/c. may be provided for a maximum panel length of 1.0 m in both the cases of UTWT/TWT.

6(e). Short joint spacing is critical for the good performance of UTWT/TWT projects. Acting like a paver block system, it reduces curling stresses and banding stresses in concrete slab due to loads.

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Load transfer is Provided by aggregate interlock, which is further enhanced by short joint spacing and by the support of the underlying pavement. Compared to conventional pavements, load transfer is not as critical for concrete overlays because the underlying pavement provides considerable support to the joints.

For UTWT/TWT, extra concrete thickness is needed near the joint at the transition to the asphalt roadway. Similar practice is continued near the taper joint.

Timely joint cutting (with in 6-18hours of laying of UTWT/TWT) prevent cracking, minimize curling and warping stresses. Since more number of joints because of close spacing are required to be cut, it is preferable to resort to skip-sawing to avoid cracking. The intermediate joints shall be cut after the skip sawing is completed. The sawing should be started when the pavement is able to bear the weight of the saw cutting machine and the crew. Higher rate of strength development may need Joint cutting after 5 hours or so. Too heavy Joint cutting machine over UTWT may be avoided. Each properly aligned tie bar shall be at least 50mm away from the joint free edge. The minimum concrete cover around steel bars, shall be about 50mm, In case of TWT and conventional white topping. The maximum concrete cover to tie bars shall be not less than 2.5 times the maximum size of aggregate in, case of UTWT.

7 1. The temperature of Pavement Quality concrete shall be maintained as per **IRC:15:2002**. Concrete having temperature at the time of pouring more than 30°C will not be allowed.

2. Concrete pavement must be in proper cross profile as per camber prescribed by the Engineer.

3. After the final regulation of the surface of the slab, surface of concrete slab shall be brush - textured in a direction at right angles to the longitudinal axis of the carriageway.

4. The brushed surface texture shall be applied evenly across the slab in one direction by the use of a wire brush not less than 450 mm. wide. The brush shall be made of 32-gauge tape wires grouped together in tufts spaced at 10 mm. centres. The tufts shall contain an average of 14 wires and initially be 75 mm. long. The brush shall have three rows of tufts. The rows shall be 20 mm. apart and the tufts in one row shall be opposite the centre of the gap between tufts in the other row. The brush shall be replaced when the shortest tuft wears down to 60 mm. long.

5. The texture depth shall be determined by the sand patch test as described in the clause given below. The test shall be taken at least once in a week or whenever the Engineer considers it necessary, at times after constructions. 10 individual measurements of the texture depth shall be taken at least 2 Mtr. apart anywhere along the diagonal line across a lane width between points 50 M apart. No measurements shall be taken within 30 mm of the longitudinal edges of the concrete slabs. The texture depth shall not be less than minimum required as per the table below, nor greater than a maximum average of 1.25 mm.

6. After the application of the brushed texture, the surface of the slab shall have a uniform appearance. The top surface should be finished neatly with lines and profiles as instructed by the Engineer. Impressions of any kind like footprints of animals and workers should be avoided after laying of the road.

7. It will be the responsibility of the contractor to give the required finish of riding surface by checking with the straight edge and wedge gauge and any deficiency observed, shall be rectified as specified in the general specifications for Road Works.

8. Initial curing shall be done immediately after the surface texturing. Initial curing shall be done covering with hessian cloth and sprinkling with water over the concreted portion as soon as the concrete starts setting and by the application of approved resin based aluminized reflective curing compound which hardens into an impervious film of membrane with the help of mechanical sprayer. Care should be taken not to disturb the brushed surface texture.

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Further curing of concrete shall be done as directed, for a minimum period of 14 days from the date of casting of c.c. slab.

A penalty of **Rs.2500/-** per day will be levied for improper curing.

9. The cement concrete slab pavement in M 40 is required to be carried out strictly as per the drawing. As regards thickness no claims on account of additional thickness other than the specified, if provided, will be entertained.

10. The regularity of the surface of the slab shall comply with the requirement of following clause.

10.1 Compliance with the requirements of this clause for surface regularity shall be measured using an approved 3 m long straight edge and wedge in such a way as to reveal any and all irregularities. The maximum permitted number of surface irregularity of 5 mm and 7 mm in a length of 300 m shall be 20 numbers and such irregularities shall be properly recorded in the register.

10.2 Longitudinal irregularity shall normally be measured along any line or lines parallel to the edge of the slab.

10.3 Transverse irregularity shall normally be measured along any line with the straight edge placed at right angles to the center line of the road.

11. If deemed necessary by the Engineer, any section of the slab which deviates from the specified levels and tolerance shall be demolished and reconstructed at the Contractor's expense.

12. There shall be a defect liability for **5 years period (60 months)** for C.C.pavement. If during this period, concrete road fails due to (1) development of cracks (2) Spalling of edges (3)Erosion of concrete surface etc., the action as decided by the engineer shall be taken against the contractor. In case of development of structural/full depth cracks, **25% cost of the slab per cracked panel shall be recovered as penalty**. The penalty amount shall not exceed cost of respective slab. The contractors should replace the cracked panels within the guarantee period. It is obligatory on the part of contractors to take care of such cracks during the guarantee period.

In case of disputed cracks, nature of cracks may be ascertained by extracting core on the crack in question by the contractor at his cost. If the depth of the penetration of the crack observed on the core is more than 1/3rd the depth of the slab, the crack will be considered as structural crack.

13. The works shall be carried out **in each ward** simultaneously if necessary, so as to complete the work in stipulated time.

14.The contractor shall be liable to maintain the road during the defect liability period, which shall include any repairs, rectification of any part or portion of the project road immediately without waiting for any notice or intimation and shall include:

i. Surface deteriorations shall be rectified.

ii. Paver blocks-the undulations in the paver blocks, settlement of paver blocks and broken pieces of paver blocks shall be rectified/replaced as directed.

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15. Deteriorated surfaces in TWT, Paver Blocks that affect the movement of traffic shall be repaired / rectified within 24 hrs. of notice of such defects by the contractor when brought to his notice by concerned Engineers-in-charge.

16. Ready mix concrete will be brought to the site from RMC plant only by transit mixers / Leak proof Dumpers / Trucks.

a) Every transit mixer / Leak proof Dumpers / Trucks will carry delivery challan, mentioning the minimum following details -

- i) Name of Manufacturer and Depot.
- ii) Serial No. of challan.
- iii) Date
- iv) Truck No.
- v) Name of contractor to whom the RMC is being supplied.
- vi) Location of contract work.
- vii) Grade of concrete.
- viii) Specified workability.
- ix) Cement content and Grade of cement.
- x) Time of loading
- xi) Quantity of concrete.

b) A computerized print out showing details of ingredients or ready mix concrete including admixture viz. the actual weight of each ingredients, required weight of each ingredients as per mix design etc. shall invariably be obtained with each transit mixer carrying RMC on site. The computerized sheet shall be signed by the site in charge and contractor's representative and shall be preserved as a record on the site.

17. The Pavement Quality Concrete should be produced in RMC plant using ice flakes to control the temperature of concrete. The Pavement Temperature of Pavement Quality Concrete should not exceed 30°C at the time of pouring.

18. All the Paver blocks required for the paver block work shall be procured from the reputed manufacturers and also the interlocking paver block **shall have BIS registration.**

19. Testing for the compressive strength shall be carried out for cement concrete works of M 40 for each day's work. At least three sets consisting of 3 nos. of cubes (at regular interval) along with 3 flexural beams shall be cast. Cubes from each set shall be tested for 7 days & 14 days at the site laboratory in presence of Engineer -in-charge. of the work & the contractor shall submit remaining three C. C. cubes for testing compressive strength for 28 days at the approved Laboratory. Also, the contractor shall cast & submit for each day's work, 3 flexural beams for testing flexural strength at the approved Laboratory.

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20. Whenever the cubes and beams are required to be sent to the laboratory, the same shall be transported to the Laboratory by the contractors at their cost. The acceptance criteria for the test result shall be as per I. S. 456.No payment for this will be made to contractors.

21.The contractors shall arrange to send the cubes and flexural beams to the testing laboratory at least one days before the date of testing of the cubes as well as beams, failing which, penalty of Rupees **1000/-** per day will be imposed and recovered from the contractors bill.

22. Directions for use of Micro silica

1. I.S.I. Micro silica confirming IS: 15388:2003 shall be used up to 10% by weight of cement and excess may be permitted up to 59 Kg as per IRC: SP: 76-2008/ as per design mix

**MINIMUM TEST FREQUENCIES FOR
CONTROL OF CONCRETE ROAD CONSTRUCTION**

Concrete:

Item	Test	Control	Frequency
Workability			One per transit mixer
Concrete strength			Beam/Cube samples, as specified for each age of 7 days, 14 days and 28 days for every days
Checking surface evenness with 3 mt. straight-edge and wedge gauge			Three longitudinal lines along with the slab length - one in the end middle - third end the two edge third strips, along the line of maximum unevenness.

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Section VIII**SCHEDULE - A****SCHEDULE OF RATES AND APPROXIMATE QUANTITIES**

- (a) The quantities given here are those upon which the lump-sum tender cost of the work is based but they are subject to alternations, omissions, deductions or additions as provided for in the conditions of this contract and do not necessarily show the actual quantities of work to be done. The unit rates noted below are those governing payment for extras or deductions or omissions according to the conditions of the contract, as set forth in the Preliminary Specification of the S.S.R.B/T.N.B.P. and other conditions or specifications of the contract.
- (b) It is to be expressly understood that the measured work is to be taken net (not withstanding any custom or practice to the contrary) according to the actual quantities when in place and finished according to the drawings or as may be ordered from time to time by the ----- and the cost calculated by measurement or weight at the respective prices, without any additional charge for any necessary or contingent works connected therewith. The rates quoted are for works IN SITU and complete in every respect.

Item No.	Probable quantity		Description of work	S.S.R.B/ T.N.B.P/ MoSRTH No.	Rate			Unit in words	Amount	
	Figures	Unit			Words	Figures			Figures	
			Separate sheets enclosed			Rs.	P.		Rs.	P.

Date

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Note – The Second Sub-division of this column (ie. column 3) is for entering description in words such as number, cubic meter, kg etc.**SCHEDULE - B**

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LIST OF DRAWINGS

LIST OF DRAWINGS Note – All drawings to be signed by the Contractor as well as the Officer entering into the contract			SUPPLIMENTARY LIST As referred in the specifications (including the Preliminary Specifications of the T.N.B.P / S.S.R.B)			
Sl. No.	Drawing Number	Description	Sl. No.	Drawing Number	Description	Date on which the drawing was supplied

Date

Signature of the Bidder

Signature of the Bidder

FORM OF BID SECURITY (BANK GUARANTEE)

WHEREAS, ... (Name of Bidder) (hereinafter called "the Bidder") has submitted his bid dated (Date) for the {Name of Work)(hereinafter called "the Bid").

KNOW ALL MEN by these presents that We (Name of Bank) of (Name of Country) having our registered office at (hereinafter called "the Bank") are bound unto (Name of Employer) (hereinafter called "the Employer") in the sum of for which payment well and truly to be made to the said Employer the Bank binds himself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this day of 20.....

THE CONDITIONS of this obligation are :

- (1) If the Bidder withdraws his Bid during the period of bid validity specified in the Form of Bid:
or
- (2) If the Bidder does not accept the correction of arithmetical errors of his bid price in accordance with the instruction to Bidders: or
- (3) If the Bidder having been notified of the acceptance of his Bid by the Employer during the period of bid validity :
 - a. Fails or refuses to execute the Form of Agreement in accordance with the instructions to Bidders, if required : or
 - b. Fails or refuses to furnish the Performance Security, in accordance with the Instructions to Bidders; or
 - c. Fails or refuses to furnish the Domestic Preference Security, where required.

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

This Guarantee will remain in force up to and including the date of 162 days after the deadline for submission of bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank not later than the above date.

DATE..... SIGNATURE OF THE BANK.....

SEAL OF THE BANK.....

SIGNATURE OF THE WITNESS.....

Name and address of the witness

Signature of the Bidder

SPECIFICATIONS FOR INTERLOCKING CONCRETE BLOCK PAVEMENT

- 1.0** The interlocking concrete blocks for the pavement shall be procured of the approved shape, size and colour from the reputed manufacturers having facilities of production of design mix concrete, vibro-compacting machine of required specification and well established laboratory for conducting the required tests. The approval shall be obtained from the engineer-in-charge in writing well before the procurement action by the agency.
- 2.0** The engineer-in-charge reserves the right to inspect the manufacturing plant, manufacturing process and to collect the samples at factory or work site and get it tested in the Laboratory of his choice to his entire satisfaction. The testing charges payable if any shall be borne by the contractor.
- 3.0** Unless otherwise specified in the nomenclature of items or in the drawing the concrete paving block, shall conform to the grade(s) as specified in **Table 1** hereunder for various uses.
- 4.0** All paver block, shall be sound and free of cracks or other visual defects which will interfere with the proper paving of the unit or impair the strength or performance of the pavement constructed with the paver blocks. Minor defects in the form of chippings, resulting from the customary methods of handling during delivery, not larger than 10 mm in not more than 5% of consignment shall not be deemed grounds for rejection.

5.0 Sampling for Testing:

- 5.1** The paver blocks required for carrying out the tests laid down in this standard shall be taken by one of the methods given in 5.2 and 5.3 In either case, a sample of 20 blocks shall be taken from every consignment of 4000 blocks or part thereof of the same size, shape and thickness, and the same batch of manufacture. From these samples, the blocks shall be taken at random for conducting the tests.
- 5.2** The required number of paver blocks shall be taken at regular intervals during the loading of the vehicle or the unloading of the vehicle depending on whether sample is to be taken before delivery or after delivery. When this is not practicable, the sample shall be taken from the stack, in which case the required number of blocks shall be taken at random from across the top of the stacks, the sides accessible and from the interior of the stacks by opening trenches from the top.

6.5 Flexural strength:

The flexural strength the block, shall not be less than 4.0 Mpa when tested as per method specified in "**Annexure F**"

6.6 Abrasion Resistance:

The abrasion index of the paver blocks sample determined by method specified in "**Appendix G**" shall conform to the values given in **Table 4**.

7.0 Marking:

Concrete paver blocks manufactured in accordance with laid down specification shall be marked permanently with the following information:

- a) the identification mark of manufacturer ;
- b) The grade of concrete used for manufacturing of paver blocks.

8.0 For detailed guidelines for the use of interlocking concrete block pavement IRC: SP: 63-2004 may be referred to.

9.0 Technical specifications for laying concrete paving blocks are available in **Annexure "A"**.

10.0 Payment

The finished area shall be measured nearest to 0.01 sqm. for the purpose of payment. The payment for edge restraint shall be made separately which shall be measured on per cum. basis.

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Table 1 Recommended Grades of Paver Blocks for Different Traffic Categories

(Clauses 5 and 9.1.4)

Sl No.	Grade Designation of Paver Blocks	Specified Compressive Strength of Paver Blocks at 28 Days	Traffic Category	Recommended Minimum Paver Block Thickness	Traffic Examples of Application
(1)	(2)	(3)	(4)	(5)	(6)
i)	M-30	30	Non-traffic	50	Building premises, monument premises, landscapes, public gardens / parks, domestic drivers, paths and patios, embankment slopes, sand stabilization area, etc
ii)	M-35	35	Light-traffic	60	Pedestrian plazas, shopping complexes ramps, car parks, office driveways, housing colonies, office complexes, rural roads with low volume traffic, farm houses, beach sites, tourist resorts local authority footways, residential roads, etc
iii)	M-40	40	Medium – traffic	80	City streets, small and medium market roads, utility cuts on arterial roads, etc.
iv)	M-50	50	Heavy – traffic	100	Bus terminals, industrial complexes, mandi houses, roads on expansive soils, factory floor, service stations, industrial pavements, etc
v)	M-55	55	Very heavy – traffic	120	Container terminals, ports, docks yards, mine access roads, bulk cargo handling areas, airport pavements, etc.

NOTES

1. Non-traffic areas are defined as areas where no vehicular traffic occurs.
2. Light-traffic is defined as a daily traffic up to 150 commercial vehicles exceeding 30 KN laden weight , or an equivalent up to 0.5 million standard axles (MSA) for a design life of 20 years (A standard axle is defined as a single axle load of 81.6 KN.)
3. Medium traffic is defined as daily traffic of 150-450 commercial vehicles exceeding 30 KN laden weight, or an equivalent of 0.5 to 2.0 MSA for a design life of 20 years.
4. Heavy traffic is defined as a daily traffic of 450 – 1500 commercial vehicles exceeding 30 KN laden weight, or an equivalent of 2.0 to 5.0 MSA for a design life of 20 years.
5. Very heavy – traffic is defined as a daily traffic of more than 1500 commercial vehicles exceeding 30 KN laden weight, or an equivalent

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Table 2: Recommended dimensions and tolerances for type A, B and C paver blocks.

S.No.	Dimension	Measurement Method	Recommended Values	Tolerance Limit
1.	Width, W	As per Annex B	80 to 115 mm	± 2 mm
2	Length, L	As per Annex B	(1.5 to 2.3) X W	± 2 mm
3	Thickness, T	As per Annex B	60 to 120 mm	± 3 mm
4	Aspect Ratio (L/T)	As per Annex B	Maximum: 4.4	+ 0.275
5	Chamfer	As per Annex B	Maximum: 5mm	+ 1 mm
6	Thickness of Wearing Layer	As per Annex B	Minimum: 15mm	- 2mm
7	Plan Area, Asp.	As per Annex B	Maximum: 0.03m ²	+0.001m ²
8	Wearing Surface Area, A _{sw}	As per Annex B	75% of plan Area	$\pm 1\%$
9	Squareness	As per Annex B	Nil	± 2 mm

Table 3 Compressive strength requirements of concrete paver blocks.

S.No.	Grade of Concrete	28-day Compressive Strength (MPa) of Chamfered Paver Blocks of Thickness			
		60mm	80mm	100mm	120mm
1	M-25	26.5	29.5	31.0	32.5
2.	M-30	31.8	35.4	37.2	39.0
3	M-35	37.1	41.3	43.4	45.5
4	M-40	42.4	47.2	49.6	52.0
5	M-45	47.7	53.1	55.8	58.5
6	M-50	53.0	59.0	62.0	65.0
7	M-55	58.3	64.9	68.2	71.5
8	M-60	63.6	70.8	74.4	78.0

Note: A 10 percent lower tolerance limit in compressive strength shall be allowed.

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1. TECHNICAL SPECIFICATIONS FOR LAYING CONCRETE PAVING BLOCKS**1.1. Base**

1.1.1. The Finished surface of the concrete base shall match the design profile of the concrete blocks within ± 10 mm.

1.1.2. Compaction shall be done with vibratory roller. In restricted areas where normal rollers cannot operate, hand-held or plate vibrators should be employed.

1.2. Bedding Sand Layer

1.2.1. The bedding sand layer shall be from either a single source or blended to achieve the following grading.

<i>IS Sieve Size</i>	<i>Per cent Passing</i>
9.52 mm	100
4.75 mm	95-100
2.36 mm	80-100
1.18 mm	50-95
600 micron	25-60
300 micron	10-30
150 micron	0-15
75 micron	0-10

Single sized, gap-graded sands or those containing an excessive amount of fines will not be used. The sand particles should preferably be angular type.

The joint-filling sand should pass a 2.35 mm sieve and be well graded. The following grading is recommended:

<i>Sieve Size</i>	<i>Per cent Passing</i>
2.36 mm	100
1.18 mm	90-100
600 micron	60-90
300 micron	30-60
150 micron	15-30
75 micron	0-10

The use of cement in the joint-filling sand is not recommended as a general practice as the cemented sand is likely to crack into segments which are easily dislodged.

1.2.2. Average thickness of this laying course shall be 20 to 40 mm.

1.2.3. The sand should be slightly moist, and the moisture content shall be about 4 per cent by weight.

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"ANNEX B"

METHOD FOR DETERMINATION OF DIMENSIONS, ASPECT RATIO, PLAN AREA, WEARING SURFACE AREA AND DEVIATION FROM SQUARENESS.

B-1 DETERMINATION OF LENGTH, WIDTH, THICKNESS AND ASPECT RATIO

B-1.1 Apparatus

The apparatus shall comprise:

- a) Steel calipers;
- b) A steel rule capable of measuring up to 300 mm to an accuracy of 0.5 mm

B-1.2 Specimens

Ten paver block specimens, randomly selected from the group of blocks of specified shape, size and thickness, as per the sampling procedure in 5, shall be tested.

B-1.3 Procedure

B-1.3.1 Length and Width: The length and width of a paver block (Fig.3) shall be measured across two opposite faces by using the steel calipers or steel rule. Two representative positions shall be used for measurement of length and three for measurement of width. The mean values of length and width for the block shall be noted to the nearest 1 mm.

B-1.3.2 Thickness: The thickness of a paver block (Fig. 3) shall be measured at four sensibly different representative positions. The mean value of the thickness of the block shall be noted to the nearest 1 mm.

B-1.3.3 Aspect Ratio: The Aspect Ratio of the specified block shall be calculated by dividing the mean length by the mean depth as determined by the procedures in B-1.3.1 and B-1.3.2 and shall be noted to the nearest 0.1

B-2 CHAMFER

B-2.1 Apparatus

The apparatus shall comprise of steel calipers.

B-2.2 Specimens

The ten paver block specimens, tested for dimensions as per B-1, shall be tested.

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B-2.3 Procedure

The depth and width of chamfer of the paver block (Fig.3) shall be measured across two opposite faces, to the nearest 0.1 mm, by using the steel calipers. Four representative positions shall be used for measurement of depth and width. The mean values of depth and width of chamfer for the block shall be noted to the nearest 0.1 mm

B-3 PLAN AREA AND WEARING SURFACE AREA

B-3.1 Apparatus

The apparatus shall comprise:

- (a) Balance capable of weighing 100 g to an accuracy of 0.01 g;
- (b) Sheets of thin cardboard of uniform thickness;
- (c) Sharp pencil;
- (d) Odd-leg marking gauge (Fig.4);
- (e) Sharp scissors;
- (f) Steel rule marked with graduations of 0.5 mm.

B-3.2 Specimens

The ten specimens, tested for dimensions as per B-1, shall be used for the tests.

B-3.3 Procedure

B-3.3.1 Plan Area (A_{sp}): The block shall be placed, wearing surface facing up, on the card board and its perimeter traced with the pencil. The shape shall be cut out accurately with the scissors and weighed to the nearest 0.01 g, and the result recorded as mass **m_{sp}**. A rectangle measuring 200 mm X 100 mm, accurately cut out from the same cardboard, shall also be weighed to the nearest 0.01 g, and the result recorded as mass **m_{std}**. The plan area for the block shall be calculated from the formula:

$$A_{sp} = \frac{20,000 \, m_{sp}}{m_{std}}, \text{ mm}^2$$

Alternatively, where possible, the plan area may also be calculated by multiplying the length by the width, as determined by the procedure in B-1.3.1

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B-3.3.2 Wearing Surface Area (A_{sw}): The width of the chamfer of the block shall be measured at four sensibly different locations and their mean value determined. A ball-point pen refill shall be fixed to the odd-leg marking gauge and the gauge shall be set to the measured mean value of chamfer width. The gauge so set shall be used to draw a line, indicating the width of the chamfer, along the periphery of the cardboard shape of the plan area of the block with mass m_{sp} , as obtained in B-3.3.1. The marked chamfer width on the cardboard shall be neatly cut away with the scissors, and the cardboard shall be weighed to the nearest 0.01 g and the result recorded as mass m_{sw} . The wearing surface area for the block shall be calculated from the formula:

$$A_{sw} = \frac{20,000 \, m_{sw}}{m_{std}}, \text{ mm}^2$$

B-4 DEVIATION FROM SQUARENESS

B-4.1 Apparatus

The apparatus shall comprise:

- (a) Engineer's square or a profiled template
- (b) Feeler gauges

B-4.2 Specimens

The ten specimens, tested for dimensions as per B.1, shall be used for the tests.

B-4.3 Procedure

With the stock of the square of profiled template in contact with the top or bottoms surface of the block, the blade shall be brought into contact with the vertical face of block. The clearance, if any, between the square of profiled template and the vertical face of the block shall be measured to the nearest 0.1 mm with the feeler gauge at points 10 mm inside each top and bottom edge of the block. This measurement shall be repeated at six sensibly different locations around the block, and the average of the feeler gauge measurement noted as the deviation from squareness for the block, which shall be noted to the nearest 0.1 mm.

B-5 REPORT

The individual and average values of measured dimensions, chamfer, aspect, ratio, plan area, wearing surface area and deviation from squareness of specimens tested as per B-1, B-2, B-3 and B-4 shall be reported.

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"ANNEX C"**METHOD FOR DETERMINATION OF WATER ABSORPTION****C-1 APPARATUS**

The balance used shall be sensitive to within 0.5 percent of the mass of the smallest specimen tested.

C-2 SPECIMENS

Five out of the ten test specimens selected for test as per Annex B shall be used for the tests.

C-3 PROCEDURE

C-3.1 Saturation: The test specimens shall be completely immersed in water at room temperature for 24 ± 2 hours. The specimens shall then be weighed, while suspended by a metal wire, and completely submerged in water, and the weight shall be recorded in kg to the nearest 0.001kg.(Wa). They shall be removed from the water and allowed to drain for one minute by placing them on a 10mm or coarser wire mesh. Visible water on the specimens shall be removed with a damp cloth. The specimen shall then be immediately weighed and the weight for each specimen noted in kg to the nearest 0.001 kg. (Ww).

C-3.2 Drying : Subsequent to saturation, the specimens shall be dried in a ventilated oven at $(107 \pm 7)^{\circ}\text{C}$ for not less than 24 h. and until two successive weighing at intervals of 2 hours show an increment of loss not greater than 0.2 percent of the previously determined mass of the specimen. The dry weight of each specimen (Wd) shall be recorded in kg to the nearest 0.001kg.

C-4 CALCULATION

C-4.1 Absolute Water Absorption (Wab): The absolute water absorption shall be calculated as follows:

$$W_{ab} = \frac{W_w - W_d}{W_w - W_a}, \quad \text{Mg/m}^3$$

C-4.2 Percent Water Absorption (W %): The percent water absorption shall be calculated as follows:

$$W\% = \frac{W_w - W_d}{W_d} \times 100$$

C-5 REPORT

The individual and average values of measured water absorption of specimens tested as per C-1 to C-4 shall be reported.

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METHOD FOR DETERMINATION OF DENSITY

D-1 APPARATUS

- (a) Electric oven
- (b) Weights and Balance of adequate capacity and accuracy

D-2 SPECIMENS

Five specimens tested as per Annex C shall be used for the tests.

D-3 PROCEDURE

D-3.1 The five specimens shall be dried to constant mass in a suitable oven, heated to $(110 \pm 5)^{\circ} \text{C}$. The blocks shall then be taken out and allowed to cool to room temperature. Their dimensions shall be measured in accordance with Annex B and the overall volume completed in m^3 , nearest to 0.001 m^3 . The blocks shall then be weighed in kg to the nearest 0.001 kg .

D-3.2 Alternatively, the volume of the specimens shall be calculated by making use of the data generated during the determination of water absorption (Annex C), as follows:

$$\text{Volume} = (W_w - W_a) 10^{-3}, \text{ m}^3$$

D-4 CALCULATION

The density of each block shall be calculated as follows:

$$\text{Density} = \frac{\text{Mass of block in kg}}{\text{Volume of block in m}^3} \times 10^{-3} (\text{Mg/m}^3)$$

D-5 REPORT

METHOD FOR DETERMINATION OF COMPRESSIVE STRENGTH

E-1 APPARATUS

E-1.1 Testing Machine: The apparatus shall comprise a compression testing machine which shall be equipped with two steel bearing blocks for holding the specimen. It is desirable that the blocks have a minimum hardness of 60 (HRC) and a minimum thickness of 25 mm. The block on top through which load is transmitted to the specimen shall be spherically seated. The block below on which the specimen is placed shall be rigidly fitted. When the bearing area of the steel blocks is not sufficient to cover the bearing area of the paver block specimen, two steel bearing plates meeting the requirements of E-1.2 shall be placed between the steel platens fitted on the machine and the specimen.

E-1.2 Steel Bearing Block and Plates : The surfaces of the steel bearing blocks and plates shall not depart from the plane by more than 0.025 mm in any 15 mm dimension. The centre of the sphere of the spherically seated upper bearing block shall coincide with the centre of the bearing surface. If a bearing plate is used, the centre of the sphere of

" ANNEX D"**METHOD FOR DETERMINATION OF DENSITY****D-1 APPARATUS**

- (a) Electric oven
- (b) Weights and Balance of adequate capacity and accuracy

D-2 SPECIMENS

Five specimens tested as per Annex C shall be used for the tests.

D-3 PROCEDURE

D-3.1 The five specimens shall be dried to constant mass in a suitable oven, heated to $(110 \pm 5)^{\circ} \text{C}$. The blocks shall then be taken out and allowed to cool to room temperature. Their dimensions shall be measured in accordance with Annex B and the overall volume completed in m^3 , nearest to 0.001 m^3 . The blocks shall then be weighed in kg to the nearest 0.001 kg .

D-3.2 Alternatively, the volume of the specimens shall be calculated by making use of the data generated during the determination of water absorption (Annex C), as follows:

$$\text{Volume} = (W_w - W_a) 10^{-3}, \text{ m}^3$$

D-4 CALCULATION

The density of each block shall be calculated as follows:

$$\text{Density} = \frac{\text{Mass of block in kg}}{\text{Volume of block in m}^3} \times 10^{-3} (\text{Mg/m}^3)$$

D-5 REPORT

The individual and average values of measured density of specimens tested as per D-1 to D-4 shall be reported.

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E-4 PROCEDURE

E-4.1 The dimensions and plan areas of the blocks shall be determined as described in Annex B. The blocks shall be stored for 24 ± 4 hours in water maintained at a temperature of $(20 \pm 5)^{\circ}\text{C}$. The bearing plates of the testing machine shall be wiped clean. The specimen shall be clamped between the plates in such a way that the axes of the specimen are aligned with those of the bearing plates.

E-4.2 The load shall be applied without shock and increased continuously at a rate of $15 \pm 3 \text{ N/mm}^2$ / minute until no greater load can be sustained by the specimen or delamination occurs. The maximum load applied to the specimen shall be noted in N.

E-5 CALCULATION

The apparent compressive strength of individual specimen shall be calculated by dividing the maximum load (in N) by the plan area (in mm^2). The corrected compressive strength shall be calculated by multiplying the apparent compressive strength by the appropriate correction factor from Table below. The strength shall be expressed to the nearest 0.1 N/mm^2 .

Correction factors for thickness and chamfer of paver block for calculation of compressive strength

(Clause E-5)

Paver Block Thickness (mm)	Correction factor for	
	Plain Block	Chamfered Block
60	1.00	1.06
80	1.12	1.18
100	1.18	1.24
120	1.24	1.30

For other thickness of paver blocks between 60 mm and 120 mm, linear extrapolation of correction factor shall be made.

E-6 REPORT

The individual and average compressive strength of the specimens tested as per E-1 to E-5 shall be reported.

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METHOD FOR DETERMINATION OF FLEXURAL STRENGTH

F-1 APPARATUS

The apparatus used for test shall be the same as in Clause 8 of IS 516 with the following modifications:

- (a) The distance from centre to centre of the two rollers on which the specimen is supported shall be 160 mm.
- (b) The load shall be applied through a single roller mounted on top of the specimen at the centre of the supporting span, i.e., the horizontal distance from the loading point to the centre of each of the supporting rollers shall be 80mm.

F-2 SPECIMENS

This test method can be applied for type A, B and C blocks having minimum length of 180 mm. Five paver block specimens, randomly selected from the group of blocks of specified shape, size and thickness, as per the sampling procedure in 5.0, shall be tested.

F-3 CAPPING OF SPECIMENS

F-3.1 The test specimens shall be capped by one of the methods described in E-3 of Annex E.

F-3.2 Specimens with false joints and surface relief features which are likely to interfere with the test results shall have their surface grounded to plainness before capping and testing.

F-4 PROCEDURE

The test procedure shall be the same as in Clause 8 of IS 516, with the following modifications:

- (a) The load shall be applied along the vertical centre line of the supporting span
- (b) The load shall be applied without shock and increased continuously at a rate such that the extreme fiber stress increases at approximately 7 kg/cm²/min.
- (c) The load shall be increased until the specimen fails, and maximum load applied shall be recorded.

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F-5 CALCULATION

Flexural strength of the specimen shall be calculated as follows:

$$f_b = \frac{24 p}{bd^2}$$

Where

f_b = Flexural strength (N/mm²)

p = Maximum load (N)

b = Width of the block (mm)

d = Thickness of the block (mm)

F-6 REPORT

The individual and average flexural strength of block specimens tested as per F-1 to F-4 shall be reported.

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"ANNEX G"**METHOD FOR DETERMINATION OF ABRASION RESISTANCE****G-1 APPARATUS**

The following apparatus is required :

- (a) Electric drill (1000 watts minimum, 'WOLF 3814' or equivalent),
- (b) Drill bracket, guide bar and guide-bar bracket ('WOLF 0421' or equivalent),
- (c) Drill stand and paving-unit clamp welded to base plate,
- (d) Drill stand shaft,
- (e) Dial gauge (calibrated one full revolution = 1mm),
- (f) Chuck and ball race
- (g) Chuck casing with water hose connection , and
- (h) Revolution counter (photoelectric or electronic) to measure total revolutions or rpm of ball-race.

The output of the shaft of the drill shall be set at a speed of between 1000 and 1050 revolutions per minute. When the test drill is rigged, the total sliding mass of the drill and attachments shall be 14.5 kg. with a tolerance of ± 0.25 kg. The test rig shall be maintained in this condition. Before testing, the rig shall be checked to ensure that there are no external factors affecting the sliding mass. The drill-stand shaft and guide bar shall be lubricated to ensure free sliding at all Times.

G-2 SPECIMENS

Five paver block specimens, randomly selected from the group of blocks of specified shape, size and thickness, as per the sampling procedure in 5.0, shall be tested.

G-3 PROCEDURE

G-3.1 The mass of drill and fittings shall be checked for free slide on the drill stand shaft without any obstruction. The dry specimen shall be clamped on the drill-stand base plate. The ball-race shall be placed on the specimen and the chuck shall be lowered on the ball-race. The drill shall be left unclamped on the shaft. A constant rate of water supply to the test surface of the specimen shall be started and maintained to clear the debris formed during abrasion.

G-3.2 The drill shall be run for approximately 3 seconds to seat the ball-race. The dial gauge plunger shall be lowered on the bearing surface of the drill bracket and chuck shall be rotated by hand through one revolution in each direction. The dial gauge shall be set Zero to the mean of the needle reading.

G-3.3 The drill shall be run, stopping it at approximately every 1000 revolutions to measure the penetration. The test shall be continued until the ball-race has completed 5000 revolutions or until the dial gauge has indicated an indentation greater than 1.5mm, whichever occurs first. The indentation shall be measured by rotating the chuck by hand through one revolution in each direction and noting the

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mean dial gauge reading. The number of revolutions of the ball-race shall be noted.

Note: If the drill and drill stand appear to wander from side to side causing the ball race to alter its path to the paver block surface, then either the drill has been set at the wrong speed or the guide mechanism is worn and needs replacement. Results from the test are valid only if a clearly defined circular impression has been made on the paver block surface upon completion of the test.

G-4 CALCULATION

The abrasion index of the specimen shall be calculated using the following formula:

$$I_a = \frac{\sqrt{r}}{d_i}$$

Where:

I_a = Abrasion Index (calculated when the ball-race revolutions equal 5000 or the penetration equals 1.5mm, whichever occurs first)

r = ball-race revolutions in thousands

d_i = depth of indentation in mm

G-5 REPORT

The minimum value of abrasion index obtained from the five specimens shall be reported as the abrasion index (I_a -min) of the sample.

G-6 GUIDE FOR CHOICE OF ABRASION INDEX

The Abrasion Index is defined in such a manner that it increases/decreases with the increase/decrease in abrasion resistance. When the purchaser wants to specify values for Abrasion Index, the values given in Table 4 may be taken as interim guide.

Table 4 Suggested values of Abrasion Index
(Clause G-6)

S.No	Traffic (Ref. Table 1)	Minimum 28 Days Abrasion Index
1	Non-Traffic	1.0
2	Light Traffic	1.2
3	Medium Traffic	1.3
4	Heavy Traffic	1.5
5	Very Heavy Traffic	2.0

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CERTIFICATE FOR OWNING/POSSESSION OF EQUIPMENTS

BY THE TENDERER

(TO BE ISSUED BY A GAZETTED OFFICER OF THE GOVERNMENT OR AND
OFFICER OF THE CORPORATION OF CHENNAI NOT BELOW THE RANK OF A
CLASS-II OFFICER)

I

.....hereby
certify that M/s. Thiru / Tmt..... is
owning / in possession of the under mentioned machineries.

1. 2 Nos Plate compactor
2. 4 Nos Tipper Lorry / Dumper
3. 1 No Vibratory Roller
4. 2 Nos Straight Edge
5. 1 No Saw cutting machine
6. 2 Nos Water Lorry
7. 1 No Cold Milling Machine (if cold milling carried out)
8. 1 No JCB / Poclain
9. 1 No Accelerating beam
10. 2 **no vaccumasier**
11. **4 no Needle Vibrators**
12. 4Nos Groove Cutter
13. 1 Nos Screed Vibrators
14. 1 No Air Compressor
15. Steel shuttering used as a form work preferably in the form of channels
16. **R.M.C. Plant (Computerized). Capacity min. 60 Cum. per hr. conforming to basic norms as per attached Annexure**

NB: The Certifying Officer shall personally verify before issuing the certificate and he should take responsibility for any discrepancy, mis-statement or untruth in the certificate.

The tenderer should also enclose attested copy (Notarized) of documentry evidence for owning of above machineries

Signature of the Bidder

**CORPORATION OF CHENNAI
ZONAL OFFICE - VIII
LIST OF ROADS
Package- 4 (5 Road works)**

Sl.No	wardNo	Name of the Road	No of Roads	Length of Roads in 'Km'
Package -4				
1	102	Canal Road (from Jn.of New Avadi Road to Jn.of N Street)	1	270
2	102	Palliarasan Street	1	145
3	102	Manjakollai Street	1	210
4	102	V.O.C.Nagar Main Road	1	260
5	102	Canal Road (from Jn.of N Street to Jn.of Outer Circular Road)	1	300

Signature of the tenderer
Address of the Tenderer in block letters
(WithSeal)

Signature of the Bidder

It is informed that the contract labourers should wear proper uniform during the maintenance period.

<i>Sl.No.</i>	<i>Name of Equipment</i>
<i>1</i>	<i>Face Mask</i>
<i>2</i>	<i>Shock proof hand gloves</i>
<i>3</i>	<i>Disposable hand gloves</i>
<i>4</i>	<i>Gum boot / Safety shoes</i>
<i>5</i>	<i>First Aid box</i>
<i>6</i>	<i>Emergency light</i>
<i>7</i>	<i>Helmet / hard hat</i>
<i>8</i>	<i>Safety cones</i>
<i>9</i>	<i>Traffic barriers</i>
<i>10</i>	<i>Warning lights</i>
<i>11</i>	<i>Red flags</i>
<i>12</i>	<i>Caution boards</i>

PRICE BID DOCUMENTS

SCHEDULE – A

Note : The Bid document and Price Bid Documents uploaded in the PDF format should not be changed or converted to any other format while down loading .
The tenderer shall quote their rates only by writing in the indelible ink by manually or by typing after down loading

Signature of the Bidder