

**CORPORATION OF CHENNAI**  
**STOTM WATER DRAIN DEPARTMENT**  
**FOR WORKS ABOVE 2 CRORES**



**TECHNICAL BID DOCUMENTS**

**S.W.D.No. B5/283/2010 – P.W.C.No. 3360**

Construction of Storm Water Drain of size 2mx2m along Esplanade road (Eastern side), N.S.C.Bose Road (North & South sides), Broadway bus stand (Western side) and Frazer Bridge Road from Dr.Ambedkar law college road/Kuralagam opposite to Frazer Bridge Road in Dn.49,Zone-III.

Superintending Engineer  
Storm water drain *Department*

Price: Rs.16,875 (Rupees Sixteen thousand Plus S.T. at 10% and SC on ST @ 5%)

(THIS TENDER DOCUMENT IS NOT TRANSFERABLE)

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**SECTION I**

**INVITATION FOR BID**

**(IFB)**

**CORPORATION OF CHENNAI**  
**.STORM WATER DRAIN DEPARTMENT**

**TENDER NOTICE**

Corporation of Chennai  
S.W.D.Department

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	EMD	Cost of Tender	Eligible Class	Last Date & Time of Submission
1	<b>P.W. C.No. 3360</b>	<b>S.W.D.No. B5/283/2010</b>  Construction of Storm Water Drain of size 2mx2m along Esplanade road (Eastern side), N.S.C.Bose Road (North & South sides), Broadway bus stand (Western side) and Frazer Bridge Road from Dr.Ambedkar law college road/Kuralagam opposite to Frazer Bridge Road in Dn.49,Zone-III.	<b>2.45 Crores</b>	<b>2.45 lakh</b>	<b>16,875</b>	<b>Class I and above</b>	<b>11/6/2010 3.00P.M</b>

The Tenders can also be downloaded from website <http://tender.tn.gov.in> and [www.chennaicorporation.com](http://www.chennaicorporation.com) or obtained at the Tender Sales Counter, Ripon Buildings. Tenders will be opened on **.11/6/2010.** 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.

**NOTE:** For all the tenders which are more than Rs.25.00 lakhs in value, the tender document can also be downloaded from the websites [www.tntenders.gov.in](http://www.tntenders.gov.in) or [www.tenders.tn.gov.in](http://www.tenders.tn.gov.in). The downloaded tender document shall be submitted without cost of tender document. For all the tenders upto Rs.25.00 lakhs in value, the downloaded tender documents have to be submitted with cost of tender document in the form of Demand Draft. 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.

**Section II**  
**Instruction to bidders**  
**(ITB)**

## INSTRUCTIONS TO BIDDERS (ITB)

### A. General

#### 1. Scope of Bid

1.1 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.

1.2 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 from India who are legally competent and entitled for entering into contract as per the law of contract prevailing in India.

##### 2.1.1 In the case of a Joint venture/Consortium/ Group bidding:-~~Deleted~~

2.2 The Contractors having registration in the class specified and above in the tender notice in the BUILDINGS Department of Corporation of Chennai, or intending Tenderer should be a registered contractor as specified in the tender notice in any of the Centre / State Government Department / Government undertaking are eligible to participate in the Tender. Provisional Registration shall be done by the successful bidder and 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) they or their sister concern have controlling shareholders in common; or

(b) they or their sister concern receive or have received any direct or indirect subsidy from any of them; or

(c) they or their sister concern have the same legal representative for purposes of this bid; or

(d) 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

(e) 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

(f) 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) Tenderer should have the experience in Civil work and should have executed at least one work costing more than Rs1.23 Crore during last five years.
  - (d) Major items of construction equipment proposed to carry out the Contract;
  - (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 1.5 times the estimated amount of work and work of same value in the last three years.
- 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:-DELETED
- 3.4 To qualify for award of the Contract, Bidders shall meet the following minimum qualifying criteria:**
- (a) The Bidder shall have an annual turnover of not less than that specified in the Bid Data Sheet during each of the last 5 financial years.
  - (b) Proposals for the timely acquisition (own, lease, hire etc) 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. One Bid per Bidder**
- 4.1 Each Bidder shall submit only one Bid, A Bidder who submits or participates in more than one Bid (other than as a subcontractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the Bidder's participation to be disqualified.

**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.

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	Invitation for Bid (IFB)
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	Bill of Quantities (Financial Bid) Volume -II
Section IX	Forms of Security

**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**

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Signature of the Bidder

**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**

- (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 Quoted Contract Value as specified in the Bid Data sheet. 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:
  - 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.

## **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 (Volume I)**

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

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

#### **Cover No.2 – Price Bid (Volume II)**

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

**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.

**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 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:

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.

**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 as to the withholding by the Superintending Engineer 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 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 % monetary award which does not exceed Rs. 10,000/-, 3 % on which next Rs.40,000/- or any part thereof, 2 % on the next Rs.50,000/- or any part thereof.

**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 detriment 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 conform 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.

- (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) The advance payment is delayed.
- (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.
- (i) 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.
- (j) 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.

#### **Bid Data Sheet**

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

<b>Instructions to Bidders (ITB) Clause Reference</b>	<b>Bid Data</b>																																
	<b>A. General</b>																																
(1.1)	Construction of Storm Water Drain of size 2mx2m along Esplanade road (Eastern side), N.S.C.Bose Road (North & South sides), Broadway bus stand (Western side) and Frazer Bridge Road from Dr.Ambedkar law college road/Kuralagam opposite to Frazer Bridge Road in Dn.49,Zone-III.  <b>S.W.D.No. B5/283/2010 – P.W.C.No. 3360</b>																																
(3.2c)	Tenderer should have the experience in civil work and should have executed at least one work costing more than <b>Rs1.23 Crore</b> during last five years.																																
(3.2 f)	Reports on the financial standing of the Bidder, such as profit and loss statements and auditor's reports for the past five years;																																
(3.2 i)	Information regarding any litigation, current or during the last five years, in which the Bidder is involved.																																
(3.2k)	The Bidder should have turnover of <b>1.5 times the estimated amount of work</b> and work of same value in the last three years.																																
(3.4b)	The essential equipment to be made available for the Contract by the successful Bidder shall be. <table border="1" style="margin-left: 40px;"> <thead> <tr> <th style="text-align: center;">Sl. No.</th> <th style="text-align: center;">Particulars of Equipment</th> <th style="text-align: center;">Capacity</th> <th style="text-align: center;">Number</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.</td> <td>Dumpy level</td> <td></td> <td style="text-align: center;">3Nos</td> </tr> <tr> <td style="text-align: center;">2.</td> <td>Concrete mixer machine</td> <td></td> <td style="text-align: center;">5Nos</td> </tr> <tr> <td style="text-align: center;">3.</td> <td>Needle vibrator with 40 mm needle</td> <td></td> <td style="text-align: center;">10Nos</td> </tr> <tr> <td style="text-align: center;">4.</td> <td>Centering &amp; shuttering material in steel</td> <td></td> <td style="text-align: center;">As required</td> </tr> <tr> <td style="text-align: center;">5.</td> <td>JCB</td> <td></td> <td style="text-align: center;">1Nos</td> </tr> <tr> <td style="text-align: center;">6.</td> <td>Tipper Lorry</td> <td></td> <td style="text-align: center;">5Nos</td> </tr> <tr> <td style="text-align: center;">7.</td> <td>Dewatering Pump</td> <td style="text-align: center;">5 to12HP</td> <td style="text-align: center;">5Nos</td> </tr> </tbody> </table>	Sl. No.	Particulars of Equipment	Capacity	Number	1.	Dumpy level		3Nos	2.	Concrete mixer machine		5Nos	3.	Needle vibrator with 40 mm needle		10Nos	4.	Centering & shuttering material in steel		As required	5.	JCB		1Nos	6.	Tipper Lorry		5Nos	7.	Dewatering Pump	5 to12HP	5Nos
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	Note: Tenderer should given an undertaking that the above equipments will be purchased/hired for the project.																		
(3.4c)	<p>The minimum Key personnel required for the work</p> <p><b>The minimum no of Key Personnel to be deployed for the wbe as follows.</b></p> <table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Position</th> <th>Qualification</th> <th>Number</th> <th>Total Experience</th> <th>Experience in similar Works</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Project Manager</td> <td>B.E Civil</td> <td>1</td> <td>5 years</td> <td>5 years</td> </tr> <tr> <td>2.</td> <td>Site Engineer</td> <td>D.C.E</td> <td>2</td> <td>5 years</td> <td>5 years</td> </tr> </tbody> </table>	Sl. No.	Position	Qualification	Number	Total Experience	Experience in similar Works	1.	Project Manager	B.E Civil	1	5 years	5 years	2.	Site Engineer	D.C.E	2	5 years	5 years
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1.	Project Manager	B.E Civil	1	5 years	5 years														
2.	Site Engineer	D.C.E	2	5 years	5 years														
(3.4d)	The minimum amount liquid assets and/or credit facilities net of other contractual commitments of the Bidder shall be – <b>92 Lakhs</b>																		
	<b>B. Bidding Documents</b>																		
7.2	The number of copies of the Bid to be completed and returned shall be <b>two</b>																		
(8.1)	A Pre bid Meeting will be conducted on <b>25.05.2010</b>																		
	<b>C. Preparation of Bids</b>																		
(16.1)	The number of copies of the Bid to be completed and returned shall be <b>two (Original &amp; Copy)</b>																		
(14.1)	The period of Bid validity shall be <b>90</b> days after the deadline for Bid submission specified in the Bid Data sheet.																		
(15.1)	The amount of Bid Security shall be <b>2.45 Lakh</b>																		
	<b>D. Submission of Bids</b>																		
(18.1)	The address for the purpose of Bid submission is <b>The Superintending Engineer Storm Water drain department Corporation Of Chennai Ripon building Chennai -60003.</b>																		
(17.3)	The deadline for submission of bids shall be <b>11.06.2010 up to 3.00 Pm</b>																		
	<b>E. Bid Opening and Evaluation</b>																		
(20.1)	The opening of the Prequalification Bid shall take place at <b>11.06.2010 at 3.30 PM</b>																		
	<b>F. Award of Contract</b>																		
(30.0)	The Standard Form of Performance Security acceptable to the Commissioner shall be – 2% of the contract amount.																		

## **SECTION III**

- 1. Pre- Qualification Bid Submission Sheet**
- 2. Declaration by the Bidder / Tenderer**
- 3. Qualification Information**

**Section III**  
**1. Pre-Qualification Bid Submission Sheet**

Date:.....

**Invitation for Bid No: ...[Insert IFB no.]...**

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.
- 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.
- e) 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:
  - a) Demand Draft .....(furnish details of the Demand Draft).....
  - b) Chalan .....(furnish details of the Chalan).....
  - c) Any other Form mentioned in Cl. 15.1 of ITB (Furnish Details)
- 4. Attached to this letter are copies of original documents defining:
  - i) the Bidder's legal status;
  - ii) the principal place of business;
  - iii) 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	
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 .....

**Section III**

**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:

### Section III

#### 3.1 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.	

SI No	Questions	Answers to be furnished by the bidder
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)	
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 List of Machinery & equipment that company proposes to take on rent and use for the work 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.



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

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

### 3.4 APPLICATION INFORMATION SHEET

<b>Application Information</b>	
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	
<ol style="list-style-type: none"> <li>1. In the case of single entity, articles of incorporation or constitution of the legal entity named above.</li> <li>2. Power of attorney to represent the firm or JV/consortium /group named above.</li> <li>3. In case of JV, power of attorney for lead member of consortium by other JV partner</li> </ol>	

### 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

**3.7 TOTAL ANNUAL TURNOVER**

(Bidder and/consortium/group must fill in this form)

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

**3.8 DETAILS OF SUB CONTRACTOR AND THEIR RESPONSIBILITES**

(Applicable in case of subletting)

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

## Definitions

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.
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. **Equipment** is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.
26. **The Initial Contract Price** is the Contract Price listed in the Authority's Letter of Acceptance.
27. **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.
28. **Materials** are all supplies, including consumables, used by the Contractor for incorporation in the Works.
29. **Plant** is any integral part of the Works that has to have a mechanical, electrical, chemical, or biological function.
30. **The Site** is the area defined as such in the Contract Data.

31. **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.
32. **Specification** means the Specification of the Works included in the Contract and any modification or addition made or approved by the Superintending Engineer.
33. **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.
34. **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.
35. **Temporary Works** are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works.
36. **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

## SECTION IV

# LETTER OF ACCEPTANCE (LOA)

**Section IV**

**1. Letter of Acceptance**  
*[Letterhead paper of the Employer]*

By Cable/Registered Post with acknowledgement due/

From

-----

-----

To

-----

-----

Letter No.-----

Dt.....

Sub:

Ref: (insert Bid No. and date)

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

## 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: \_\_\_\_\_

### 3. Agreement

This Agreement, made the [day] day of [month], [year] between [name and address of Employer] (hereinafter called "the Employer") and [name and address of Contractor] (hereinafter called "the Contractor") of the other part.

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

Now this Agreement witnesseth as follows:

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

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

The Common Seal of \_\_\_\_\_

was hereunto affixed in the presence of: \_\_\_\_\_

Signed, Sealed, and Delivered by the said \_\_\_\_\_

in the presence of: \_\_\_\_\_

Binding Signature of Employer \_\_\_\_\_

Binding Signature of Contractor \_\_\_\_\_

SECTION V  
CONDITIONS OF CONTRACT

## Section V. 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.

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.

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.
- 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 subcontractor, 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**

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 actins, 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.

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**

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.

**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.

## **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

## **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**

- 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**

- 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-DELETED**

## **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. Advance Payment-DELETED**

## **45. 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.

## **46. Secured Advance**

**46.1** The Authority shall make advance payments in respect of materials intended for but not yet incorporated in the works in accordance with the conditions stipulated in the contract data. The Contractor is not eligible for secured advance if he has already availed mobilization advance as per Clause 46.1.

## **E. 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**

**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**

**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.

## **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.

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.

- 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 portion fails to appoint its arbitrator in pursuance of sub- clauses above within 30 days after arbitrator by the other party, than 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.
- 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**

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 emprised 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.

### **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.

SECTION VI  
CONTRACT DATA

## Section VI. Contract Data

1. The Employer is The Commissioner  
Corporation Of Chennai  
Ripon building  
Chennai – 600 03.

The Engineer in Charge is The Superintending Engineer  
Storm Water Drain Department  
Corporation Of Chennai  
Ripon building  
Chennai – 600 03.

### **S.W.D.No. B5/283/2010 – P.W.C.No. 3360**

Construction of Storm Water Drain of size 2mx2m along Esplanade road (Eastern side), N.S.C.Bose Road (North & South sides), Broadway bus stand (Western side) and Frazer Bridge Road from Dr.Ambedkar law college road/Kuralagam opposite to Frazer Bridge Road in Dn.49,Zone-III.

The adjudicator appointed jointly by the Employer and Contractor is  
The Superintending Engineer  
Bus Route and Road Department.

The Works consist of Construction of storm water drain as per design and drawings.

The Start Date shall be the date of issues of notice to proceed with the work.

The Intended Completion Date for the whole of the Works shall be 8 months.

### MILESTONE DATES

Sl. No.	Description of Work	Milestone I (2Months from Start Date)	Milestone II (4Months from Start Date)	Milestone II (6Months from Start Date)	Milestone IV (8Months from Start Date)
1.	Construction of storm water drain	15%	45%	75%	100%

The following documents also form part of the Contract: *[list documents]*

- (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,
2. The Contractor shall submit a revised Program for the Works within 14 days of delivery of the Letter of Acceptance.
  3. The Site Possession Date shall be immediately after the letter of acceptance.
  4. The Site is located along NSC Bose Road and is defined in drawings.
  5. The Defects Liability Period is 2 years.
  6. The minimum insurance covers shall be
    - (a) The maximum deductible for insurance of the Works and of Plant and Materials
    - (b) The minimum cover for insurance of the Works and of Plant and Materials
    - (c) The maximum deductible for insurance of Equipment.
    - (d) The minimum cover for loss or damage to Equipment.
    - (e) The maximum deductible for insurance of other property.
    - (f) The minimum for insurance of other property.
    - (g) The minimum cover for personal injury or death insurance
      - (i) for the Contractor's employees.
      - (ii) and for other people.
  7. The following events shall also be Compensation Events:(ITB – Section 2 – Clause 36)
  8. The period between Program updates is 30 days.

The amount to be withheld for late submission of an updated Program is Rs. 10000.
  9. The language of the Contract documents is English.

The law that applies to the Contract is the law of Union of India.

**10.** Institution whose arbitration procedures shall be used: The Corporation of Chennai / P.W.D Govt., of Tamil Nadu.

**11.** Appointing Authority for the Adjudicator: The Commissioner.

**12.** Arbitration will take place in accordance with rules and regulations.

**13.** The liquidated damages for the whole of the Works are 12,200/- per day.

The maximum amount of liquidated damages for the whole of the Works is 12,27,000.00

**14.** The Performance Security shall be 2% of the Contract Price:

(a) Bank Guarantee.

(b) Performance Bond.

The standard form(s) of Performance Security acceptable to the Employer shall be of the type presented in Section 9.

**15.** The date by which operating and maintenance manuals are required is Within 28 days of issue of certified of completion of hole are section of work, as the case may be.

The date by which "as built" drawings are required is Within 28 days of issue of certify of completion of hole are section of work, as the case may be.

The amount to be withheld for failing to produce "as built" drawings and/or operating and maintenance manuals by the date required is Rs. 10000.

**16.** The percentage to apply to the value of the work not completed, representing the Employer's additional cost for completing the Works, is 20%.

**SECTION VII**

**GENERAL TECHNICAL  
SPECIFICATIONS**

## Section VII

### A. GENERAL TECHNICAL SPECIFICATIONS

#### 1. Earthwork

##### 1.1 General

The excavation shall be carried out to correct lines and levels. This shall also include, where required, proper shoring to maintain excavations and also the furnishing, erecting and maintaining of substantial barricades around excavated areas and warning lamps at night. Rock excavated shall be stacked properly as approved by the Engineer-in-charge.

##### 1.2 Clearing

The area to be excavated / filled shall be cleared of fences, trees, plants, logs, stumps, bush, vegetation, rubbish, slush, etc. and other objectionable matter. If any roots or stumps of trees are encountered during excavation, they shall also be removed. The material so removed shall be disposed off as approved by the Engineer-in-charge.

##### 1.3 Excavation

Excavation for permanent work shall be taken out to such widths, lengths, depths and profiles as are shown on the approved drawings or such other lines and grades as may be agreed with the Engineer-in-charge. Rough excavation shall be carried out to a depth of 150 mm above the final level. The balance shall be excavated with special care. Soft pockets shall be removed below the final level and extra excavation filled up with material as approved by the Engineer-in-charge. Should any excavation be taken below the specified elevations, the Contractor shall fill it up with concrete of the same class as in the foundation resting thereon, up to the required elevation at no cost to the department. Every precaution shall be taken to prevent slips. If slips occur, the slipped material shall be removed and the slope dressed to a modified stable slope.

##### 1.4 Fill, Backfilling and Site Grading

###### 1.4.1 General

All fill material shall be subject to the Engineer-in-charge's approval. If any material is rejected by Engineer-in-charge, the Contractor shall remove the same forthwith from the site. Surplus fill material shall be deposited /disposed off as directed by Engineer-in-charge after the fill work is completed.

No earth-fill shall commence until surface water discharges and streams have been properly intercepted or otherwise dealt with to the approval of the Engineer-in-charge.

#### **1.4.2 Material**

To the extent available, selected surplus soil from excavations shall be used as backfill. Backfill material shall be free from lumps, organic or other foreign material. All lumps of earth shall be broken or removed unless otherwise stated. Where excavated material is mostly rock, the boulders shall be broken into pieces not larger than 150 mm size, mixed with properly graded fine material consisting of murrum or earth to fill the voids and the mixture used for filling. If fill material is required to be imported, the Contractor shall make arrangements to bring such material from outside borrow pits. The material and source shall be subject to the prior approval of the Engineer-in-charge. The approved borrow pit areas shall be cleared of all bushes, roots of trees, plants, rubbish, etc. Top soil containing foreign material shall be removed. The materials so removed shall be disposed of as directed by Engineer-in-charge. The Contractor shall provide the necessary access roads to borrow areas and maintain the same if such roads do not exist.

#### **1.4.3 Filling in pits and trenches around foundations of structures, walls, etc.**

The spaces around the foundations, structures, pits, trenches, etc., shall be cleared of all debris, and filled with earth in layers not exceeding 15 cm, each layer being watered, rammed and properly consolidated to the satisfaction of Engineer-in-charge. Earth shall be rammed with approved mechanical compaction machines. Usually no manual compaction shall be allowed unless the Engineer-in-Charge is satisfied that in some cases manual compaction by tampers cannot be avoided. The final backfill surface shall be trimmed and leveled to a proper profile to the approval of the Engineer-in-charge.

The filling shall be done after the concrete or masonry is fully set and done in such a manner as not to cause undue thrust on any part of the structure.

#### **1.4.4 Plinth Filling**

Plinth filling shall be carried out with approved material such as soil, sand or murum as in layers not exceeding 15 cm watered and compacted with mechanical compaction machines. When filling reaches the finished level, the surface shall be flooded with water, unless otherwise directed, for at least 24 hours, allowed to dry and then the surface again compacted as specified above to avoid settlement at a later stage. The finished level of the filling shall be trimmed to the level/slope specified.

At some locations/ areas, it may not be possible to use rollers because of space restrictions, etc. The Contractor shall then be permitted to use pneumatic tampers, rammers, etc. and he shall ensure proper compaction.

#### **1.4.5 Sand Filling in Plinth and Other Places**

Where backfilling is required to be carried out with local sand it shall be clean, medium grained and free from impurities. The filled-in-sand shall be kept flooded with water for 24 hours to ensure maximum consolidation. The surface of the consolidated sand shall be dressed to required level or slope. Construction of floors or other structures on sand fill shall not be started until the Engineer-in-charge has inspected and approved the fill.

#### **1.4.6 General Site Grading**

Site grading shall be carried out as indicated in the approved drawings. Excavation shall be carried out as specified in the Department's Requirements. Filling and compaction shall be carried out as specified under relevant Clause and elsewhere unless otherwise indicated below.

If no compaction is called for, the fill may be deposited to the full height in one operation and leveled. If the fill has to be compacted, it shall be placed in layers not exceeding 150 mm and leveled uniformly and compacted as indicated in relevant Clause before the next layer is deposited.

To ensure that the fill has been compacted as specified, field and laboratory tests shall be carried out by the Contractor.

Field compaction tests shall be carried out in each layer of filling until the fill to the entire height has been completed. This shall hold good for embankments as well. The fill will be considered as incomplete if the desired compaction has not been obtained.

The Contractor shall protect the earth fill from being washed away by rain or damaged in any other way. If any slip occurs, the Contractor shall remove the affected material and make good the slip.

#### **1.4.7 Fill Density**

Unless otherwise specified the compaction, where so called for, shall comply with minimum 90% compaction by Standard Proctor at moisture content differing not more than 4% from the optimum moisture content. The Contractor shall demonstrate adequately by field and laboratory tests that the specified density has been obtained.

#### **1.4.8 Timber Shoring**

The provisions of relevant ISS shall apply.

## **2 Concrete**

### **2.1 General**

The Engineer-in-Charge shall have the right at all times to inspect all operations including the sources of materials, procurement, layout and storage of materials, the concrete batching and mixing equipment and the quality control system. Such an inspection shall be arranged and the *Engineer-in-Charge's* approval obtained, prior to starting of concrete work. This shall, however, not relieve the Contractor of any of his responsibilities. All materials which do not conform to the Specifications shall be rejected.

Materials complying with codes/standards shall generally be used.

### **2.2 Materials**

#### **2.2.1 Cement**

Unless otherwise called for by the Engineer-in-charge, cement shall be ordinary Portland cement conforming to IS: 2697, IS: 8112 or IS: 12269. Super Sulphated cement conforming to IS 6909 or super resistant Portland cement conforming to IS 12330 or Pozzolana Portland Cement conforming to IS 1489..

Sulphate resistant cement conforming to IS 12330 shall be used for all cement concrete works wherever necessary as directed by the Engineer-in-charge.

Only one type of cement shall be used in any one mix. The source of supply, type or brand of cement within the same structure or portion thereof shall not be changed without approval from the Engineer-In-Charge.

Cement which is not used within 90 days from its date of manufacture shall be tested at a laboratory approved by the Engineer-In-Charge and until the results of such tests are found satisfactory, it shall not be used in any work.

### **2.2.2 Aggregates (General)**

It shall comply with requirement of IS 383 and as specified in IS 456-2000. Aggregates shall consist of naturally occurring stones (crushed or uncrushed), gravel and sand. They shall be chemically inert, strong, hard, clean, durable against weathering, of limited porosity, free from dust/silt/organic impurities/deleterious materials such as iron pyrites, coal, mica, slate, clay alkali, soft fragments, sea shells and conform to IS: 383. Aggregates such as slag, crushed over burnt bricks, bloated clay aggregates, sintered fly ash and tiles shall not be used.

Aggregates shall be washed and screened before use where necessary or if directed by the Engineer-in-Charge.

Aggregates containing reactive silica shall not be used.

Graded aggregate shall conform to I.S. specification.

### **2.2.3 Water**

Water used for both mixing and curing shall conform to IS : 456-2000 and free from injurious amounts of oils, acids, alkalis, salts, sugar, organic materials that may be deleterious to concrete or steel.

### **2.2.4 Reinforcement**

Reinforcement shall be any of the following:

- a) Mild Steel and medium tensile bars to IS 432 Part 1.
- b) High strength deformed bars and wires to IS 1786.
- c) Rolled steel Grade A made from structural steel to IS 2062.

All reinforcement shall be free from loose mill scales, loose rust and coats of paints, oil, mud or other coatings, which may destroy or reduce bond.

### **2.2.5 Admixtures**

Admixtures may be used in concrete as per manufacturer's instructions only with the approval of the Engineer-in-Charge. Accelerating, retarding, water reducing and air entraining admixtures shall conform to IS : 9103 and integral water proofing admixtures to IS : 2645.

### **2.2.6 Samples and Tests**

All materials used for the works shall be tested before use.

Sampling and testing shall be as per IS: 2386 under the supervision of the Engineer-in-Charge.

The Contractor shall furnish manufacturer's test certificates and technical literature for the admixture proposed to be used. If directed, the admixture shall be got tested at an approved laboratory at no extra cost.

### **2.3 Design Mix Concrete**

For Design Mix Concrete, the mix shall be designed according to IS: 10262 and SP 23 to provide the grade of concrete having the required workability and characteristic strength not less than appropriate values given in IS: 456. The minimum cement content for Design Mix Concrete shall be as per IS: 456.

The minimum cement content stipulated above shall be adopted irrespective of whether the Contractor achieves the desired strength with less quantity of cement. It shall be the Contractor's sole responsibility to carry out the mix designs at his own cost. He shall furnish to the Engineer-in-Charge at least 30 days before concreting operations, a statement of proportions proposed to be used for the various concrete mixes and the strength results obtained. The strength requirements of the concrete mixes ascertained on 150 mm cubes as per IS: 516 shall comply with the requirements of IS: 456.

Grades lower than M20 shall not be used for reinforced concrete (general) grading lower than M25 shall not be used for reinforced concrete in liquid retaining structures.

#### **b) Batching & Mixing of Concrete**

Proportions of aggregates and cement, as decided by the concrete mix design, shall be by weight. These proportions shall be maintained during subsequent concrete batching by means of weigh batchers capable of controlling the weights within one percent of the desired value.

### **2.4 Nominal Mix Concrete**

#### **Mix Design & Testing**

Mix Designing and preliminary tests are not necessary for Nominal Mix Concrete. However works tests shall be carried out as per IS: 456.

#### **Mixing**

Concrete shall be mixed in a mechanical mixer conforming to IS 1791. The mixing shall be continued until there is uniform distribution of materials and the mass is uniform in colour and consistency. If there is segregation after unloading, the concrete should be remixed.

## 2.5 Formwork

Formwork shall be all inclusive and shall consist of but not be limited to shores, bracings, sides of footings, walls, beams and columns, bottom of slabs etc. including ties, anchors, hangers, inserts, false work, wedges etc.

The design and engineering of the formwork as well as its construction shall be the responsibility of the contractor; however, if so desired by the Engineer-in-Charge, the drawings and calculations for the design of the formwork shall be submitted to the Engineer-in-Charge for the approval.

Formwork shall be designed to fulfill the following requirements:

- a) Sufficiently rigid and tight to prevent loss of grout or mortar from the concrete at all stages and appropriate to the methods of placing and compacting.
- b) Made of suitable materials.
- c) Capable of providing concrete of the correct shape and surface finish within the specified tolerance limits.
- d) Capable of withstanding without deflection the worst combination of self weight, reinforcement and concrete weight, all loads and dynamic effects arising from construction and compacting activities, wind and weather forces.
- e) Capable of easy striking out without shock, disturbance or damage to the concrete.
- f) Soffit forms capable of imparting a camber if required
- g) Soffit forms and supports capable of being left in position if required
- h) Capable of being cleaned and/or coated if necessary immediately prior to casting the concrete; design temporary openings where necessary for these purposes and to facilitate the preparation of construction joints.

The faces of formwork coming in contact with concrete shall be cleaned and two coats of approved mould oil applied before fixing reinforcement. Forms that have deteriorated shall not be used. Before reuse, all forms shall be thoroughly scraped, cleaned, nails removed, holes suitably plugged, joints repaired and warped lumber replaced to the satisfaction of the Engineer-in-Charge.

Wire ties passing through beams, columns and walls shall not be allowed. In their place bolts passing through sleeves shall be used. Formwork spacers left in-situ shall not impair the desired appearance or durability of the structure by causing spalling, rust staining or allowing the passage of moisture.

Formwork showing excessive distortion, during any stage of construction, shall be repositioned and strengthened. Placed concrete affected by faulty formwork, shall be entirely removed and formwork corrected prior to placement of new concrete at Contractor's cost.

## 2.6 Transporting, Placing and Compacting Concrete

Concrete shall be transported from the mixing plant to the formwork with minimum time lapse by methods that shall maintain the required workability and will prevent segregation, loss of any ingredients or ingress of foreign matter or water.

In all cases concrete shall be deposited as nearly as practicable directly in its final position to avoid re-handling. To avoid segregation, concrete shall not be re-handled or caused to flow. For locations where direct placement is not possible and in narrow forms and Contractor shall provide suitable drops and "Elephant Trunks". Concrete shall not be dropped from a height of more than 1.0 m. Care shall be taken to avoid displacement of reinforcement or formwork.

Concrete shall not be placed in flowing water. Under water, concrete shall be placed in position by tremies or by pipeline from the mixer and shall never be allowed to fall freely through the water.

While placing concrete the Contractor shall proceed as specified below and also ensure the following:

- a) Continuously between construction joints and pre-determined abutments.
- b) Without disturbance to forms or reinforcement
- c) Without disturbance to pipes, ducts, fixings and the like to be cast in; ensure that such items are securely fixed. Ensure that concrete cannot enter open ends of pipes and conduits etc.
- d) Without dropping in a manner that could cause segregation or shock.
- e) In deep pours only when the concrete and formwork designed for this purpose and by using suitable chutes or pipes.
- f) Do not place if the workability is such that full compaction cannot be achieved
- g) Without disturbing the unsupported sides of excavations; prevent contamination of concrete with earth. Provide sheeting if necessary in supported excavations, withdraw the linings progressively as concrete is placed.
- h) If placed directly onto hardcore or any other porous material, dampen the surface to reduce loss of water from the concrete.
- i) Ensure that there is no damage or displacement to sheet membranes.
- j) Record the time and location of placing structural concrete.

Concrete shall normally be compacted in its final position within thirty minutes of leaving the mixer. Concrete shall be compacted during placing with approved vibrating equipment without causing segregation until it forms a solid mass free from voids thoroughly worked around reinforcement and embedded fixtures and into all corners of the formwork. When placing concrete in layers advancing horizontally, care shall be taken to ensure adequate vibration, blending and melding of the concrete between successive layers.

## **2.7 Curing**

Curing and protection shall start immediately after the compaction of the concrete to protect it from

1. Premature drying out, particularly by solar radiation and wind;
2. leaching out by rain and flowing water;
3. high internal thermal gradient;
4. vibration and impact which may disrupt the concrete and interfere with its bond to the reinforcement
5. After the concrete has begun to harden i.e. 1 to 2 hr. after laying curing shall be started.
6. All concrete, unless approved otherwise by the Engineer-in-Charge, shall be cured by use of continuous sprays or ponded water or continuously saturated coverings of sacking, canvas, or other absorbent material for the period of complete hydration with a minimum of 7 days. The quality of curing water shall be the same as that used for mixing.
7. Where a curing membrane is approved to be used by the Engineer-in-Charge, the same shall of a non-wax base and shall not impair the concrete finish in any manner. The curing compound to be used shall be approved by the Engineer-in-Charge before use and shall be applied with spraying equipment capable of a smooth, even textured coat.
8. When concrete is used as sub-grade for flooring, the flooring may be commenced before the curing period of sub-grade is over, but curing of sub-grade shall be continued along with the top layer of flooring for a minimum period of 7 days.
9. Curing may also be done by covering the surface with an impermeable material such as polyethylene, which shall be well sealed and fastened.

## **2.8 Construction Joints and Keys**

The position and arrangement of construction joints shall be as indicated by the contractor in his working drawings duly approved by the department. Concrete shall be placed without interruption until completion of work between construction joints. If stopping of concreting becomes unavoidable anywhere, a properly formed construction joint shall be made with the approval of the Engineer-in-Charge.

## **2.9 Repair and Replacement of Unsatisfactory Concrete**

Immediately after the shuttering is removed, all defective areas such as honey-combed surfaces, rough patches, holes left by form bolts etc, shall be inspected by the Engineer-in-Charge who may permit patching of the defective areas or reject the concrete work.

All through holes for shuttering shall be filled for full depth and neatly plugged flush with surface.

Rejected concrete shall be removed and replaced by the Contractor at no additional cost to the Employer.

For patching of defective areas all loose materials shall be removed and the surface shall be prepared as approved by the Engineer-in-Charge.

The decision of the Engineer-in-Charge as to the method of repairs to be adopted shall be final and binding on the Contractor.

## **2.10 Hot Weather Requirements**

Concreting during hot weather shall be carried out as per IS 7861 (Part I).

Adequate provision shall be made to lower concrete temperatures which shall not exceed 40 deg C at time of placement of fresh concrete.

For major and large scale concreting works the temperature of concrete at times of mixing and placing, the thermal conductivity of the formwork and its insulation and stripping period shall be closely monitored.

## **3 Structural Steel Work**

### **3.1 Fabrication**

#### **3.1.1 General**

As much fabrication work as is reasonably practicable work shall be completed in shops, where steel work is fabricated.

All workmanship and finish shall be of the best quality and shall conform to the best approved method of fabrication. All materials shall be finished straight and shall be machined/ground smooth true and square where so specified. All holes and edges shall be free of burrs. Shearing and chipping shall be neatly and accurately done and all portions of work exposed to view shall be neatly finished. Tolerances for fabrication of steel structures conform IS 7215. Tolerances for erection of steel structures shall conform to IS 12843.

#### **3.1.2 Welding**

Welding shall be in accordance with IS 816, IS 819, IS 1024, IS 1261, IS 1323 and IS 9595 as appropriate.

## **3.2 Site Erection**

### **3.2.1 Plant and Equipment**

The suitability and capacity of all plant and equipment used for erection shall be to the satisfaction of the EIC.

### **3.2.2 Storing and Handling**

All structural steel should be so stored and handled at the site that the members are not subject to excessive stresses and damage.

### **3.2.3 Setting Out**

The positioning and leveling of all steelwork, the plumbing of stanchions and the placing of every part of the structure with accuracy shall be in accordance with approved drawings and to the satisfaction of EIC.

### **3.2.4 Security during Erection**

Safety precaution during erection shall conform to IS 7205:1974. During erection, the steel work shall be securely bolted or otherwise fastened and, when necessary, temporarily braced to provide for all load to be carried by the structure during erection including those due to erection equipment and its operation.

No riveting, permanent bolting or welding should be done until proper alignment has been obtained.

### **3.2.5 Field Connections**

All field assembly by bolts, rivets and welding shall be executed in accordance with the requirements of shop fabrication excepting such as manifestly apply to shop conditions only. Where the steel has been delivered painted, the paint shall be removed before field welding, for a distance of 50 mm at least on either side of the joint.

## **3.3 Painting**

All fabricated steel material, except those galvanised shall receive protective paint coating as prescribed in IS 1477 Parts 1 & 2.

Parts to be encased on concrete shall not be painted or oiled.

## **4. Brickwork**

### **4.1 Materials**

Bricks used in the works shall conform to the requirements laid down in IS : 1077, IS 2180, IS 2222, IS 2691, IS 3952, IS 6165. The class of the bricks shall be as specifically indicated in the respective items of work prepared by the Contractor.

#### 4.2 Compressive Strength :

Five bricks shall be tested. The average compressive strength shall be as per class designation. The compressive strength of individual brick shall not be less than 20 % of the specified value.

##### 4.2.1 Classification of burnt clay solid bricks

The classes and sub-classes of burnt clay solid bricks shall be as given in Table 1.

**Table 1 – Classes of Burnt Clays Solid Bricks and their Principal requirements.**

Type of Brick	Class designation (see more below)	Compressive strength kg/cm <sup>2</sup> Min	Water absorption (24 hr. immersion percentage max.	Efflorescence
(1)	(2)	(3)	(4)	(5)
Heavy duty (See IS:2180-1970)	450	450	10	Nil
	400	400	10	Do
Common burnt clay building bricks (see IS: 1077-1970)	350	350	15	Slight
	300	300	15	Do
	250	250	15	Do
	200	200	15	Do
	175	175	15	Do
	150	150	15	Do
	125	125	20	Moderate
	100	100	20	Do
	75	75	20	Do
	50	50	20	Do

Note : Each class of bricks shall further be divided into sub-classes A, B, etc. based on the following :

Sub-class A – Tolerance limit shall be  $\pm 3$  percent and shall have smooth rectangular faces with sharp corners and emit clear ringing sound.

Sub-class B – Tolerance limit shall be  $\pm 8$  percent and shall be permitted to have slight distortion and round edges, provided no difficulty shall arise in laying of uniform courses.

#### 4.2.2 Specification for burnt clay facing bricks

Classification

The facing bricks shall be of two classes :

- (a) Class I; and
- (b) Class II

#### 4.2.3 General Quality

4.2.3.1 The facing bricks shall be made of clay, shale or mixture of these materials with or without admixtures and burnt to meet the requirements of this standard. The coloring material added to the clay shall be of suitable ceramic materials and shall be well distributed throughout the body. The brick shall be of uniform colour.

4.2.3.2 The bricks shall be free from cracks, flaws and nodules of free lime and of even texture. These shall be thoroughly burnt and shall have plane rectangular faces with parallel sides and sharp straight right angled edges.

#### 4.2.4 Dimensions and Tolerances

4.2.4.1 The standard sizes of the facing bricks shall be 19 x 9 x 9 cm and 19 x 9 x 4 cm.

4.2.4.2 The permissible tolerances shall be as under :

Dimensions	Tolerances	
Cm.	Class I	Class I
	Mm	MM

19	± 3	± 5
9	± 2	± 3
4	± 1.5	± 2

#### 4.2.5 Physical Requirements

4.2.5.1 The average compressive strength obtained in accordance with the procedure laid down in Table I of IS: 3495-1966 (Method of sampling and testing clay building bricks shall not be less than 75kg/cm<sup>2</sup> for Class I.

4.2.5.2 The water absorption requirement when tested in accordance with the procedure laid down in Table 2 of IS: 3495-1966 for 24h immersion shall not exceed 15 percent.

4.2.5.3 When tested in accordance with the method specified in Table 3 of IS : 3495 – 1966 efflorescence requirements shall be 'Nil' for both classes.

4.2.5.4 When measured in accordance with the method specified in Table 4 of IS: 3495 – 1966 the warpage for both classes shall not exceed 2.5 mm.

#### 4.3 Water absorption :

Five bricks shall be tested for water absorption and shall not exceed 20 % by weight upto class 12.5 & 15% by weight for higher classes.

#### 4.4 Efflorescence :

Five bricks shall be tested for efflorescence. The efflorescence shall be 'nil' to ' moderate'

Sample bricks shall be submitted to the Engineer-in-Charge for approval and bricks supplied shall conform to approved samples. If demanded by Engineer-in-Charge, brick samples shall be got tested as per IS : 3495 by Contractor. Bricks rejected by Engineer-in-Charge shall be removed from the site of works within 24 hours.

#### 4.5 Preparation of Mortar

##### Materials :

**Water** : Water used shall be clean and reasonably free from injurious or deleterious materials such as oils, acids, alkalis, salts. Sand for masonry mortars shall conform to IS 2116

Mortars shall be prepared and tested as per IS 2250.

#### **4.6 Workmanship**

Workmanship of brick work shall conform to IS : 2212. All bricks shall be thoroughly soaked in clear water for at least one hour immediately before being laid. The cement mortar for brick masonry work shall be as specified in the respective item of work prepared by the Contractor.

All brickwork shall be plumb, square and true to dimensions shown.

Brickwork shall be kept constantly moist on all the faces for at least seven days after 24 hrs of laying. The arrangement for curing shall be got approved from the Engineer-in-Charge.

Double scaffolding having two sets of vertical supports shall be provided to facilitate execution of the masonry works. The scaffolding shall be designed adequately considering all the dead, live and possible impact loads to ensure safety of the workmen, in accordance with the requirements stipulated in IS : 2750 and IS : 3696 (Part - I). Scaffolding shall be properly maintained during the entire period of construction. Single scaffolding shall not be used on important works and will be permitted only in certain cases as decided by the Engineer-in-Charge. Where single scaffolding is adopted, only minimum number of holes, by omitting a header shall be left in the masonry for supporting horizontal scaffolding poles. All holes in the masonry shall be carefully made good before plastering/ pointing.

All brick work shall be built tightly against columns, floor slabs or other structural members.

To overcome the possibility of development of cracks in the brick masonry following measures shall be adopted.

For resting RCC slabs, the bearing surface of masonry wall shall be finished on top with 12 mm thick cement mortar 1:3 and provided with 2 layers of Kraft paper Grade 1 as per IS : 1397 or 2 layer of 50 micron thick polyethylene sheets.

RCC/ steel beams resting on masonry wall shall be provided with reinforced concrete bed blocks of 150 mm thickness, projecting 150mm on either sides of the beam, duly finished on top with 2 layer of Kraft paper Grade 1 as per IS : 1397 or 2 layers of 50 micron thick polyethylene sheets.

### **5. Random Rubble Masonry, in Foundation Plinth and Superstructure**

#### **5.1 Materials**

Stones for the works shall be of the specified variety which are hard, durable, fine grained and uniform in colour ( for superstructure work ) free from defects like cracks, sand holes, patterns of soft / loose materials veins, other defects. Quality and work shall conform to the requirements specified in IS: 1597 (Part-I). The percentage of water absorption shall not exceed 5 percent as per test conducted in accordance with IS: 1124. The Contractor shall supply sample stones to the Engineer-in-Charge for

approval. Stones shall be laid with its grains horizontal so that the load transmitted is always perpendicular to the natural bed.

Cement-sand mortar for stone masonry works shall be as per IS 2250.

## **5.2 Scaffolding**

Type of scaffolding to be used shall be as specified in the section of brick masonry.

## **5.3 Workmanship**

For all works below ground level the masonry shall be random rubble with ordinary quarry dressed stones for the hearting and selected quarry dress stones for the facing.

For all R.R. masonry in superstructure the masonry shall be well bonded, faced with hammer dressed stones with squared quoins at corners. The maximum thickness of joints shall not exceed 20 mm. All joints shall be completely filled with mortar. When plastering or pointing is not required to be done, the joints shall be struck flush and finished as the work proceeds. Otherwise, the joints shall be raked to a minimum depth of 20 mm by a raking tool during the progress of the work while the mortar is still green.

Green work shall be protected from rain by suitable covering. Masonry work shall be kept constantly moist on all the faces for a minimum period of seven days for proper curing of the joints.

## **6. Damp - Proof Course**

### **6.1 Materials and Workmanship**

All the walls in a building shall be provided with damp-proof course covering plinth to prevent water from rising up the wall. The damp-proof course shall run without a break throughout the length of the wall, even under the door or other opening. Damp-proof course shall consist of minimum 50mm thick cement concrete of 1:2:4 nominal mix with nominal reinforcement and approved water-proofing compound admixture conforming to IS: 2645 in proportion as directed by the manufacturer. Concrete shall be with 10mm down graded coarse aggregates.

## **7. Wood work in Doors, Windows, Ventilators & partitions**

### **7.1 Materials**

Timber shall be of the best quality conforming to IS 287, well seasoned by the suitable process before being planed to the required sizes. Flush door shutters of the solid core type with plywood face panel shall conform to IS: 2202 (Part-1)

Transparent sheet glass conform to the requirements of IS: 2835 or IS: 2553 (Part-1). Wired and figured glass shall be as per IS: 5437. Builder's hardware for fittings and fixtures shall be of the best quality from approved manufacturers. Each wooden door shutter shall have a minimum of three hinges and two fastenings like tower bolt, handle and mortise lock etc. floor stoppers, handles, kick plates etc. shall also be provided. Each window shutter shall have minimum of 3 hinges and one fastening like tower bolt and one handle for opening and closing.

## **7.2 Workmanship**

The workmanship and finish of wood work in doors, windows, ventilators and partitions shall be of a very high order. Contractor shall ensure that work is executed in a professional manner by skilled carpenters for good appearance, efficient and smooth operation of the shutters.

All works shall be executed as per the detailed Drawing prepared by the Contractor and approved by the Engineer-in-Charge.

The workmanship shall generally conform to the requirements specified in IS : 4021.

## **8. Steel Doors, Windows and Ventilators**

### **8.1 Materials**

Hot rolled steel sections for the fabrication of steel doors, windows and ventilators shall conform to IS: 7452 which are suitable for single glazing.

Pressed steel door frames for steel flush doors shall be out of 1.25mm thick mild steel sheets of profiles as per IS : 4351.

Transparent sheet glass shall conform to the requirements of IS: 2835. Wired and figured glass shall be as per IS: 5437.

Builder's hardware of fittings and fixtures shall be of the best quality from the approved manufacturers. Hot rolled sections shall conform to IS 7452 Fire check doors shall conform to IS 3614 Part 1 & 2. Steel windows for industrial buildings shall conform to IS 1361.

## **8.2 Workmanship**

All steel doors, windows and ventilators shall be of the type as specified in the respective items of work prepared by the Contractor and of sizes as indicated in the Drawings prepared by the contractor. Steel doors, windows and ventilators shall conform to the requirements as stipulated in IS : 1038. Steel windows shall conform to IS : 1361 if so specified.

## **9. Cement Plastering Work**

### **9.1 Materials**

The proportions of the cement mortar for plastering shall be as per approved drawings and specifications. Cement and sand shall be mixed thoroughly in dry condition and then just enough water added to obtain a workable consistency. The quality of water and cement shall be as per relevant IS standards. The quality and grading of sand for plastering shall conform to IS : 1542. Any mortar which is partially set shall be rejected and removed forthwith from the site. Droppings of plaster shall not be re-used under any circumstances.

### **9.2 Workmanship**

Preparation of surfaces and application of plaster finishes shall generally conform to the requirements specified in IS : 1661 and IS : 2402.

Plastering operations shall not be commenced until installation of all fittings and fixtures such as door/window panels, pipes, conduits etc. are completed.

All joints in masonry shall be raked as the work proceeds to a depth of 10 mm / 20mm for brick/ stone masonry respectively with a tool made for the purpose when the mortar is still green. The masonry surface to be rendered shall be washed with clean water to remove all dirt, loose materials, etc., Concrete surfaces to be rendered shall be roughened suitably by hacking or bush hammering for proper adhesion of plaster and the surface shall be evenly wetted to provide the correct suction. The masonry surfaces should not be too wet only damp at the time of plastering. The dampness shall be uniform to get uniform bond between the plaster and the masonry surface.

### **9.3 Interior & Exterior plain faced plaster**

This plaster shall be laid in a single coat of specified thickness. The mortar shall be dashed against the prepared surface with a trowel. The dashing of the coat shall be done using a strong whipping motion at right angles to the face of the wall or it may be applied with a plaster machine. The coat shall be trowelled hard and tight forcing it to surface depressions to obtain a permanent bond and finished to smooth surface. Interior plaster shall be carried out on jambs, lintel and sill faces, etc. as shown in the drawing and as directed by the Engineer-in-Charge.

### **9.4 Plain Faced Ceiling plaster**

This shall be applied in a single coat of specified thickness. Application of mortar shall be as stipulated in above paragraph.

For external plaster, the plastering operation shall be commenced from the top floor and carried downwards. For internal plaster, the plastering operations for the walls shall commence at the top and carried downwards. Plastering shall be carried out to the full length of the wall or to natural breaking points like doors/ windows etc. Ceiling plaster shall be completed first before commencing wall plastering.

## **10. Cement Pointing**

### **10.1 Materials**

The cement mortar for pointing shall be in the specified proportion. Sand shall conform to IS : 1542 and shall be free from clay, shale, loam, alkali and organic matter and shall be of sound, hard, clean and durable particles. Sand shall be approved by Engineer-in-Charge and if so directed it shall be washed/ screened to meet specification requirements.

### **10.2 Workmanship**

Where pointing of joints in masonry work is specified, the joints shall be raked at least 15 mm/ 20 mm deep in brick/ stone masonry respectively as the work proceeds when the mortar is still green.

Any dust/ dirt in the raked joints shall be brushed out clean and the joints shall be washed with water. The joints shall be damp at the time of pointing. Mortar shall be filled into joints and well pressed with special steel trowels. The joint shall not be disturbed after it has once begun to set. The joints of the pointed work shall be neat. The lines shall be regular and uniform in breadth and the joints shall be raised, flat, sunk or 'V' as may be specified in the respective items of work. No false joints shall be allowed.

The work shall be kept moist for at-least 7 days after the pointing is completed.

## **11. Painting of Concrete, Masonry & Plastered Surfaces**

### **11.1 Materials**

All the materials shall be of the best quality from an approved manufacturer. Contractor shall obtain prior approval of the Engineer-in-Charge for the brand of manufacture and the colour/ shade. All materials shall be brought to the site of works in sealed containers.

### **11.2 Workmanship**

The surfaces to be treated shall be prepared by thoroughly brushing them free from dirt, mortar droppings and any loose foreign materials. Surfaces shall be free from oil, grease and efflorescence. Efflorescence shall be removed only by dry brushing of the growth. Cracks shall be filled with Gypsum. Workmanship of painting shall generally conform to IS : 2395.

## **12. Painting & Polishing of Wood Work**

### **12.1 Materials**

1. Wood primer shall conform to IS : 3536
2. Filler shall conform to IS : 110

3. Varnish shall conform to IS : 337
4. French polish shall conform to IS : 348
5. Synthetic enamel paint conform to IS : 2932

All the materials shall be of the best quality from an approved manufacturer. Contractor shall obtain prior approval of the Engineer-in-Charge for the brand of manufacture and the colour/ shade. All materials shall be brought to the site of works in sealed containers.

## 12.2 Workmanship

The type of finish to be provided for woodwork of either painting or polishing, the number coats, etc. shall be as specified in the respective items of work to be prepared by the Contractor.

Painting shall be either by brushing or spraying. Contractor shall procure the appropriate quality of paint for this purpose as recommended by the manufacturer. The workmanship shall generally conform to the requirements of IS : 2338 (Part I).

## 13. Painting of Steel Work

### 13.1 Materials

1. Zinc chrome primer shall conform to IS : 2074
2. Synthetic enamel paint shall conform to IS : 2932
3. Aluminium paint shall conform to IS : 2339

All the materials shall be of the best quality from an approved manufacturer. Contractor shall obtain prior approval of the Engineer-in-Charge for the brand of manufacture and the colour/ shade. All the materials shall be brought to the site in sealed containers.

### 13.2 Workmanship

Painting work shall be carried out only on thoroughly dry surfaces. Painting shall be applied either by brushing or by spraying. Contractor shall procure the appropriate quality of paint for this purpose as recommended by the manufacturer. The workmanship shall generally conform to the requirement of IS : 1477 (Part 2).

IS No.	Title
	<b>Construction Planning and Storage of Materials</b>
4082 :	Recommendation on stacking and storage of construction materials at site (first revision)
7969 :	Safety code for handling and storage of building materials
	<b>EARTHWORK</b>

<b>IS No.</b>	<b>Title</b>
1498	Classification and identification of soils for general engineering purposes (first revision) (Amendments 2) (Reaffirmed)
3764: 1992	Excavation work - Code of safety (first revision)
4081	Safety code for blasting and related drilling operations
	<b>FOUNDATIONS</b>
269 :	33 grade ordinary Portland cement.
432 (Part 1)	Mild steel and medium tensile steel bars and hard-drawn steel wire for concrete reinforcement: Part 1 Mild steel and medium tensile steel bars (third revision)
455	Portland slag cement
456	Code of practice for plain and reinforced concrete (Reaffirmed 2000)
1080 : 1986	Code of practice for design and construction of shallow foundations on soils (other than raft, ring and shell)
1489 (Part 1)	Portland pozzolana cement: Part 1 Fly ash based
1489 (Part 2)	Portland pozzolana cement: Part 2 Calcined clay based
1786	High strength deformed steel bars and wires for concrete reinforcement
1904	Code of practice for design and construction of foundations in soils: General requirements
2062	Steel for general structural purposes
6909	Specification for supersulphated cement
8041	Rapid hardening Portland cement
12269	53 grade ordinary Portland cement.
SP 36 (Part 2) :1988	Compendium of Indian Standards on soil engineering : Part 2 Field testing
	<b>MASONRY</b>
	<b>Part 1 Mortars</b>
269	33 grade ordinary Portland cement
383	Coarse and fine aggregates from natural sources for concrete
455	Portland slag cement

IS No.	Title
456	Code of practice for plain and reinforced concrete
1344	Calcined clay pozzolana
1489 (Part 1)	Portland pozzolana cement: Part 1 Fly ash based
1489 (Part 2)	Portland pozzolana cement: Part 2 Calcined clay based
2250	Code of practice for preparation and use of masonry mortars
2720 (Parts 1 to 41)	Methods of test for soils
3812	Fly ash for use as pozzolana and admixture
6452	Specification for high alumina cement for structural use
6909	Specification for supersulphated cement
8041	Rapid hardening Portland cement
8043	Hydrophobic Portland cement

8112	43 grade ordinary Portland cement
12269	53 grade ordinary Portland cement
12600	Low heat Portland cement
SP 20 (S &T) :	Handbook on masonry design and construction
SP 21 (S &T)	Summaries of Indian Standards for building materials
	<b>Part 2 Brickwork</b>
269	33 grade ordinary Portland cement
383	Coarse and fine aggregates from natural sources for concrete
455	Portland slag cement
456	Code of practice for plain and reinforced concrete
1489 (Part 1)	Portland pozzolana cement: Part 1 Fly ash based
1489 (Part 2)	Portland pozzolana cement: Part 2 Calcined clay based

2645	Integral cement waterproofing compounds
3812	Fly ash for use as pozzolana and admixture
5454	Methods of sampling of clay building bricks
6452	Specification for high alumina cement for structural use
4014 Part 1 & 2	Code of practice for steel tubular scaffolding
6909	Specification for supersulphated cement
8041	Rapid hardening Portland cement
8042	White Portland cement
8043	Hydrophobic Portland cement
8112	43 grade ordinary Portland cement
9103	Admixture for concrete
12269	53 grade ordinary Portland cement
12600	Low heat Portland cement
SP 20 (S & T)	Handbook on masonry design and construction
SP 21 (S & T)	Summaries of Indian Standards for building materials
1077	Common burnt clay building bricks
2212	Code of practice for brick work
3696 (Part 1)	Safety code of scaffolds and ladders: Part 1 Scaffolds
4014 (Part 2)	Code of practice for steel tabular scaffolding: Part 2 Safety regulations for scaffolding
SP 25 (S & T)	Handbook on caused and prevention of cracks in building
	<b>Stonework</b>
1123	Method of identification of natural building stones
1127	Recommendations for dimensions and workmanship of natural building stones for masonry work
1597 (Part 1)	Code of practice for construction of stone masonry: Part 1 Rubble stone masonry
2250	Code of practice for preparation and use of masonry mortars

3316	Specification for structural granite
3696 (Part 1)	Safety code of scaffolds and ladders: Part 1 Scaffolds
4101 (Part 1)	Code of practice for external facing and veneers: Part 1 Stone facing
SP 20 (S & T)	Handbook on masonry design and construction
SP 21 (S & T)	Summary of Indian Standards for building materials
	<b>Plain And Reinforced Concrete</b>
269	33 grade ordinary Portland cement
383	Coarse and fine aggregates from natural resources for concrete
432 (Part 1 & 2)	Mild steel and medium tensile steel bars and hard drawn steel wire for concrete reinforcement: Part 1 Mild steel and medium tensile steel bars. Part 2 Hard drawn steel wire
455	Portland slag cement
456	Code of practice for plain and reinforced concrete
516	Method of test for strength of concrete
650	Standard sand for testing of cement
3085	Method of test for permeability of cement mortar & concrete
9284	Method of test for abrasion resistance of concrete
5816	Method of test for splitting tensile strength of concrete cylinders
8142	Method of test for determining setting time of concrete by penetration resistance
12600	Low heat Portland cement masonry cement
3466	Masonry cement
3558	Code of practice immersion Vibrator for consolidating concrete
8042	White Portland cement
1343	Code of practice for Prestressed concrete
883	Design of structural timber in building - Code of practice
1199	Methods of sampling and analysis of concrete
1344	Calcined clay pozzolana

1489 (Part 1)	Portland pozzolana cement: Part 1 Fly ash based
1489 (Part 2)	Portland pozzolana cement: Part 2 Calcined clay based
1786	High strength deformed steel bars and wires for concrete reinforcement
1791	Batch type concrete mixers
1946	Code of practice for use of fixing devices in walls, ceilings and floors of solid construction
2062	Steel and general structural purposes
2386 (Part 1)	Methods of test for aggregates for concrete: Part 1 Particle size and shape
2386 (Part 2)	Methods of test for aggregates for concrete: Part 2 Estimation of deleterious materials and organic impurities
2386 (Part 3)	Methods of test for aggregates for concrete: Part 3 Specific gravity, density, voids, absorption and bulking
2386 (Part 4)	Methods of test for aggregates for concrete: Part 4 Mechanical properties
2386 (Part 5)	Methods of test for aggregates for concrete: Part 5 Soundness
2386 (Part 6)	Methods of test for aggregates for concrete: Part 6 Measuring mortar making properties of fine aggregates
2386 (Part 7)	Methods of test for aggregates for concrete: Part 7 Alkali aggregate reactivity
2386 (Part 8)	Methods of test for aggregates for concrete: Part 8 Petrographic examination
2502	Code of practice for bending and fixing of bars for concrete reinforcement
2505	Concrete vibrators - Immersion type - General requirements
2506	General requirements for screed board concrete vibrators
2514	Concrete vibrating tables
2751	Recommended practice for welding of mild steel plain and deformed bars for reinforced construction
3025	Methods of sampling and test (physical and chemical) for water used in industry
3812	Fly ash for use as pozzolana and admixture
4031 (Part 1)	Methods of physical tests for hydraulic cement: Part 1 Determination of fineness by dry sieving
4656	Form vibrators for concrete

4925	Concrete batching and mixing plant
4926	Ready mixed concrete
4990	Plywood for concrete shuttering work
6452	Specification for high alumina cement for structural use
6909	Specification for supersulphated cement
7861 (Part 1)	Code of practice for extreme weather concreting: Part 1 Recommended practice for hot weather concreting

8041	Rapid hardening Portland cement
8043	Hydrophobic Portland cement
8112	43 grade ordinary Portland cement
9012	Recommended practice for Concreting
9013	Method of making, curing and determining compressive strength of accelerated cured concrete test specimens
9103	Admixtures for concrete
10262	Recommended guidelines for concrete mix design
12269	53 Grade ordinary Portland Cement
13330	Sulphate resisting Portland Cement
12600	Low heat Portland cement
13311 (Part 1)	Non-destructive testing of concrete - Methods of test: Part 1 Ultrasonic pulse velocity
13311 (Part 2)	Non-destructive testing of concrete - Methods of test: Part 2 Rebound hammer
SP 23 (S & T)	Handbook on concrete mixes (based on Indian Standards)
SP 24 (S & T)	Explanatory handbook on Indian Standard Code for plain and reinforced concrete
SP 33 (S & T)	Handbook on timber engineering
SP 34 (S & T)	Handbook on concrete reinforcement and detailing
	<b>Door and Windows (Wood And Metal)</b>
208	Door handles

303	Plywood for general purposes
399	Classification of commercial timbers and their zonal distribution
401	Code of practice for preservation of timber
419	Putty, for use on window frames
1003 (Part 1)	Timber panelled and glazed shutters: Part 1 Door shutters
1003 (Part 2)	Timber panelled and glazed shutters: Part 2 Window and ventilator shutters
1038	Steel doors, windows and ventilators
1081	Code of practice for fixing and glazing of metal (steel and aluminum) doors, windows and ventilators
1328	Veneered decorative plywood
1658	Fibre hardboards
1659	Block boards
2191 (Part 1)	Wooden flush door shutters (cellular and hollow core type): Part 1 Plywood face panels
2191 (Part 2)	Wooden flush door shutters (cellular and hollow core type): Part 2 Particle board and hard board face panels
2202 (Part 1)	Wooden flush door shutters (solid core type): Part 1 Plywood face panels
2202 (Part 2)	Wooden flush door shutters (solid core type): Part 2 Particle board and hard board face panels
2553 (Part 1)	Safety glass: Part 1 General purpose
2835	Flat transparent sheet glass
3087	Wood particle boards (medium density) for general purposes
3097	Veneered particle boards
3129	Low density particle boards
3348	Specification for Fibre insulation boards
3478	Specification for high density wood particle boards
3548	Code of practice for glazing in building
1361	Steel windows for industrial buildings, ventilation blinds for windows
4021	Timber door, window and ventilator frames

1826	Venation blinds for windows
1948	Aluminum doors, windows and ventilators
4020 (Parts 1-16)	Door shutters, method of test
4351	Specification for steel door frames
4913	Code of practice for selection, installation and maintenance of timber doors and windows
4962	Specification for wooden side sliding doors
5187	Flush bolts
5437	Figured, rolled and wired glass
5509	Fire retardant plywood
5539	Specification for preservative treated plywood
6198	Legged, braced and battened timber door shutters
6248	Specification for metal rolling shutters and rolling grills
6534	Guiding principles of grading and inspectiopn of timber
7452	Hot-rolled steel sections for doors, windows and ventilators
12896	Classification of Indian timbers for door and window shutters and frames
SP 21 (S & T)	Summarise of Indian Standards for building materials
SP 33 (S & T)	Handbook on timber engineering
	<b>Steel Construction</b>
104	Ready mixed paint, brushing, zinc chrome, priming
123	Ready mixed paint, brushing, finishing, semi-gloss, for general purposes to Indian Standard Colours No.445, 446, 448, 449, 451, 473 and red oxide
800	Code of practice for general construction in steel
801	Code of practice for use of cold formed light gauge steel structural members in general building construction.
811	Cold formed light gauge structural steel sections
1024	Code of practice for use of welding in bridges and structures subject to dynamic loading

1030	Carbon steel castings for general engineering purposes
1148	Hot-rolled rivet bars (up to 40 mm dia) for structural purposes
1149	High tensile steel rivet bars for structural purposes
1161	Steel tubes for structural purposes
1977	Structural steel (ordinary quality)
2062	Steel for general structural purposes
2074	Ready mixed paint, air drying, red oxide-zinc chrome, priming
	<b>White Washing, Colour Washing and Painting of Masonry, Concrete and Plaster Surfaces (Calcareous Surfaces)</b>
44	Iron oxide pigments for paints
55	Ultramarine blue for paints
109	Ready mixed paint, brushing, priming, plaster, to Indian Standard Colour No. 361 and 631 White and off white
133	Enamel, interior: (a) undercoating, (b) finishing
158	Ready mixed paint, brushing, bituminous, black lead-free, acid alkali and heat resisting
168	Ready mixed paint, air drying, for general purpose
427	Distemper, dry, colour as required
428	Distemper, oil emulsion, colour as required
2395 (Part 1)	Code of practice for painting concrete masonry and plaster surfaces : Part 1 Operation and workmanship
2395 (Part 2)	Code of practice for painting concrete masonry and plaster surfaces : Part 2 Schedule
2932	Enamel, synthetic, exterior (a) undertaking (b) finishing
2933	Enamel, exterior (a) undertaking (b) finishing
3384	Specification for bitumen primer for use in waterproofing and damp proofing
5410	Cement paint
5411 (Part 1)	Plastic emulsion paint: Part 1 for interior use
5411(Part 2)	Plastic emulsion paint: Part 2 for exterior use

6278	Code of practice for whitewashing and colour washing
9862	Ready mixed paint, brushing, bituminous, black lead-free, acid alkali, water and chlorine resisting
	<b>Painting, Varnishing and Allied Finishes (Wood And Metals)</b>
102	Ready mixed paint, brushing, red lead, non settling, painting
110	Ready mixed paint, brushing, Grey filler, for enamels for use over primers
117	Ready mixed paint, brushing, finishing exterior, semi-gloss for general purposes to Indian Standard Colours No. 101 to 104, 169,174,216, 217, 219, 275, 278, 280,281, 283, 352 to 354, 358 to 365, 384 to 388, 397, 410, 442 to 444
124 (Part 3)	Ready mixed paint, brushing, finishing exterior, semi-gloss for general purposes: Part 3 (superseding IS 119)
127	Ready mixed paint, brushing, finishing exterior, semi-gloss for general purposes white
128	Ready mixed paint, brushing, finishing exterior, semi-gloss for general purposes black
133	Enamel, interior: (a) undercoating, (b) finishing
137	Ready mixed paint, brushing, matt or eggshell flat, finishing, interior to Indian Standard colour as required
144	Ready mixed paint, brushing, petrol resisting, air-drying, for interior painting of tanks and container, red oxide (colour unspecified)
158	Ready mixed paint, brushing, bituminous, black lead-free, acid alkali and heat resisting
198	Varnish gold size
207	Gate and shutter hooks and eyes
337	Varnish, finishing interior
348	French polish
401	Code of practice for preservation of timber
423	Plastic wood for joiners filter
524	Varnish, finishing, exterior, synthetic, air drying
525	Varnish, finishing, exterior and general purposes
1477 (Part 1)	Code of practice for painting of ferrous metals in buildings: Part 1 Pretreatment

1477 (Part 2)	Code of practice for painting of ferrous metals in buildings: Part 2 Painting
2338 (Part 1)	Code of practice for finishing of wood and wood based materials: Part 1 Operations and workmanship
2338 (Part 2)	Code of practice for finishing of wood and wood based materials: Part 2 Schedules
2339	Aluminium paint for general purposes, in dual container
2554 (Part 1&2)	Code of practice for painting of non ferrous metals in buildings
2524 (Part 1)	Code of Practice for painting of non-ferrous metals in buildings; Part 1 Pretreatment
2524 (Part 1)	Code of Practice for painting of non-ferrous metals in buildings; Part 2 Painting
2932	Enamel, synthetic, exterior (a) undertaking (b) finishing
2933	Enamel, exterior (a) undertaking (b) finishing
3531	Glossary of terms relating to corrosion of metals
3536	Ready mixed paint, brushing, wood primer, pink
3537	Ready mixed paint, finishing interior, for general purposes, to Indian Standard Colours No. 101, 216, 217, 219, 275, 281, 352, 353, 358 to 361, 363, 364, 388, 410, 442, 444, 628, 631, 632, 634, 693, 697, white and black
3539	Ready mixed paint, undercoating for use under oil finishes to Indian Standard Colours, as required
3585	Ready mixed paint, aluminium, brushing priming water resistant, for woodwork
SP 27(S & T) 1987	Handbook on method of measurement of buildings works (first revision)
IS 1200 (Part 2) 1974	method of measurement of building and engineering works : Part2 concrete works (third revision) (Amendment No.2)
IS 1200 (Part 3) 1976	Method of measurement of building and civil engineering works: Part 3 brickwork(third revision)
IS 1200 (Part 4) 1976	Method of measurement of building and civil engineering works: Part 4 stone masonry (third revision)

IS 1200 (Part 5) 1982	Method of measurement of building and civil engineering works: Part 5 form work (third revision) (Amendment No.1)
IS 1200 (Part 6) 1974	Method of measurement of building and civil engineering works: Part 6 refractory work(second revision) (Amendment no.2)
IS 1200 (Part 7) 1976	Method of measurement of building and civil engineering works: Part 7 hardware(second revision)
IS 1200 (Part 8) 1993	Method of measurement of building and civil engineering works: Part 8 steelwork and iron work(fourth revision)
IS 1200 (Part 9) 1973	Method of measurement of building and civil engineering works: Part 9 roof covering (including cladding) (second revision) (Amendment No.1)
IS 1200 (Part 10) 1973	Method of measurement of building and civil engineering works: Part 10 ceiling and linings (Second revision) (Amendment No.2)
IS 1200 (Part 11) 1977	Method of measurement of building and civil engineering works: Part 11 paving, floor finishes dado and skirting (third revision) (Amendment No.1)
IS 1200 (Part 12) 1976	Method of measurement of building and civil engineering works: Part 12 plastering and pointing (third revision)
IS 1200 (Part 13) 1994	Method of measurement of building and civil engineering works: Part 13 whitewashing, colour washing, distampering and painting of building surfaces (fifth revision)
IS 1200 (Part 14) 1984	Method of measurement of building and civil engineering works: Part 14 glazing (third revision)
IS 1200 (Part 15) 1987	Method of measurement of building and civil engineering works: Part 15 painting, polishing, varnishing etc (fourth revision)
IS 1200 (Part 16) 1979	Method of measurement of building and civil engineering works: Part 16 laying of water and sewer lines including appurtenant items (third revision)
IS 1200 (Part 17) 1985	Method of measurement of building and civil engineering works: Part 17 road work including air field pavements (third revision)
IS 1200 (Part 18) 1974	Method of measurement of building and civil engineering works: Part 18 demolition and dismantling(third revision)

IS 1200 (Part 19) 1981	Method of measurement of building and civil engineering works: Part 19 water supply, plumbing and drains (third revision)
IS 1200 (Part 20) 1981	Method of measurement of building and civil engineering works: Part 20 laying of gas and oil pipelines (third revision)
IS 1200 (Part 21) 1973	Method of measurement of building and civil engineering works: Part 21 wood-work and joinery(second revision) (Amendment No.1)
IS 1200 (Part 22) 1982	Method of measurement of building and civil engineering works: Part 22 materials
IS 1200 (Part 23) 1988	Method of measurement of building and civil engineering works: Part 23 piling (fourth revision)
IS 1200 (Part 24) 1983	Method of measurement of building and civil engineering works: Part 24 well foundations (third revision) (Amendment No.1)
IS 1200 (Part 25) 1971	Method of measurement of building and civil engineering works: Part 25 tunneling (second revision) (Amendment No.4)
IS 1200 (Part 26) 1987	Method of measurement of building and civil engineering works: Part 26 Acid resistant lining
IS 1200 (Part 27) 1992	Method of measurement of building and civil engineering works: Part 27 earthwork done by mechanical appliances.
IS 3861:2002	Method of measurement of plinth, carpet and rentable area of buildings (second revision) (Amendment No.3)
IS 1200 (Part 1) 1992	Method of measurement of building and civil engineering works: Part 1 earthwork (fourth revision)
IS 1200 (Part 28) 1992	Method of measurement of building and civil engineering works: Part 28 Sound insulation works
IS 875(Part 1)	Code of practice for dead loads (other than earthquake) for Buildings & Structures.
IS 875(Part 2)	Code of practice for . Imposed loads

IS 875(Part 3)	Code of practice for wind loads
IS 875(Part 4)	Code of practice for snow loads
IS 875(Part 5)	Code of practice for Special loads & combinations
IS 1893 (Part 1)-2002	Criteria for earthquake resistant design of structure.
IS 13920-1993	Ductile detailing of reinforced concrete structures subjected to seismic forces
IS 2911(Part 4) 1985	Code of practice for design & Construction of pile foundation (Load Test on piles)
IS 2911(Part 1)	Sec 2-1979 Code of practice for design & construction of pile foundations (Bored Cast-in Situ pile).
SP 34 (S&T) 1987	Handbook on Concrete reinforcement and detailing.
SP 22 (S&T) 1982	Explanatory handbook on codes for earthquake engineering(IS 4326:1976)
SP 7	National Building (Code-2005) of India.
SP 16(S&T) 1980	Design aids for reinforced concrete to IS 456:1978
IS 1786:1985 & 2008	Specification for High Strength deformed steel bars and wires for concrete reinforcement (third revision) (superseding IS 1139-1966) (Amendment No.1)
SP 24(S&T) 1983	Explanatory handbook on Indian Standard Code of practice for plain and reinforced concrete(IS 456:1978)

# CORPORATION OF CHENNAI

Storm water drain Department.



## VOLUME -II

### PRICE BID DOCUMENTS

**S.W.D.No. B5/283/2010 – P.W.C.No. 3360**

**FOR THE WORK** Construction of Storm Water Drain of size 2mx2m along Esplanade road (Eastern side), N.S.C.Bose Road (North & South sides), Broadway bus stand (Western side) and Frazer Bridge Road from Dr.Ambedkar law college road/Kuralagam opposite to Frazer Bridge Road in Dn.49,Zone-III.

Superintending Engineer

Commissioner

*Storm water drain Department*

*Corporation of Chennai*

Price: Rs.16,875

**SECTION VIII**  
**FINANCIAL BID**

**CORPORATION OF CHENNAI**  
**STORM WATER DRAIN DEPARTMENT**

**PART - II**

**NAME OF THE WORK: Construction of Storm Water Drain of size 2mx2m along Esplanade road (Eastern side), N.S.C.Bose Road (North & South sides), Broadway bus stand (Western side) and Frazer Bridge Road from Dr.Ambedkar law college road/Kuralagam opposite to Frazer Bridge Road in Dn.49,Zone-III.**

Sl. No	Quantity		Description of work	Rate Rs.P.  (Both in Figures and Words)	per	Amount Rs.P.
1	3344.78	Sq.m	Picking existing black top surface - 2 to 10cm thick		Sq.m	
2	8671.08	Cum	Earth work excavation for foundation in all kinds of soils in varying depths including dismantling any masonry and roots met within foundation and shoring planks, baling water if necessary including clearing and levelling the site etc., and excluding refilling, complete with an initial lead of 10m and lift of 2m.The earth work for Storm Water drain work to be carefully done with out damaging under ground services.		Cum	
3	451.65	Cum	Cement concrete work 1:4:8 (1 Cement,4 River sand and 8 blue granite broken stone jelly 40mm gauge) including consolidation curing, etc., complete for foundation etc., up to basement.		Cum	
4	11479.03	Sq.m	Supplying and erecting centering for sides and soffits including supports and shuttering up to 3m high for plane surface such as side slabs of RCC boxing and similar vertical RCC slab, etc., with all cross bracings using mild steel sheets of size 90x60cm and 10gauge stiffened with welded mild steel angles of size 25x25x3mmfor boarding laid over Oak (country wood) joists of size 10x6.5cm spaced at about 90cm centre to centre		Sq.m	

			and supported by casuarina props of 10 to 13cm dia spaced at 75cm centre to centre etc., complete.			
5	2112.10	Cum	Providing vibrated reinforce controlled Ready-mix cement concrete M 20 design mix (to be designed with the material to be used) using 20mm ISS size HBG metal including cost and conveyance of all materials to site including cement, handling charges for the same mixing including placing the pump in position, erecting the horizontal and vertical pipe line to the required distance and height, laying, compacting, providing cover blocks finishing smooth the surface including vibration charges curing concrete all other tools, and plants employed and all other incidental charges etc., complete (Excluding cost and fabrication charges of steel and form work) confirming to MORTH Specifications , as directed by the Engineer. (Source MORTH – Standard Data book for Analysis of Rates, I Revision, Page 472 & 473, Case II)		Cum	
6	280025.46	Kg	Supplying ribbed tor steel rods upto 16mm dia including, cutting, cranking, fabricating, assembling, laying in exact position, tying with soft steel wire 16 or 18 BWG etc., complete for all RCC Works.		Kg	
7	109.00	Cum	Plain cement concrete 1:1.5:3 (1 cement, 1.5 river sand and 3 stone jelly 12 to 20mm gauge) including consolidating, curing, etc., complete up to basement.		Cum	
8	9.31	Cum	Cement concrete work 1:1.5:3 (1 cement, 1.5 river sand and 3 blue granite broken stone jelly 12 to 20mm gauge) cast-in-situ including consolidation, curing, etc. ,for all RCC works up to basement.		Cum	
9	1602.30	Cum	Refilling with excavated earth in regular layers of 15cm thick each including carefully ramming, watering, consolidating etc., complete for		Cum	

			foundation and basement.			
10	7068.78	Cum	Carting away the surplus earth and debris to dumping ground in the Corporation land as directed during execution.  12 km lead		Cum	
11	119.00	Nos.	Construction of Inspection Chamber of size 2M x0.6MX Flush with 24" FRC Manhole door with frame of Manufacturing, supplying and fixing SFRC manhole cover with frame 600mm dia clear opening heavy duty as per IS:12592/2002. The frame & cover shall bear a non fracture load of 20MT for 30seconds with frame height of 165mm, cover height 90mm, Bearing (Seating area of cover)75mm with Hot Dip Galvanizing Hook of cover 16mm, frame edge protection flat of size 25 x 3mm exposed surface of M.S. rings shall be painted with anti corrosive bitumastic paint. The approximate weight of cover & frame 210kg. Fixing of SFRC doors and Frames with flush levels.		No.	
12	69.00	Nos.	Construction of Inspection Chamber of size 2MX0.6MX Flush with FRC door and with Gully Gratings of Manufacturing, supplying and fixing SFRC gully gratings 600mm dia with clear width-12 holes of 50mm dia. The frame & cover shall bear a non fracture load of 5MT for 30seconds with frame height of 165mm (shall confirm IS: 12592/2002), cover height 90mm, Bearing (Seating area of cover)75mm with Hot Dip Galvanizing Hook of cover 16mm, frame edge protection flat of size 25 x 3mm exposed surface of M.S. rings shall be painted with anti corrosive bitumastic paint. The approximate weight of cover & frame 210kg. Fixing of SFRC doors and Frames with flush levels.		No.	

13	114.94	M	Supplying and fixing of PVC pipe of 110mm dia (PVC with ISI Monogram with working pressure of 4Kg/Cm2) for chute pipes		M	
14	57.00	M	Supplying and fixing of PVC pipe of 110mm dia (PVC with ISI Monogram with working pressure of 6Kg/Cm2) for replacing sanitary pipes		M	
15	57.00	M.	Supplying and fixing of PVC pipe of 160mm dia (PVC with ISI Monogram with working pressure of 4Kg/Cm2) for Inlet Connections.		M	
16	57.00	M.	Supplying and jointing 20mm dia PVC pipe, including cutting, threading and jointing with necessary specials fixing to wall with clamps and screws including making holes in the wall or drilling holes in roof and making good the wall or roof after fixing with necessary scaffolding etc., complete.		M	
17	495.04	Kg	Supplying and fixing of M.S. Angle of size ISA 75mm x 75mm x 6mm. Provision for service departments cables laying.		Kg	
<b>TOTAL BID PRICE (in figures and in words)</b>						

**Note:**

- (1) Item for which no rate or price has been entered in will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the **Bill of Quantities**
- (2) Unit rates and prices shall be quoted by the bidder in Indian rupee
- (3) Where there is a discrepancy between the rate in figures and words, lesser of the two will govern.
- (4) **Bill of quantities should be submitted separately as a Financial Bid.**

SECTION IX  
SECURITY FORMS

**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

## PERFORMANCE BANK GUARANTEE

To: \_\_\_\_\_ [name of Employer]  
\_\_\_\_\_ [address of Employer]

WHEREAS

\_\_\_\_\_  
[name and address of Contractor] (hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. \_\_\_\_\_ dated \_\_\_\_\_ to execute \_\_\_\_\_ [name of Contract and brief description of Works] (hereinafter called "the Contract");

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

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

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of \_\_\_\_\_ [amount of guarantee] \_\_\_\_\_<sup>1</sup> [in words], such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of \_\_\_\_\_ [amount of guarantee]<sup>1</sup> as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

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

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

This guarantee shall be valid until ..... (i.e.) 28 days from the date of expiry of the Defects Liability Period.

Signature and seal of the guarantor \_\_\_\_\_

Name of Bank \_\_\_\_\_

Address \_\_\_\_\_

Date \_\_\_\_\_

- 1 An amount shall be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract and denominated in Indian Rupees from any Nationalised/ Scheduled Bank..
  
- 2 Bank Guarantee Validity date should be mentioned specifically.  
(whole period of contract + Defects liability period + 28 days)

**SAMPLE FORMAT FOR EVIDENCE OF ACCESS TO OR AVAILABILITY OF CREDIT FACILITIES –\*            CLAUSE 3.2 [g] OF ITB**

**BANK CERTIFICATE**

This is to certify that M/s. .... is a reputed company with a good financial standing.

If the contract for the work, namely ..... (Name of work) is awarded to the above firm, we shall be able to provide overdraft/credit facilities to the extent of Rs. .... to meet their working capital requirements for executing the above contract.

\_\_\_ Sd. \_\_\_

Name of Bank

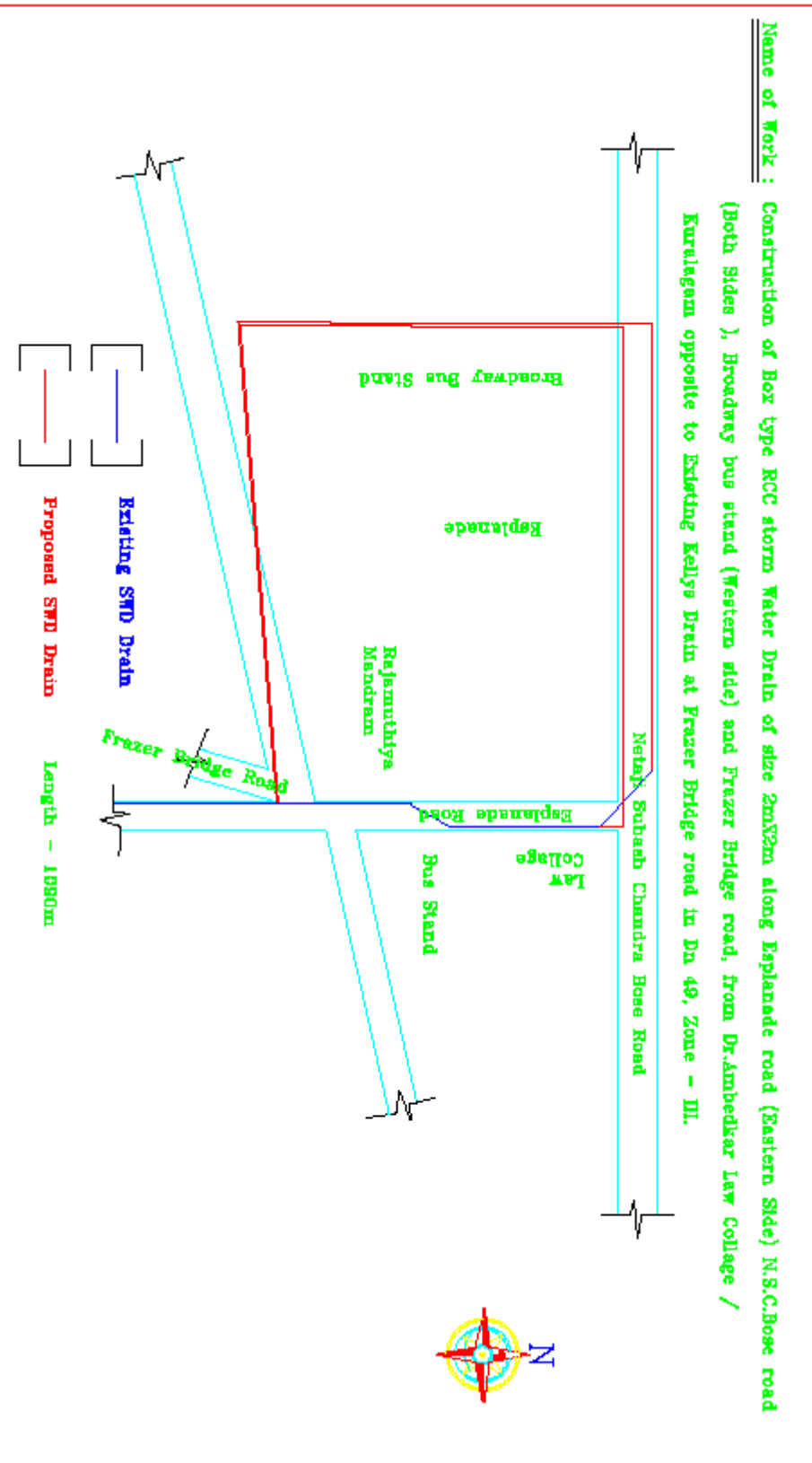
Senior Bank Manager

Address of the Bank

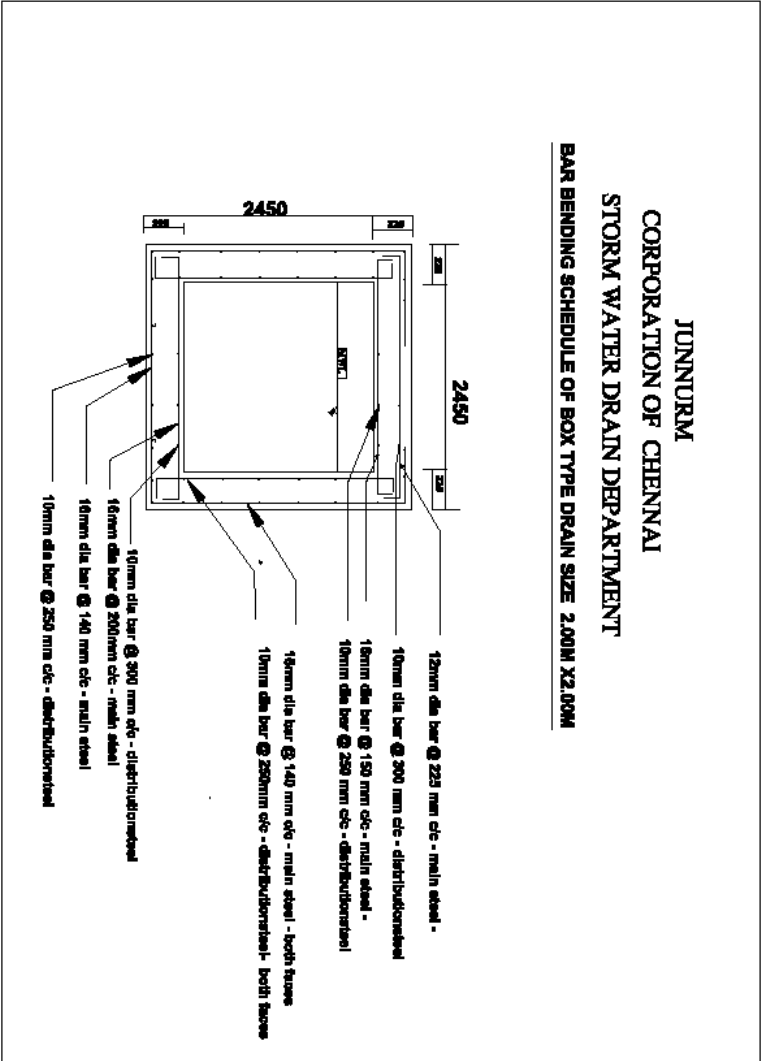
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**Name of Work :** Construction of Box type RCC storm Water Drain of size 2mX2m along Esplanade road (Eastern Side) N.S.C.Bose road (Both Sides ), Broadway bus stand (Western side) and Frazer Bridge road, from Dr.Ambedkar Law College / Kurelegem opposite to Existing Kellys Drain at Frazer Bridge road in Dn 49, Zone - III.



**JUNNDRM  
CORPORATION OF CHENNAI  
STORM WATER DRAIN DEPARTMENT  
BAR BENDING SCHEDULE OF BOX TYPE DRAIN SIZE 2.00M X2.00M**



## Model Drawing for Inspection Chamber

