TENDER REFERENCE NO: - WBIDC/IP/HIP/IDW (Part –A)/2023/2(2nd Call)

NOTICE INVITING E-TENDER

FOR

CONSTRUCTION OF BOUNDARY WALL & MAIN ENTRANCE GATE, INTERNAL ROAD NETWORK SYSTEM, STORM WATER DRAINAGE SYSTEM, WASTE WATER DRAINAGE SYSTEM AT HALDIA INDUSTRIAL PARK

AT

HALDIA, PURBA MEDINIPUR, WEST BENGAL

JULY – 2023

WEST BENGAL INDUSTRIAL DEVELOPMENT CORPORATION LIMITED
"Protiti",
23, Abanindranath Tagore Sarani, (Camac Street)
Kolkata - 700017,
West Bengal, India

Email: wbidc@wbidc.com
visit us at: www.wbidc.com

DISCLAIMER

The information contained in this Notice Inviting e-Tender(NIeT) document or subsequently provided to Bidder(s), whether verbally or in documentary form by or on behalf of West Bengal Industrial Development Corporation Limited (WBIDC), is provided to Bidder(s) on the terms and conditions set out in this NIeT document and any other terms and conditions subject to which such information is provided. This NIeT document is not an agreement and is neither an offer nor invitation to any other party. The purpose of this NIeT document is to provide interested Bidder(s) with information that may be useful to them to prepare their proposal including financial offers (the "Bid") pursuant to this NIeT Document. This specification includes statements, which reflect various assumptions; assessments arrived at by WBIDC in relation to the project. Such assumptions, assessments and statements do not purport to contain all the information each Bidder(s) may require. This NIeT document may not be appropriate for all persons, and it is not possible for WBIDC and their employees or advisors to consider the investment objectives, financial situation and particular needs of each Bidder(s) who reads or uses the NIeT document. The assumptions, assessments, statements and information contained in this NIeT document, may not be complete, accurate, adequate or correct. Each Bidder(s) should, therefore, conduct its own investigations and analysis, and should check the accuracy, adequacy, correctness, reliability and completeness of the assumptions, assessments, statements and information in this NIeT document and obtain independent advice from appropriate sources. Information provided in this NIeT document to the Bidder(s) is on a wide range of matters, some of which depends upon interpretation of law. The information given is not an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of law. WBIDC, its employees, advisors and technical Consultant/s accepts no responsibility for the accuracy or otherwise for any interpretation or opinion of law expressed herein. WBIDC and their employees, advisors and technical Consultant/s make no representation or warranty and shall incur no liability under any law, statute, rules or regulations or tort, principles of restitution or unjust enrichment or otherwise for any loss, damages, cost or expense which may arise from or be incurred or suffered on account of anything contained in this NIeT document or otherwise, including the accuracy, adequacy, correctness, reliability of completeness of the NIeT document and assessment, assumption, statement or information contained therein or deemed to form part of this NIeT document or arising in any way in this Bid stage. WBIDC, its employees, advisors and technical Consultant/s also accepts no liability of any nature whether resulting from negligence or otherwise howsoever caused arising from reliance of any Bidder(s) upon the statements contained in the NIeT document. WBIDC may at their absolute discretion, but without being under any obligation to do, so update, amend or supplement the information, assessment or assumptions contained in this NIeT document.

The issue of this NIeT document does not imply that WBIDC is bound to select a Bidder(s) or to appoint the preferred Bidder(s) for the project and WBIDC reserves the right to reject all or any of the Bidder(s) or Bid without assigning any reason. The Bidder(s) shall bear all its costs associated with or relating to the reparation and submission of its Bid including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by WBIDC or any other costs incurred in connection with or relating to its Bid. All such costs and expenses will remain with the Bidder(s) and WBIDC shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a Bidder(s) in preparation or submission of the Bid regardless of the conduct or outcome of the Bidding Process.

TABLE OF CONTENTS

SECTION DESCRIPTION

SECTION-1

- **LIST OF IMPORTANT DATES**

- **PRESS NOTICE**

- **NOTICE INVITING e-TENDER (NIeT)**

List of Important Dates of Bids

Name of work:

Construction of boundary wall & main entrance gate, internal road network system, storm water drainage system, waste water drainage system at Haldia Industrial Park.

Date and Time Schedule:

Sl. No.	Particulars	Date & Time
1	Date of uploading of N.I.T. & other Documents (online) (Publishing Date)	26.07.2023
2	Documents download/sell start date (Online)	26.07.2023 at 18.00Hrs
3	Pre Bid Meeting	31.07.2023 at 14.00 Hrs
4	Bid submission start date (On line)	01.08.2023 at 10:30 Hrs
5	Bid Submission closing (On line)	25.08.2023 at 15:00 Hrs
6	Bid opening date for Technical Proposals (Online)	28.08.2023 after 11:00 Hrs
7	Date of uploading list for Technically Qualified Bidder(online)	To be notified later
8.	Date for opening of Financial Proposal (Online)	To be notified later
9.	Overall completion period for work	18 calendar months (545 days) excluding 36 months defect liability period. (as specified bid document)
10.	Bid validity	120 (One hundred Twenty) Days from the last date of bid submission

Press Notice

E-Tender Reference No.: WBIDC/IP/HIP/IDW (Part –A)/2023/2(2nd Call)

West Bengal Industrial Development Corporation (WBIDC) proposes to selection of contractor for Construction of Boundary Wall & Main Entrance Gate, Internal Road Network System, Storm Water Drainage System, Waste Water Drainage System of Haldia Industrial Park including thirty six (36) months defect liability period, at Haldia, Purba Medinipur, West Bengal.

Sl No.	SUBJECT	DESCRIPTION
1.	Place	Haldia, Purba Medinipur, West Bengal, India
2.	Name of work	Construction of boundary wall & main entrance gate, internal road network system, storm water drainage system, waste water drainage system at Haldia Industrial Park.
3.	Overall Time allowed for completion	18 (eighteen) calendar months (545 days) excluding 36 months defect liability period. (as specified bid document)
4.	Document download	The total Tender Document can be downloaded from the e-procurement portal https://wbtenders.gov.in/nicgep/app from 26.07.2023 at 18:00 Hrs.
5.	Last date and time for submission of Online Tender	25.08.2023; 15:00 hrs

NOTICE INVITING e-TENDER

The Managing Director, West Bengal Industrial Development Corporation Limited (WBIDCL) invites proposal through e-tenders from renowned and eligible Contractors for undertaking the following work:

Sl. No.	SUBJECT	DESCRIPTION
1	Name of work	Construction of boundary wall & main entrance gate, internal road network system, storm water drainage system, waste water drainage system at Haldia Industrial Park. E-Tender Reference No.: **WBIDC/IP/HIP/IDW (Part –A)/2023/2(2nd Call)**
2	Location of work	Haldia, Purba Medinipur, West Bengal, India
3	Estimated cost of the Work	Rs. 46,93,47,358.00 (Rupees forty six crore ninety three lakh forty seven thousand three hundred fifty eight only). This estimate has been prepared based on current PWD schedule and considering 18 % GST and 1% LWC.
4	Time of completion	18 (Eighteen) calendar months (545 days) excluding thirty six (36) months defect liability period. (as specified bid document)
5	Qualification criteria	The bidder must be a reputed and reliable construction company having the following credentials: a) Intending tenderers should produce credentials of single completed work comprising of Road Network, RCC Frame work & RCC Drain of the minimum value of 30% (thirty percent) of the estimated amount during 5 (five) years prior to the date of issue of the tender notice for which the bid is invited for Govt. /semi Govt. /Statutory bodies /Corporates / Reputed Organizations. The works have to be executed as prime Contractor. The work must be under a single contract anywhere in India with State or Central Government / Autonomous body/ Corporates/ Reputed organization; or, b) Intending tenderers should produce credentials of 2 (two) completed work comprising of Road Network, RCC Frame work & RCC Drain of the minimum value of 25% (twenty five percent) of the estimated amount during 5 (five) years prior to the date of issue of the tender notice for which the bid is invited for Govt. /semi Govt. /Statutory bodies / Corporates / Reputed Organizations. The works have to be executed as prime Contractor. The work must be under a single contract anywhere in India with State or Central Government / Autonomous body/ Corporates/ Reputed organization. c) Certificates for work issued by Executive Engineer/ Divisional Engineer / Competent Authority to be produced clearly stating that the work entrusted to him has been successfully completed. Having no adverse measure (Punishment, Hon'ble Court's, Verdict) taken by client, if any, by any authority/ client on any account against their organization/ firm for any project or similar nature or otherwise executed during last 5(five years working. d) A declaration to that effect will have to be submitted in the form of Affidavit in non-judicial stamp paper duly Notarized. e) Bidder should not be black listed with any Govt. /semi Govt. /Statutory bodies /Corporates/ Organizations. f) The bidder shall have a minimum average yearly turnover of at least Rs. 6 Crores for the last five years. g) The bidder should be a profit making organization consistently for the last five financial years. h) The bidder must have an organizational set up consisting of qualified engineers.

Sl. No.	SUBJECT	DESCRIPTION
8	Availability of Tender Documents	Tender documents will be available w.e.f 26.07.2023 at 18:00 Hrs from the e-procurement portal www.wbtenders.gov.in
9	Site Visit	Bidders are advised to visit the site before submission of bid.
10	Submission of tender	Bidding documents, digitally signed by authorized person of the bidder must be uploaded on line from after 01.08.2023 at 10.30 hrs. and must be uploaded on or before 25.08.2023 at 15-00 Hrs.(as per server clock).
11	Procedure for submission of tender	Bidders are requested to submit their tenders through e-procurement portal https://wbtenders.gov.in/nicgep/app. If required, the bidders may be requested to submit the hard/ original copy of the technical bid at the time of verification of the documents.
12	Date, time and venue of opening of Technical Bid	28.08.2023 at Time: 11-00 hours (as per server clock). Place: WBIDC Office board Room
13	Date of Opening of Financial Bid	To be notified later.
14	Validity of the bid	120(One Hundred Twenty) Days from the last date of bid submission
15	Work Order	Work Order will be issued only after administrative approval and receiving of fund.
16	Taxation	Taxes applicable if any in respect of this contract whether in vogue or may be imposed in future shall be payable by the contractor and WBIDC will not entertain any claim what so ever in this respect. However any benefit due to reduction of taxes etc. may be passed onto WBIDC.

NOTE: Other details can be seen in the bidding document. WBIDC reserves to itself the right to reject any or all the tenders received without assigning any reason thereof.

Section – 2

Background Information

1.1 Background

West Bengal Industrial Development Corporation Limited (WBIDC) is setting up a modern Industrial Park over approx. 306.96 acres at Haldia in Purba Medinipur District, West Bengal. Haldia industrial belt, located on the Southwest of Kolkata near the mouth of the Hooghly River is a favorable destination for industries due a major river port and availability of industrial infrastructure. The Haldia Township is bordered by the Haldi River an offshoot of the Ganges River. The industrial city has several major projects, like Mitsubishi Chemicals Ltd.,

South Asian Petrochemicals Ltd, Indian Oil Corporation Limited (IOCL), Exide, Shaw Wallace, Tata

Chemicals, Haldia Petrochemicals, Hindustan Lever Limited etc.

It is well connected with road and railway. The National Highway 41 connects the port city with National

Highway 6 (part of Golden Quadrilateral) at Kolaghat. Haldia Dock Complex, the country's 5th largest port with all modern facilities for industrial growth is close to its doorstep. Haldia port is connected with the broad-gauge line of the South-Eastern Railways. Sufficient power is available for the prospective industries at the park.

1.2 Details of the Park

- The industrial park is spread over approx. 306.96 acres of land at Haldia, under District Purba Medinipur.
- The project site is well connected through roads. The National Highway 41 connects the port city with
- National Highway 6 (part of Golden Quadrilateral) at Kolaghat. From Kolaghat NH-6 connects Orissa, Jharkhand, Kharagpur, Bankura and Purulia and also Durgapur, through NH-34 to North Bengal, Bangladesh via Petrapole and Bhojadanga. A State Highway also connects Haldia with Kolaghat via Tamluk town which is the district headquarters as an alternate connectivity.
- Haldia port is connected with the broad-gauge line of the South-Eastern Railways.
- The Netaji Subhash Chandra Bose International Airport, Kolkata is 133 km from site
- The park is within the Haldia Industrial Belt.
- Haldia Dock Complex, the country's 5th largest port with all modern facilities for industrial growth is close to its doorstep.

Section - 3

Instructions to Bidders (ITB)

A. General

1. Scope of Bid

1.1 The Employer –"Chairman & Managing Director, West Bengal Industrial Development Corporation Limited" invites sealed e-tenders for Construction of Boundary Wall & Main Entrance Gate, Internal Road Network System, Storm Water Drainage System, Waste Water Drainage System at Haldia Industrial Park.

1.2 The successful Bidder will be expected to complete the Works within **18 (eighteen) calendar months (545 days) from the date of issue of the Notice to proceed with the work or Work Order**. The thirty six **(36) months defect library period to be** counted from the date of successful completion of the work. The necessary manpower needed shall be provided by the Contractor during the defect library period. No extra claim shall be entertained for this purpose.

1.3 The intending tenderers should make them thoroughly acquainted in the prevailing conditions of the site, facilities and difficulties and together information which might influence in making the offers. They should study all the conditions and information included in the tender documents and gets these verified from actual inspection of site and collect additional information as may be necessary by them.

1.4 Extra claims or any concession on the ground of insufficient data or information and absence of knowledge of conditions prevailing at situation arising during the execution of the work shall not be entertained

1.5 Throughout these documents, the terms "bid" and "tender "and their derivatives (bidder / tenderer, bid/ tender, bidding /tendering, etc.) are synonymous.

1.6 The term ENGINEER will mean the authorized representative(s) from the Client who will overlook all the site activities.

2. Source of Funds

2.1 The Employer has decided to undertake the work envisaged in the contract and has provided funds for the same.

3. Invitation to Tender

3.1 The Tender Inviting Authority reserves the right to reject all the tenders or the lowest or any other tender which in the judgment of Tender Inviting Authority does not appear to be in its best interest, and the tender shall have no cause of action or claim against the Tender Inviting Authority or its officers, employees, successors or assignees for rejection of the tender.

ANY DEVIATION OF TECHNICAL SPECIFICATION AS WELL AS CONDITIONAL TENDER WILL NOT BE ACCEPTED. EVEN TENDER INVITING AUTHORITY WILL HAVE EVERY RIGHT TO CANCEL THE PARTICULAR OFFER AT ANY STAGE EVEN AFTER ISSUANCE OF ACCEPTANCE ORDER.

4. Pre-Bid Conference

4.1 A pre-bid conference is arranged in the office of WBIDC as per Time Schedule mentioned in the Notice. Bidders are advised to attend the same. Technical queries shall preferably be forwarded at least 2 days in advance before the pre-bid conference. Site visit should be undertaken by the bidders before the pre-bid conference.

5. Completeness of Offer

5.1 If any item or details of an item are not given in various specifications of the tender documents which are required essentially for the completion of the work, it should be included in the Contractor's offer so that the offer is complete in all respects. No claim for extra payment will be entertained on the plea that the specification for an item or equipment is not complete in all respect. It is the responsibility of the Tendered to make an offer for the Complete Project. The tenderer is to be guided by the spirit of the project and not by the wording of the specification.

6. Eligible Bidders

6.1 This Invitation for Bids is open to all eligible and renowned bidders who have previous experiences of successfully completing similar nature of Works.

Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices by the Central Government, the State Government or any public undertaking, autonomous body, authority whatever name called under the Central or the State Government.

6.2 All bidders shall upload all the information as requested in Section 4, Qualification Information along with the Technical Part and Form of Bid (Format given in Section 9) along with the financial part of the Bid Document

6.3 All bidders shall include the following information and documents with their bid in Section 4, Qualification Information:

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. Reports of the profit and loss statements and auditor's reports for the past 5 years.

c. Information regarding any litigation or arbitration during the last 5 years in which the Bidder is involved, the parties concerned, the disputed amount, and the matter.

d. Evidence of ownership of major items of construction equipment by providing a list of construction equipment and providing evidence of arrangement of possessing them on hire/lease/buying.

6.4 Bids from joint venture are not allowed.

Documentary evidence in support of the above should be submitted.

6.5 (a) each bidder must produce:

i. Copies of Income Tax Return of last Five years;

ii. An affidavit that the information furnished with the bid documents is correct in all respects; and

iii. Copy of Professional Tax clearance Certificate.

iv. Copy of PAN Card

(b) Each bidder must demonstrate:

i. Availability for construction equipment, either owned, or on lease or on hire, of the key equipment(s) including equipment's required for establishing field laboratory to perform the mandatory tests

ii. Availability of technical personnel for construction work of as stated above

6.6 Sub-Contractors' experience and resources shall not be taken into account in determining the bidder's compliance with the qualifying criteria.

6.7 Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have:

(i) Made misleading or false representations in the forms, statements, affidavits and attachments submitted in proof of the qualification requirements; and /or

(ii) Record of poor performance such as abandoning the works, not properly completing the contract, in ordinate delays incompletion, litigation history, or financial failures etc.

7. One Bid per Bidder

7.1 Each Bidder shall submit only one Bid for the work. A Bidder who submits more than one Bid will cause the proposals with the Bidder's participation to be disqualified.

8. Cost of Bidding

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

9. Site Visit

9.1 The Bidder, at his own cost, responsibility and risk, is encouraged to visit, examine and familiarize himself with the Site of Works and its surroundings including source of earth, water, road aggregates etc. and obtain all information that may be necessary for submission of the Bid for the work. The costs of visiting the Site shall be at the Bidder's own expense.

9.2 For site visitor for any clarifications relating to this Tender Document the bidder may contact the person (s) whose contact details are given below:

Mr. Soumitra Sen	Mr. Sourav Pal
Adv.(P), WBIDC	EA-IP, WBIDC
Phone No. 033-22553838	Phone No. 033-22553157
E-mail: soumitra.sen@wbidc.com	E-mail: sourav.pal@wbidc.com

B. Bidding Documents and Evaluation

1. Content of Bidding Documents

1.1. The tenders are to be submitted through online to the website stated in two folders at a time, one is Technical Proposal & the other is Financial Proposal before the prescribe date and time using the Digital Signature (DSC). The documents are to be uploaded virus scanned copy duly digitally signed. The documents will get encrypted.

1.2. PRE QUALIFICATION PROPOSAL

Technical Proposal:

a. Statutory Cover containing the following digitally signed documents:

1. NIeT & Drawings

2. EMD

b. Non Statutory cover containing the following digitally signed documents:

Sl. No.	Category Name	Sub category Description	Details
1.	Qualification Information	Section 4 of NIT	Form given in Section 4 is to be filled up, duly signed and stamped
2.	Certificate	Certificate	As per Clause 7.5 (a) Section 3 (a) The Copies of Income Tax Returns of last five years 2017-2018, 2018-2019, 2019-2020,2020-2021, 2021-2022; (b) An affidavit that the information furnished with the bid documents is correct in all respects. (c) Professional Tax clearance Certificate. (d) GST registration certificate. (e) Trade Licence (f) PAN Card (g) Audited balance sheets and Profit and Loss Account for the preceding five years 2017-2018, 2018-2019, 2019-2020,2020-2021, 2021-2022.
3.	Company Details	Company Details	(a) Name of the Organization (b) Address of the Organization (c) Year of Establishment (d) Status of the firm (Whether Company/Firm/Proprietary) (e) Name of Directors/ Partners/Proprietor. (f) Whether registered with the Registrar of Companies/ Registrar of Firms. If so, mention number and date.
4.	Credentials	Credential	Bidder should have at least one construction work comprising of Road Network, RCC Frame work & RCC Drain with minimum 30% of the estimated cost or two construction work comprising of Road Network, RCC Frame work & RCC Drain with minimum 25% of the estimated cost for which the bid is invited for Govt. /semi Govt. /Statutory bodies/ Corporates/ Reputed organization.
5.	Financial Information	P/L & Balance Sheets 2017-2018, 2018-2019, 2019-2020,2020-2021, 2021-2022.	a)All balance Sheets
6.	Declaration	Declaration1	Addenda issued in accordance with Clause Of IT Band /or Minutes of Pre-Bid Meeting Other important documents

Additional Information: Any additional information may be incorporated in NIeT.

Financial Proposal:

The Financial Proposal contains the following documents:

(i) Form of Bid as specified in Section 9;

(ii) Priced bill of quantities for items (filled in BOQ).

[Note: In case any discrepancy, the amount which is quoted in BOQ will be considered.]

N.B.: Submission of Statutory and Non Statutory covers are compulsory for acceptance of the bid.

1.3. The bidder is expected to examine carefully all instructions, conditions of contract, forms, terms and specifications, forms and drawings in the Bid Document. Failure to comply with the requirements of Bid Documents shall be at the bidder's own risk. Pursuant to clause E/4 hereof, bids, which are not substantially responsive to the requirement so the Bid Documents, shall be rejected.

2. Clarification of Bidding Documents and Pre-bid Meeting

2.1. Prospective Bidder requiring any clarification of the bidding documents may raise the query /queries at the Pre-bid Meeting. Copies of the Employer's response will be uploaded to the website, including a description of the inquiry, but without identifying its source.

2.2. The bidder or his authorized representative is invited to attend the pre-bid meeting on 31.07.2023 at WBIDC office at 14.00 HRS.

2.3. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage. Bidders are advised to attend the same. Technical queries shall preferably be forwarded at least 2 days in advance before the pre-bid conference.

2.4. The bidder is requested to submit any question in writing or by mail so as to reach the Employer not later than 48 hours (Two working days) before the meeting.

2.5. Minutes of the meeting, including the text of the questions raised (without identifying the source of the enquiry) and the responses given will be uploaded in the official website of WBIDCL. Any modifications of the bidding documents listed in this document of ITB, which may be commence as necessary result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to Clause of ITB and not through the minutes of the pre-bid meeting.

2.6. Non- attendance at the pre-bid meeting will not be cause for disqualification of a bidder.

3. Amendment of Bidding Documents

3.1. Before the deadline for submission of bids, the Employer may modify the bidding documents by uploading the addenda in the website.

3.2. Any addendum thus uploaded shall be part of the bidding documents

C. Preparation of Bids

1. Language of Bid

1.1. All documents relating to the Bid shall be in English.

2. Documents Comprising the Bid

2.1. The following documents, which are to be digitally signed on every page by the bidder and submitted with the technical bid, will be deemed to be part of the bid.

Section	Particulars
1	Notice inviting Tender
2	Instruction to the bidders
3	Qualification Information (Conditions of Contract)
4	Tender Drawings

3. Bid Prices

3.1. The Contract shall be for the whole Works, as described in Clause 1.1 of ITB, based on the priced Bill of Quantities submitted by the Bidder.

3.2. The quantities of the various items mentioned are approximate and may vary up to any extent or be deleted altogether. The quoted rates shall, however, remain firm and fixed for the total duration of the project. The Contractor, in his own interest, should get an indication of the probable extent of the work to be executed under any particular item in the schedule, before undertaking any preliminary and enabling work or purchasing bought-out components related to the work.

3.3. The rates quoted by the Contractor shall be deemed to be inclusive of all taxes of Central and State Governments, local bodies and authorities.

3.4. The rates and prices quoted by the Bidder shall be fixed for the duration of the Contract and shall not be subject to adjustment.

4. Currencies of Bid

4.1. The unit rates and the prices shall be quoted by the bidder entirely in Indian Rupees.

5. Bid validity

5.1. Bids shall remain valid for a period 120 (One hundred twenty) days after the dead line date for bid submission Specified in Clause of ITB. A bid valid for a shorter period shall be rejected by the Employer as non-responsive.

5.2. In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the bidders may extend the period of validity for a specified additional period. The request and the bidders 'responses shall be made in writing or by cable. A bidder agreeing to the request will not be required or

permitted to modify his bid, but will be required to extend the validity of the Bank Guarantee for a period of extension and in compliance with Clause C/6 of ITB in all respects.

6. Earnest Money Deposit

6.1. Earnest money of Rs. 25.00 lakhs (Rupees twenty five lakhs) to be submitted only through online during submission of bid.

6.2. The scanned copy of the earnest money details with duly stamped and signed must be uploaded at the time of submission of bid through e-tender. The bid stands cancelled in its entirety, if the EMD is not provided. No exemption regarding submission of EMD will not be entertained at any instant case.

6.3. Any bid not accompanied by an acceptable Earnest Money, shall be ejected by the Employer as non-responsive.

6.4. The Earnest Money of unsuccessful bidders will be returned automatically into their account.

6.5. The Earnest Money of the successful Bidder will be converted into initial security deposit and will be discharge after successful completion of the defect liability period after signed the Agreement and furnished the required Performance Security.

6.6. The Earnest Money may be forfeited:

a) If the Bidder withdraws the Bid after bid opening (technical bid) during the period of Bid validity.

b) If the bidder does not accept the correction of Bid Price pursuant to clause E/4.

c) In the case of a successful Bidder, if the Bidder fails within the specified time limit to:

i. Sign the Agreement; and/or

ii. Furnish the required Performance Security.

7. Alternative Proposals by Bidders:

7.1. Alternative proposals will be rejected as non-responsive.

8. Format and Signing of Bid:

8.1. The Bidder shall submit online one set of the bid comprising of the documents as described in Clause of ITB.

8.2. The Bid shall be digitally signed by a person or persons duly authorized to sign on behalf of the Bidder. All pages of the Bid shall be signed by the person or persons signing the Bid.

8.3. The Bid shall contain no overwriting, 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 made by scoring out the cancelled portion, making the correction, initial with date by the person or persons signing the Bid.

9. Evaluation of Tenders

Conditional Tender shall be summarily rejected.

The Financial Bid offered by the technically qualified bidder will only be opened.

10. Department's Right To Split Package And Accept Part Offer

The Department reserves the right to split the package and accept or reject any part/ item(s) of the offer from the scope of work without assigning any reason.

11. Withdrawal Of Submitted Tender

Tender once submitted cannot be withdrawn before the scheduled validity date. If any tenderer desires to withdraw his tender before such time, entire Earnest Money Deposit shall be forfeited without assigning any reason.

D. Submission of Bids

1. Submission of Bids

1.1. The Bidder shall upload his bid on or before the last date of submission of bid within the stipulated time.

2. Deadline for Submission of Bids:

2.1. The last date of uploading of Bids 25.08.2023 at 15.00hrs, (as per server clock)

3. Late Bids:

3.1. Bids after the last date of submission cannot be uploaded.

E. Bid Opening and Evaluation

1. Bid Opening

1.1. The Employer will online open the bids received at the time, date and place as specified in the event of the specified date for the opening of bids being declare as holiday for the Employer, the Bids will be opened at the appointed time and location on the next working day.

1.2. Evaluation of the technical bids shall be taken up and completed and a list will be drawn up of the responsive bids whose financial bids are eligible for consideration.

1.3. The date of Financial Bid Opening will be notified to the technically qualified bidders at a later date. In the event of the specified date being declared a holiday for the Employer, the bids will be opened at the appointed time and location on the next working day.

2. Process to be Confidential

2.1. 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 attempt by a Bidder to influence the Employer's processing of bids onward decisions may result in the rejection of his Bid.

3. Clarification of Bids and Contacting the Employer

3.1. No Bidder shall contact the Employer on any matter relating to its bid from the time of the bid opening to the time the contract is awarded.

3.2. Any attempt by the bidder to influence the Employer's bid evaluation, bid comparison or contract award decision may result in the rejection of his bid.

4. Correction of Errors

4.1. Bids which are 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 rates in figures and in words, the rate in words will govern.

b) Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern.

4.2. The amount stated in the Bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount, the Bid will be rejected and the Earnest money shall be forfeited in accordance with Clause C/6.7(b) of ITB.

5. Evaluation and Comparison of Bids

5.1. In evaluating the bids, the Employer will determine for each Bid the evaluated Bid price by adjusting the Bid price by making correction, if any, for errors pursuant to Clause E/4 of ITB.

5.2. If the Bid of the successful Bidder is seriously unbalanced in relation to the Engineer's estimate of the cost of work to be performed under the contract, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, the Employer may require that the amount of the performance security set forth in Clause F/3 of ITB be increased at the expense of the successful Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract. The amount of the increased performance security shall be decided at the sole discretion of the Employer, which shall be final, binding and conclusive on the bidder

F. Award of Contract

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

1.1. The Employer reserves the right to accept or reject any Bid, and to cancel the bidding process and reject all bids ,at any time prior to the award of Contract, without incurring any liability to the affected Bidder or bidders or any obligation to inform the affected Bidder or bidders of the grounds for the Employer' section.

1.2. Work Order will be issued only after administrative approval and receiving of fund.

2. Notification of Award and Signing of Agreement.

2.1. The bidder whose Bid has been accepted will be notified of the award by the Employer prior to expiration of the Bid validity.

2.2. The notification of award will constitute the formation of the Contract, subject only to the furnish in performance security in accordance with the provisions of Clause F/3.

2.3. The Agreement will incorporate all agreements between the Employer and the successful Bidder. It will be signed by the Employer and the successful Bidder after the performance security is furnished.

2.4. Upon the furnishing by the successful Bidder of the Performance Security, the Employer will promptly notify the other Bidders that their Bids have been unsuccessful.

3. Performance Security / Security Deposit

3.1. Within 10 (ten) days after receipt of the Letter to Proceed to Start the Work/ Work Order, the successful Bidder shall deliver Performance Security/ Security Deposit in a form acceptable to the Employer of the balance amount (after deposit of earnest money (EMD)) remaining of 2% of the Contract Price, plus additional security for unbalanced Bids in accordance with Clauses E/5.2 of ITB and Clause 49 Part I General Conditions of Contract and sign the contract.

The amount and validity period of the performance guarantee is:

Amount: Two percent (2.0%) of the contract price.

Validity Period: 45 (forty five) days after the expiry of defect liability period of thirty six months after intended completion period.

The performance security shall be in the form of a Bank Guarantee (Format given in Section 9).

3.2. Failure of the successful Bidder to comply with the requirements of Clause F/3.1.shall constitutes sufficient grounds for cancellation of the award and forfeiture of the Earnest Money. He will also be debarred from participating in bids for one year.

3.3. The earnest money deposited by the Contractor including Performance Security/ Security Deposit @2% shall be converted into initial Security Deposit and a deduction @ 8% (eight percent) will be deducted from each R.A. bill shall be made to build an amount equivalent to 10% of the executed value of the work. The security Deposit thus deducted shall be refunded to the contractor after successful completion of defect liability period of thirty six (36) months from the date of commencement of the work certified by the Engineer –in- Charge.

4. Cost of Downloaded Tender Document

4.1. In terms of Government Order No.199-CRC/2M-10/2012 dated 21.12.2013, the cost of tender document is exempted for e-tendering process.

5. Corrupt or Fraudulent Practices

5.1. The Employer requires the bidders /Contractors to strictly observe the laws against fraud and corruption in force in India, namely, Prevention of Corruption Act, 1988.

Section 4 - Qualification Information

Notes on Form of Qualification Information

The information to be filled in by bidders in the following pages will be used for purposes of accessing the techno commercial capability of the bidder- as provided for in Clause 7 of the Instructions to Bidders. Attach additional pages as necessary.

1. Individual Bidders:

1.1	Constitution or legal status of Bidder Place of registration: Principal place of business: Power of attorney of signatory of Bid	[attach copy] _____ _____ [attach
1.2	Total annual volume of civil engineering construction work executed and payments received in the last five years preceding the year in which bids are invited. (Attach certificate from Chartered Accountant).	(Rs. In lakhs) 2017-2018, 2018-2019, 2019-2020,2020-2021, 2021-2022.
1.3	Work performed as prime Contractor (in the same name and style) on construction works of a similar nature and volume over the last five years.	

Project Name	Name of Employer	Description of work	Value of Contract	Contract No.	Date of Issue of Work Order	Stipulated Date of Completion	Actual Date of Completion	Remarks (explaining reasons for delay, if any)
Separate sheets to be attached								

1.4 Availability of Major items of Contractor's Equipment proposed for carrying out the Works. List all information requested below. Refer also to Clause 7.2 (g) and Clause 4.5 (b) of the Instructions to Bidders.

Item of Equipment	Description, make, and age (Years), and capacity	Condition (new, good, poor) and number available	Owned, leased (from whom?), or to be purchased
Separate sheets to be attached			

1.5 Qualifications of technical personnel proposed for the Contract. Refer also to Clause 7.2(d) of the Instructions to Bidders and Clause 9.1 of Part-1 General Conditions of Contract.

Position	Name	Qualification	Years of experience		
			Construction works	Road Works	Others
Separate sheets to be attached					

1.6 Financial reports for the last five years: balance sheets, profit and loss statements, auditors' reports, etc. List below and attach copies.

_____

_____

_____

1.7 Name, address, and telephone, telex, and facsimile numbers of banks that may provide references if contacted by the Employer.

_____

_____

_____

1.8 Information on current litigation in which the Bidder is involved.

Name of Other party(s)	**Cause of dispute**	**Litigation where (Court/arbitration)**	**Amount involved**

Section - 5

General Conditions of Contract

A. General

1. Definitions

1.1. Terms which are defined in the Contract are not also defined in the Conditions of Contract but keep their defined meanings. Capital initials are used to identify defined terms.

The Dispute Review Expert is the person appointed jointly by the Employer and the Contractor to resolve disputes in the first instance, as provided for in Clause 27.

Bill of Quantities means the priced (as quoted by the bidder) and completed Bill of Quantities forming part of the Bid.

Compensation Events are those defined in Clause 43 hereunder.

The Completion Date is the date of completion of the Works as certified by the Engineer, in accordance with Clause 51.1.

The Contract is the Contract between the Employer and the Contractor to execute, complete, and maintain the Works. It consists of the documents listed in Clause 2.2

The Contractor is a person, company or corporate body who's Bid to carry out the Works has been accepted by the Employer.

The Contractor's Bid is the completed bidding document submitted by the Contractor to the Employer as per the instructions of the Tender Document.

The Contract Price is the price stated in the Letter of Intent/ Work Order and thereafter as adjusted in accordance with the provisions of the Contract.

Days are calendar days; **months** are calendar months.

Defect is any part of the Works not completed in accordance with the Contract.

The Defects Liability Certificate is the certificate issued by Engineer, after the Defect Liability Period has ended and upon correction of Defects by the Contractor.

The Defects Liability Period is thirty six months (36) from the date of issue of Completion Certificate.

Drawings/Documents include calculations and other information provided or approved by the Engineer for the execution of the Contract.

The Employer is the party as defined below, who employs the Contractor to carry out the Works. The Employer may delegate any or all functions to a person or body nominated by him for specified functions.

The Employer is

West Bengal Industrial Development Corporation Limited (WBIDCL)
Designation: Chairman & Managing Director
Address: 23, Abanindranath Tagore Sarani (Camac Street)
Kolkata-700 017

The Engineer is a competent person/Organization appointed by the Employer for providing Project Management Consultancy (PMC) Services and notified to the Contractor who is responsible for supervising the Contractor, administering the Contracts, certifying payments due to the Contractor, issuing and valuing Variations to the Contract and awarding extension.

PMC AND PMC"S REPRESENTATIVE

PMC"s Duties and Authority

a. The Employer shall appoint a PMC and inform the same to the Contractor to deal with all the matters related to the execution and operation of Contract.

b. PMC or his representative shall supervise the all the works carried out at site. PMC shall ensure the best quality of workmanship, materials, etc.

However, the Employer / Employer's representative reserves the right in checking / tests checking of the operation of the contract in respect of quality, testing, and measurement of Works either directly or through a separate agency or both.

PMC's Representative:

The PMC‟s Representative shall be appointed by and be responsible to the PMC and shall carry out such duties and exercise such authority as may be delegated to him by the PMC as mention below.

PMC's Authority to Delegate:

The PMC may from time to time delegate to the PMC‟s Representative any of the duties and authorities vested in the PMC. Any such delegation shall be in writing and shall not take effect until a copy thereof has been delivered to the Contractor. Any communication given by PMC‟s Representative to the Contractor in accordance with such delegation shall have the same effect as though it had been given by the PMC, provided that;

a. Any failure of the PMC‟s Representative to disapprove any work, materials or Plant shall not prejudice the authority of the PMC to disapprove such work, materials or Plant and to give instructions for the rectification thereof; and

b. If the Contractor questions any communication of the PMC‟s Representative he may refer the matter to the PMC who shall confirm, reverse or vary the contents of such communication.

1.2. **Instructions in Writing** :

Instructions given by the PMC shall be in writing, provided that, if for any reason the PMC considers it necessary to give any such instruction orally, the Contractor shall comply with such instruction. Confirmation in writing of such oral instruction given by the PMC, whether before or after carrying out of the instruction shall be deemed to be an instruction within the meaning of this Sub-Clause. Provided further that if the Contractor, within 7 days, confirms in writing to the PMC any oral instruction of the PMC and such confirmation is not contradicted in writing within 7 days by the PMC, it shall be deemed to be an instruction of the PMC. The provisions of this Sub-Clause shall equally apply to instructions given by the PMC‟s Representative and any assistants of the PMC or the PMC‟s Representative appointed pursuant as mentioned above.

PMC to Act Impartially:

Wherever, under the Contract, the PMC is required to exercise his discretion by;

a. giving his decision, opinion or consent, or
b. expressing his satisfaction or approval, or
c. determining value, or
d. otherwise taking action, which may affect the rights and obligations of the Employer or the Contractor.

He shall exercise such discretion impartially within the terms of the Contract and having regard to all the circumstances. Any such decision, opinion, consent, expression of satisfaction, approval, determination of value or action may be opened up, reviewed or revised as provided in Clause 22.0.

Equipment is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

The Initial Contract Price is the Contract Price listed in the Employer's Letter of Intent/Work Order.

The Intended Completion Date is the date on which it is intended that the Contractor shall complete the Works**. The Intended Completion Date is 18 months (545 days) from the start date**. The Intended Completion Date may be revised only by the Engineer by issuing an extension of time.

The **Start Date** is 15 days from the date of issue of Work Order/Letter of Intent to contractor. It does not necessarily coincide with any of the Site Possession Dates.

Materials are all supplies, including consumables, used by the Contractor for incorporation in the Works.

Plant is any integral part of the Works that shall have a mechanical, electrical, electronic, chemical, or biological function.

Specification means the Specification of the Works included in the Contract and any modification or addition made or approved by the Engineer.

A **Sub-Contractor** is a person, company or corporate body who has a Contract with the Contractor to carry out a part of the construction work in the Contract, which includes work on the Site.

Temporary Works are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works.

A **Variati**on is an instruction given by the Engineer, which varies the Works.

The **Works**, as defined in the Scope of Work in ITB, are what the Contract requires the Contractor to construct, install, maintain, and turn over to the Employer. The Construction Power and Water has to be arranged by the Contractor.

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 Engineer will provide instructions clarifying queries about these Conditions of Contract.

2.2. The following documents forming the contract are to be taken as mutually explanatory of one another, but in case of ambiguities or discrepancies, the Engineer's decision shall be final and binding on the Contractor.

a) Agreement,
b) Notice to Proceed with the Work (Letter of Intent / Work Order)
c) Contractor's Bid,
d) Conditions of Contract
e) Specifications,
f) Drawings,
g) Bill of Quantities, and
h) Any other document if required or as advised by Engineer.

3. Language and Law

3.1. The language of the Contract is English and the law governing the Contract is the law of Union of India.

4. Engineer's Decisions

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

4.2. Except as expressly stated in the Contract, the Engineer shall not have any authority to relieve the Contractor of any of his obligations under the contract.

5. Delegation

5.1. The Engineer, with the approval of the Employer, may delegate any of his duties and responsibilities to other people, after notifying the Contractor, and may cancel any delegation after notifying the Contractor.

6. Communications

6.1. All certificates, notices or instructions to be given to the contractor by Employer/Engineer shall be sent on the address or contact details given by the Contractor in Section 9 – Form of Bid. Communications between parties that are referred to in the conditions shall be writing. The Notice sent by registered Post or Speed Post shall be effective on delivery or at the expiry of the normal delivery period as undertaken by the postal service.

7. Subcontracting

7.1. Not allowed.

8. Other Contractors

8.1. Not Applicable

9. Personnel

9.1. The Contractor shall employ for the construction work the technical personnel who are technically qualified to execute these types of jobs and get their CVs approved by the Engineer. The Engineer will approve any proposed replacement of technical personnel only if their relevant qualifications and abilities are substantially equal to or better than those of the personnel initially proposed by the contractor and accepted by the Employer.

9.2. If the Engineer 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 three days and has no further connection with the Works in the Contract.

9.3. The Contractor shall not employ any retired Gazetted officer who has worked in the Engineering Department of the Employer and has either not completed two years after the date of retirement or has not obtained Employer's permission to work with the Contractor.

10. Employer's and Contractor's Risks

10.1. The Employer carries the risks which this Contract states are Employer's risks, and the Contractor carries the risks which this Contract states are Contractor's risks.

11. Employer's Risks

11.1. The Employer is responsible for the excepted risks which are (a) in so far as they directly affect the execution of the Works - the risks of war, invasion, act of foreign enemies, rebellion, revolution, insurrection or military or usurped power, civil war, riot, commotion or disorder (unless restricted to the Contractor's employees), natural calamities and contamination from any nuclear fuel or nuclear waste or radioactive toxic explosive, or (b) a cause due solely to the design of the Works, other than the Contractor's design.

12. Contractor's Risks

12.1. All risks of loss of or damage to works, physical property and of personal injury and death which arise during and in consequence of the performance of the Contract other than the excepted risks, referred to in clause 11.1, are the responsibility of the Contractor

13. Insurance

13.1. The Contractor at his cost shall provide, in the joint names of the Employer and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles as per rules/ as decided by the Employer for the following events which are due to the Contractor's risks:

a) Loss of or damage to the Works, Plant and Materials;

b) Loss of or damage to Equipment;

c) Loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract; and

d) Personal injury or death.

13.2. Insurance policies and certificates for insurance shall be delivered by the Contractor to the Engineer for the Engineer's approval before the Start Date. All such insurance shall provide for compensation to be payable in Indian Rupees to rectify the loss or damage incurred.

13.3. If the Contractor does not provide any of the policies and certificates required, the Employer will have the right to effect the insurance which the Contractor should have provided and recover the premiums the Employer has to pay from payments otherwise due to the Contractor or, if no payment is due, the payment of the premium shall be a debt due.

13.4. Alterations to the terms of insurance shall not be made without the approval of the Engineer.

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

14. Site Investigation Reports

14.1. The Contractor, in preparing the Bid, shall rely on his own survey and site investigation for submitting The Bid.

15. Queries about the Bid Document

15.1. Will be addressed in the Pre-Bid Meeting

16. Contractor to Construct the Works

16.1. The Contractor shall construct, and install and maintain the Works in accordance with the Specifications and Drawings.

16.2. The Contractor shall construct the works to ensure the quality of works as per specifications. The Contractor shall deploy the equipment and machinery as was proposed by the Contractor and Accepted by the Employer, as a minimum.

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

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

18. Approval by the Engineer

18.1. The Contractor shall submit Specifications and Drawings (with calculations) showing the proposed Temporary Works, whenever they are required, to the Engineer for his approval. The temporary works shall be taken up only after Engineer's approval of designs and drawings for such temporary works.

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

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

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

18.5. All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Engineer before their use.

19. Safety

19.1. The Contractor shall be responsible for the safety of persons and of all activities on the Site. He shall adopt all necessary safety precautions in implementing the works.

20. Discoveries

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

21. Possession of the Site

21.1. The Employer shall hand over complete or part possession of the site to the Contractor in advance of construction programme.

22. Co-Operation With Other Agencies

Full co-operation and coordination shall be accorded to other agencies working simultaneously for successful completion of the work.

23. Site Office

23.1. The contractor shall construct suitable temporary site office for execution work for supervisory Engineer, staff etc. of the contractor as well as of the Department/ Consultant. The contractor will arrange to provide furnish, equip, clean and maintain the site office. The contractor shall make necessary arrangement for water, semi-permanent W.C. and electricity for officials/ office. The contractor shall provide lights and fans, etc. along with necessary new furniture as required. The site offices shall be erected, furnished and be ready for occupation before start of work. There shall be 2 (two) rooms with a common toilet allotted for Employer and/or his representatives (Consultant) of 25SqM. area with necessary office furniture. On completion of work and as directed by Engineer-in-Charge the site office has to be demolished at his own cost and labour.

Condition for Supply for Water: Contractor shall make his own arrangements for water at sites by drilling and energizing the tube wells. Water quality standards shall conform to the clauses laid down in latest revisions of relevant IS Codes/ BIS code. Water samples to be used for construction as well as drinking shall be got tested from any reputed govt. authority before to start of the work and every three months thereafter. The test reports shall be submitted to the Engineer-in-charge immediately after the same is received from the laboratory. Agency will bear the cost of water sample test. Water used for drinking shall be disinfected by using permitted disinfectants before use.

24. Mobilization Advance

No Mobilization advance to be paid to the contractor

25. Access to the Site

25.1. The Contractor shall allow 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 to the Engineer and any person/ persons/ agency authorized by:

a. The Engineer

b. The Employer and anybody else authorized by the Employer.

26. Instructions

26.1. The Contractor shall carry out all of the instructions of the Engineer, which comply with the applicable laws where the Site is located.

27. Disputes

27.1. In case of any dispute which may not be settled amicably between the contractor and WBIDC, the matter may be referred to the Chairman & Managing Director of WBIDC whose opinion shall be prevailed as final and binding on all the parties and shall be subject to Kolkata jurisdiction only. This clause is applicable only after successful execution of agreement.

B. Time Control

28. Programme

28.1. Within the time stated in the Contract Document, the Contractor shall submit to the Engineer for approval a rogramme showing the general methods, arrangements, order, and timing for all the activities in the Works, along with monthly cash flow forecasts for the construction of works, 7 days in advance of the start of construction programme.

28.2. The Contractor shall submit the list of equipment and machinery being brought to site, the list of key personnel (and their CVs) being deployed, the list of equipment being placed in field laboratory and the location of field laboratory along with the programme. The Engineer shall cause these details to be verified at each appropriate stage of the programme.

28.3. An update of the Programme shall be a programme showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining Works, including any changes to the sequence of the activities.

28.4. The Contractor shall submit to the Engineer for approval an updated Programme at intervals no longer than the period stated in the Contract Document. If the Contractor does not submit an updated Programme within this period, the Engineer may withhold the amount stated in the Contract from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Programme has been submitted.

28.5. The Engineer's approval of the Programme shall not alter the Contractor's obligations. The Contractor may be required to revise the Programme and submit it to the Engineer again at any time. A revised Programme shall show the effect of Variations and Compensation Events and Contractor’s proposed steps to complete the work in time.

29. Extension of the Intended Completion Date

29.1. The Engineer shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining Works, which would cause the Contractor to incur additional cost.

29.2. The Engineer shall decide whether and by how much time to extend the Intended Completion Date within 21 days of the Contractor asking the Engineer for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information. If the Contractor has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.

29.3. The Engineer shall within 14 days of receiving full justification from the Contractor for extension of Intended Completion Date refer to the Employer for his decision. The Employer shall in not more than 21 days communicate to the Engineer the acceptance or otherwise of the Engineer’s decision. If the Employer fails to give his acceptance, the Engineer shall not grant the extension and the Contractor, if he feels the decision is wrong, may refer the matter to the Dispute Review Expert under Clause 27.1.

30. Delays Ordered by the Engineer

30.1. The Engineer may instruct the Contractor to delay the start or progress of any activity within the Works. Delay / delays total of more than 30 days will require prior written approval of the Employer.

31. Management Meetings

31.1. The Engineer may require the Contractor to attend management meetings. The business of a management meeting shall be to review the plans for the remaining Works and to deal with matters raised in accordance with early warning procedure, by which the Contractor warns the Engineer at the earliest of specific likely future events that may affect the cost or completion time of the Works.

31.2. The Engineer shall record the business of management meetings and provide copies of the record to those attending the meeting. The responsibility of the parties for actions to be taken shall be decided by the Engineer either at the management meeting or after the management meeting and stated in writing to all those who attended the meeting.

C. Quality Control

32. Identifying Defects

32.1. The Engineer 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 Engineer may instruct the Contractor to search for a Defect and to uncover and test any work that the Engineer considers may have a Defect.

33. Tests/ Results/ Site Registers etc.

33.1. For carrying out mandatory tests as prescribed in the specifications, the contractor shall establish field laboratory at the location decided by Engineer. The field laboratory will have at least the minimum equipment as required. The contractor shall be solely responsible for:

a) Carrying out the mandatory tests prescribed in the specifications

b) For the correctness of the test results, whether preformed in his laboratory or elsewhere.

33.2. The Engineer may instruct the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the Contractor shall carry out the test at his cost and pay for any samples.

33.3. The Engineer may instruct the Contractor to carry out any test from any Govt. approved agencies for the interest of the project and the Contractor shall carry out the test at his cost.

33.4. The Contractor will be required to maintain the following registers at site of work and should produce the same for inspection of the Employer whenever desired by him.

Typical Proforma of registers are enclosed (refer tables below):

Table I	Proforma for Cement Register.
Table II	Proforma for Steel Register.
Table III	Proforma for bulkage test of sand Register.
Table IV	Proforma for slump test Register.
Table V	Proforma of Brick test Register.
Table VI	Proforma of Sieve analysis of fine & coarse aggregate Register.
Table VII	Proforma of Concrete cube tests Registers.
Table VIII	Proforma of Hindrance Register.
Table IX	Proforma of Proctor compaction test Register.
Table X	Proforma of Bitumen test Register.
Table XI	Reconciliation Register

Note: The Engineer may instruct the Contractor to carry out any other tests required for the project during the construction period and the contractor shall abide the same.

TABLE - I

CEMENT REGISTER

Name of work : ……

Name of Contractor : ……...

Agreement No. : ……..

Date of Receipt	Source of Receipt with reference to S.O./Indent.	Quantity Received	Progressive total	Date of issue	Quantity issued	Item of work for which issued	Quantities returned at the end of the day
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

Total Issued	Daily balance at hand	Contractor's initials	Consultant's Initial	Initial of WBIDC Engineer	Remarks
(9)	(10)	(11)	(12)	(13)	(14)

TABLE – II

S T E E L R E G I S T E R

Name of work : ……

Name of Contractor : ……

Date of Receipt	Source of receipt with reference to S.O./Indent	Consumption as per measurement M.B. No. & Page No. or issue to other works and their T.E. Nos.	Tor Steel (in mm)					Total	Initial of Contractor	Initial of Consultant	Initial of WBIDC Engineer
			6ϕ	8ϕ	10ϕ	12ϕ	16ϕ				
(1)	(2)	(3)	(4)					(5)	(6)	(7)	(8)

N.B.: No. of diameters given is only illustrative. Open more columns for other diameters wherever needed.

TABLE – III

BULKAGE TEST OF SAND REGISTER

Sl. No.	Date of Test	Values of dust sand in cylinder	Value of inundated sand in cylinder	Percentage of Bulkage	Signature of Contractor	Signature of Consultant.	Signature of WBIDC
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

TABLE – IV

SLUMP TEST REGISTER

Sl. No.	Date of test	Type of work for which slump taken.	Specified slump		Slump obtained		Signature of Contractor	Signature of Consultant	Signature of WBIDC
			When Vibrators are used	When Vibrators are not used	When Vibrators are used	When Vibrators are not used			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

TABLE - V

BRICK TEST REGISTER

Sl. No.	Date of collection of sample	Identification mark	Size of brick in Cms.	Area in Cm^2	Date of Initial Curing.	Date of filling of frog	Date of testing	Time of curing
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

Test Results		Standard strength in per $Kg./Cm^2$	Sample sanding ref.	Signature of Contractor	Signature of Consultant	Signature of WBIDC
Compressive resistive strength for each brick in M.T.	Average strength in Kg/Cm^2					
(10)	(11)	(12)	(13)	(14)	(15)	(16)

TABLE – VI

SIEVE ANALYSIS OF FINE & COARSE AGGREGATE REGISTER

Sl. No.	Date of Testing	Weight of materials to be tested	Nominal size of aggregate	I.S. Sieve designation	Standard % passing for graded aggregate of nominal size.
(1)	(2)	(3)	(4)	(5)	(6)

Test Results	% obtained passing	Signature of Contractor	Signature of Consultant	Signature of WBIDC	Remarks
(7)	(8)	(9)	(10)	(11)	(12)

TABLE – VII

REGISTER OF CUBE TEST OF CONCRETE

01. Name of work…….....

02. Name of Contractor……..

03. Agreement No ……..

04. Sample No ……..

05. Compressive strength specified

I. 7 days……..Kg/Cm^2

II. 28 days……..Kg/Cm^2

06. Identification No ……..

07. Portion of work and quantity ……..

08. Date & time of casting cubes ……..

7 Days Test

01. Due date of test…….

02. Actual date of test…….

03. Actual Compressive Strength

Cube No. 1 a) Min :

Cube No. 2 b) Max :

Cube No. 3 c) Average :

04. Average of Max & Min: ……..

Compressive Strength

05. 15% of average strength……

06. Difference between 3 (a) and 3 (b)……

07. Is 6 less than 5?

08. If the answer to 7 is 'Yes' Acceptable

28 Days Test

01. Due date of test…….

02. Actual date of test…….

03. Delay in testing…….

04. Increase in strength

1.50Kg/Cm^2 per day of delay……...

05. Anticipated compressive strength

(min specified – 4) ……..

06. Actual Compressive Strength

Cube No. 4 a) Min:

Cube No. 5 b) Max:

Cube No. 6 c) Average:

07. Is Compressive strength equal to or
Yes / No More than specified/anticipated strength?

08. If the answer to 7 is 'Yes' Acceptable

TABLE – VIII

HINDRANCE REGISTER

Name of work…… Date of Start of work…….....

Name of Contractor…… Period of completion…….....

Agreement No…..... Actual Completion of work…....

Sl. No.	Nature of Hindrance	Date of occurrence of hindrances	Date on which hindrance was removed	Period of which hindrance existed	Initial of Contractor	Initial of Consultant	Initial of WBIDC Engineer	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(6)	(6)	(7)

TABLE – IX

PROCTOR COMPACTION TEST REGISTER

SL. No.	Date	Chainage	Wt of Mould + Wet Soil	Container No.	Container Wt.	Wt. of Container + Wet Soil	Wt. of Container + Dry Soil	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

Wt of mould = w2 ; wt of dry soil (w5) = 8 - 6

Wt of wet soil(w3)=4- w2 ; moisture content (w6) = (w4/w5)X 100

Wet density(yb) = (w3/vol.) ; Dry density (yd) = 100 x [yb/ (100+w6)]

Wt of water (w4) = 7-8

TABLE – X

BITUMEN TEST REGISTER

SL. No.	Date	Chainage	Plant Bitumen Temp.	Production Qty	Plant Dispatch Time	Site Bitumen Temp.	Site Unload Time	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

TABLE – XI

RECONCILIATION REGISTER

(FOR ANY KIND OF MATERIAL)

Sl.No.	Material	Location/ Chainage	Structure Name	Production QTY/Cum	As per Drawing Theoretical QTY	Difference b/w production and theoretical Qty	Percentage of difference	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

Contractor should arrange necessary equipment required to conduct/ complete all tests as mentioned above by his own at site and also to set up a laboratory with concrete cube testing machine.

34. Correction of Defects (including those noticed during the Defect Liability Period)

34.1. The Engineer 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 Document. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.

34.2. Every time notice of Defect/Defects is given, the Contractor shall correct the notified Defect/Defects within the length of time specified by the Engineer's notice.

34.3. The Engineer may issue notice to the Contractor to carry out removal of defects, if any noticed in his inspection, or brought to his notice. The Contractor shall remove the defects within the period specified in the notice and submit to the Engineer a compliance report.

35. Uncorrected Defects

35.1. If the Contractor has not corrected a Defect pertaining to the Defect Liability Period these Conditions of Contract, to the satisfaction of the Engineer, within the time specified in the Engineer's notice, the Engineer will assess the cost of having the Defect corrected, and the Contractor shall pay this amount, on correction of the Defect.

D. Cost Control

36. Bill of Quantities

36.1. The Bill of Quantities shall contain items for the construction, installation, testing, and commissioning, maintaining works to be done by the Contractor.

36.2. The Bill of Quantities is used to calculate the Contract Price. The Contractor will be paid for the quantity of the work done at the rate in the Bill of Quantities for each item for the construction of roads.

37. Variations

37.1. The Engineer shall, having regard to the scope of the Works and the sanctioned estimated cost, have power to order, in writing, Variations within the scope of the Works he considers necessary or advisable during the progress of the Works. Such Variations shall form part of the Contract and the Contractor shall carry them out and include them in updated programmes produced by the Contractor. Oral orders of the Engineer for Variations, unless followed by written confirmation, shall not be taken into account.

38. Payments for Variations

38.1. If rates for Variation items are specified in the Bill of Quantities, the Contractor shall carry out such work at the same rate. No increase in rates of any item specified in BOQ will be allowed due to variation in quantities.

38.2. If the rates for Variation are not specified in the Bill of Quantities, the Engineer shall derive the rate from similar items in the Bill of Quantities.

38.3. If the rate for Variation item cannot be determined in the manner specified in Clause 39.1 or 39.2, the Contractor shall, within 14 days of the issue of order of Variation work, inform the Engineer the rate which he proposes to claim, supported by analysis of the rates. The Engineer shall assess the quotation and determine the rate based on prevailing market rates within on the claim by the Contractor. As far as possible, the rate analysis shall be based on the standard data book and the current schedule of rates of the district public works division. The decision of the Engineer on the rate so determined shall be final and binding on the Contractor.

39. Cash Flow Forecasts

39.1. When the Programme is updated, the Contractor shall provide the Engineer with an updated cash flow Forecast.

40. Payment Certificates

40.1. The payment to the contractor will be as follows for construction work:

a) The Contractor shall submit to the Engineer monthly statements of the value of the work executed less the cumulative amount certified previously, supported with detailed measurement of the items of work executed.

b) The Engineer shall check the Contractor's monthly statement within 14 days and certify the amount to be paid to the Contractor.

c) The value of work executed shall be determined, based on measurements by the Engineer.

d) The value of work executed shall comprise the value of the quantities of the items in the Bill of Quantities, completed to the satisfaction of the Engineer.

e) The value of work executed shall also include the valuation of Variations, if any.

f) The Engineer 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.

g) The payment of final bill shall be governed by the provisions of clause 53 of GCC.

41. Payments

41.1. Payment for the work done by the Contractor will be based on measurements recorded at various stages of the work. 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 and sign the measurement book or level / field book of their acceptance.

41.2. If for any reason the Contractor or his authorized agent is not available, and the work may be suspended by the Engineer-in-Charge/ Consultant to avoid recording of measurements during the absence of the Contractor or his authorized representative, the Employer 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 measurements after the Contractor has been given a three-day's notice in writing, such measurements may be taken in his absence and shall be deemed to be accepted by the Contractor

41.3. Total payment shall be made against progressive Bills/ Invoices. Each Bill / Invoice shall be raised as per progress of work / supply. Only one (01) R/A bill can be raised in every month only after the billing amount reaches a minimum 6 (six) percent of the total contract value in general.

41.4. While claiming payment the contractor shall submit Bill / Invoice, Inspection / Test Report of materials/equipment and other documents as required, to the Engineer-in-Charge in triplicate duly certified by the Consultant.

41.5. Payments shall be adjusted for deductions for advance payments, security deposit, other recoveries in terms of the Contract and taxes at source, as applicable under the law. The Engineer shall pay the Contractor the amounts he had certified within about 30 days of the date of each certificate.

41.6. Items of the Works for which no rate or price has been entered in the Bill of Quantities, will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract. Also refer Clause 39.

42. Compensation Events

42.1. Not Applicable

43. Tax

The estimate has been prepared by considering 18% GST and 1% LWC. The rates quoted by the Contractor shall be deemed to be inclusive of the all taxes of Central and State Governments, local bodies and authorities except GST.

44. Currencies

All payments will be made in Indian Rupees.

45. Retention

45.1. The Employer shall retain eight percent (8%) of the billed amount as retention money from each payment of the contractor until completion of the whole construction work.

45.2. The total amount retained as retention money will be repaid to the contractor when the defect liability period has expired and the Engineer has certified that all defects notified by the Engineer to the contractor before the end of this period have been corrected.

45.3. The additional performance security for unbalanced bids as detailed in these documents is repaid to the contractor when the defect liability period has expired.

45.4. The performance security equal to the two percent of the contract price is repaid to the contractor when the Defect Liability Period is over and the Engineer has certified that the contractor has satisfactorily carried out defects removal in the Defects Liability Period.

46. Force Majeure

46.1. Any calamity like earthquake, lightning strikes, cyclones, volcanic eruptions, war, hostilities (whether declared or not), civil disturbances, acts of foreign enemies, riots, strikes, lockouts, ionizing radiation or contamination by radio activity, natural floods except accumulation of water due to rainfall which cause delay in the execution of the work, will be considered by the WBIDC for the grant of extension of time only for the completion of the work after producing documentary proof. No other claim whatsoever will be entertained by the WBIDC.

47. Site Order Book:

47.1. The Contractor shall within 7 (Seven) days from the written order to commence work, supply at his own cost, a site order book to be kept at the site of work under the custody of the PMC or his authorized representative. The site order book shall have numbered pages in triplicate, which will be initialed by the Assistant Engineer-in-charge. The directions or instructions from the Dept. Officers to be issued to the Contractor will be entered (in triplicate) in the site order book (except when such directions are given by separate letters). The contractor or his authorized representative / agent shall regularly note the entries in the site order book and also record therein the action taken or being taken by him in compliance with such directions or instructions including any other relevant point relating to the work.

47.2. The Contractor or his authorized representative / agent may take away the duplicate pages of the site order book for his own record. A duly authorized representative's agent of the contractor shall receive such instructions as above.

48. Discrepancies

48.1. Should any discrepancy appear in any of the documents and drawings included in this contract or between different parts of the same documents or any ambiguity or insufficiency of information the contractor shall point out the same to the Tender Inviting authority in writing and receive his instructions, explanations or decision in the matter. Decision of Tender Inviting authority is final and binding on the Contractor.

49. Liquidated Damages

49.1. The Contractor shall pay liquidated damages to the Employer at the rate of 1% of the contract price per week for each week that the Completion Date is delayed, for the inefficiency/fault on the part of the contractor, than the Intended Completion Date (for the whole of the works or the milestones as specified) subject to a maximum of 10% of the Contract Price. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's other liabilities.

49.2. If the Intended Completion Date is extended after liquidated damages have been paid, the Engineer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate.

49.3. The Employer may, without prejudice to any other method of recovery deduct the amount of such damages from any monies due or to become due to the Contractor. The payment or deduction of such damages shall not relieve the Contractor from his obligations to complete the Works or from any other of his obligations and liabilities under the Contract.

50. Advance Payment

Deleted

51. Securities

51.1. The Performance Security including additional security for unbalanced bids shall be provided to the Employer no later than the date specified in the Letter of Intent/Work Order and shall be issued in the form given in the form of an unconditional Bank Guarantee and by a Bank acceptable to the Employer.

52. Cost of Repairs

52.1. Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at his cost unless such damage arises from Employer's acts or omissions.

E. Finishing the Contract

53. Completion

53.1. The Contractor shall request the Engineer to issue a certificate of Completion of the Works, and the Engineer will do so upon deciding that the Works is completed and all defects have been remedied by the Contractor.

54. Taking Over

54.1. The Employer shall take over the Site and the Works within seven days of the Engineer's issuing a certificate of Completion.

55. Final Account

55.1. The Contractor shall supply the Engineers with a detailed account of the total amount that the Contractor considers payable for works under the contract within 21 days of issue of certificate of completion of construction of works. The Engineer shall issue a defect liability certificate and certify any payment that is due to the Contractor for works within 42 days of receiving the Contractor's account if it is correct and complete. If the account is not correct or complete, the Engineer shall issue within 42 days a statement that states the scope of the corrections or additions that are necessary. If the Account is still unsatisfactory after it has been resubmitted, the Engineer shall decide on the amount payable to the Contractor and issue a payment certificate within 28 days of receiving the Contractor's revised account. The payment of final bill for construction of works will be made within 14 days thereafter, and shall be binding on the Contractor.

55.2. In case the account is not received within 21 days of issue of Certificate of Completion as provided in Clause above, the Engineer shall proceed to finalize the account and issue a payment certificate within 28 days.

55.3. The payment of final bill for construction of works will be made within 14 days thereafter.

56. Termination

56.1. The Employer may terminate the Contract if the Contractor causes a fundamental breach of the Contract.

56.2. 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 Programme and the stoppage has not been authorized by the Engineer;

b) The Contractor is declared as bankrupt or goes into liquidation other than for approved reconstruction or amalgamation;

c) The Engineer gives Notice to correct a particular Defect and the Contractor fails to correct it within a reasonable period of time determined by the Engineer;

d) The Contractor does not maintain Safety and Security, which is required;

e) the Contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as defined in clause 47.1;

f) The Contractor fails to provide insurance cover as required under clause 13;

g) If the Contractor, in the judgment of the Employer, has engaged in the corrupt or fraudulent practice in competing for or in executing the Contract. For the purpose of this clause, "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official in the procurement process or in Contract execution.

h) "Fraudulent Practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Employer and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid process at artificial non-competitive levels and to deprive the Employer of the benefits of free and open competition.

i) If the Contractor has not completed at least thirty percent of the value of construction Work required to be completed after half of the completion period has elapsed;

j) If the Contractor fails to set up a field laboratory with the prescribed equipment, within 21 days from the start date; and

k) Any other fundamental breaches like if the contractor has contravened Cl 7.1 and Cl 9 of Part-1 General Conditions of Contract.

l) If the Contractor fails to deploy machinery and equipment or personnel as specified in the Contract at the appropriate time.

56.3. Notwithstanding the above, the Employer may terminate the Contract for convenience.

56.4. 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.

57. Payment upon Termination

57.1. If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Engineer shall issue a certificate for the value of the work done less liquidated damages, if any, less advance payments received up to the date of issue of the certificate, less recoveries due in terms of contract, less taxes due to be 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 , if the total amount due to the Employer exceeds any payment due to the contractor, the differences shall be recovered from the security deposit, and performance security. If any amount is still left un-recovered it will be a debt payable to the Employer. The percentage to apply to the value of the work not completed representing the Employer's additional cost for completing the Works shall be 25 % percent.

57.2. If the Contract is terminated at the Employer's convenience, the Engineer shall issue a certificate for the value of the work done, the reasonable cost of removal of Equipment, and the Contractor's costs of protecting and securing the Works and less advance payments received up to the date of the certificate, less other recoveries due in terms of the Contract, and less taxes due to be deducted at source as per applicable law.

58. Property

58.1. All Materials on the Site, Plant, Equipment, Temporary Works, and Works shall be deemed to be the property of the Employer for use for completing balance construction work if the Contract is terminated because of the Contractor's default, till the Works is completed after which it will be transferred to the Contractor and credit, if any, given for its use.

59. Release from Performance

59.1. If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of the Employer or the Contractor, the Engineer 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.

F. Other Conditions of Contract

60. Labour

60.1. 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.

60.2. The Contractor shall, if required by the Engineer, deliver to the Engineer a return in detail, in such form and at such intervals as the Engineer 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, Equipment and such other information as the Engineer may require.

60.3. No claim for idle labour would be entertained under any circumstances.

60.4. No labour below the age of eighteen years shall be employed on the work.

61. Compliance with Labour Regulations

61.1. During continuance of the Contract, the Contractor and his sub-Contractors shall abide at all times by all existing labour enactments and rules made there under, regulations, notifications and bye laws of the State or Central Government or local authority and any other labour law (including rules), regulations, bye laws 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. Salient features of some of the major labour laws that are applicable to construction industry are given in Appendix to Part I General Condition of Contract. The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made there under, regulations or 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 /bye laws /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. The 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 Sub-Contractor in no case shall be treated as the employees of the Employer at any point of time.

62. Drawings and Photographs of the Works

62.1. The contractor shall do photography of the site firstly before the start of the work, every month (preferably on the same date) thereafter showing the execution of different sections and stages of work and lastly after the completion of the work. The Contractor shall submit 2 copies of photographs. No separate payment will be made to the contractor for this.

62.2. The Contractor shall not disclose details of Drawings furnished to him and works on which he is engaged without the prior approval of the Engineer in writing. No photograph of the works or any part thereof or plant employed thereon, except those permitted under clause 58.1, shall be taken or permitted by the Contractor to be taken by any of his employees or any employees of his sub-Contractors without the prior approval of the Engineer in writing. No photographs / Video photography shall be published or otherwise circulated without the approval of the Employer/Engineer in writing.

63. The Apprentices Act 1961

63.1. The Contractor shall duly comply with the provisions of the Apprentices Act 1961 (III of 1961), the rules made there under and the orders that may be issued from time to time under the said Act and the said Rules and on his failure or neglect to do so he shall be subject to all liabilities and penalties provided by the said Act and said Rules.

a) Workmen Compensation Act 1923: -The Act provides for compensation in case of injury by accident arising out of and during the course of employment.

b) Payment of Gratuity Act 1972: - Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed the prescribed minimum years (say, five years) of service or more or on death the rate of prescribed minimum days'(say, 15 days) wages for every completed year of service. The Act is applicable to all establishments employing the prescribed minimum number (say, 10) or more employees.

c) Employees P.F. and Miscellaneous Provision Act 1952: The Act Provides for monthly contributions by the Employer plus workers at the rate prescribed (say, 10% or 8.33%). The benefits payable under the Act are:

   i. Pension or family pension on retirement or death as the case may be.

   ii. Deposit linked insurance on the death in harness of the worker.

   iii. Payment of P.F. accumulation on retirement/death etc.

d) Maternity Benefit Act 1951: - The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.

e) Contract Labour (Regulation & Abolition) Act 1970: - The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided, by the Principal Employer by Law. The principal Employer is required to take Certificate of Registration and the Contractor is required to take license from the designated Officer.

f) The Act is applicable to the establishments or Contractor of Principal Employer if they employ prescribed minimum (say 20) or more contract labour.

g) Minimum Wages Act 1948: - The Employer is to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of buildings, roads, runways is scheduled employment.

h) Payment of Wages Act 1936: - It lays down as to by what date the wages are to be paid, when it will be paid and what deductions can be made from the wages of the workers.

i) Equal Remuneration Act 1979: - The Act provides for payment of equal wages for work of equal nature to male and female workers and for not making discrimination against female employees in the matters of transfers, training and promotions etc.

j) Payment of Bonus Act 1965: - The Act is applicable to all establishments employing prescribed minimum (say, 20) or more workmen. The Act provides for payments of annual bonus within the prescribed range of percentage of wages to employees drawing up to the prescribed amount of wages, calculated in the prescribed manner. The Act does not apply to certain establishments. The newly set-up establishments are exempted for five years in certain circumstances. States may have different number of employment size.

k) Industrial Disputes Act 1947: - The Act lays down the machinery and procedure for resolution of industrial disputes, in what situations a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.

l) Industrial Employment (Standing Orders) Act 1946: - It is applicable to all establishments employing prescribed minimum (say, 100, or 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and get these certified by the designated Authority.

m) Trade Unions Act 1926: - The Act lays down the procedure for registration of trade unions of workmen and Employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.

n) Child Labour (Prohibition & Regulation) Act 1986: - The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulations of employment of children in all other occupations and processes. Employment of child labour is prohibited in building and construction industry.

o) Inter-State Migrant Workmen's (Regulation of Employment & Conditions of Service) Act 1979: - The Act is applicable to an establishment which employs prescribed minimum (say, five) or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The Inter-State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as Housing, Medical-Aid, Travelling expenses from home up to the establishment and back etc.

p) The Building and Other Construction workers (Regulation of Employment and Conditions of Service) Act 1996 and the Cess Act of 1996: - All the establishments who carry on any building or other construction work and employs the prescribed minimum (say, 10) or more workers are covered under this Act. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be modified by the Government. The Employer of the establishment is required to provide safety measures at the building or construction work and other welfare measures, such as canteens, first-aid facilities, ambulance, housing accommodations for workers near the work place etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.

q) Factories Act 1948: - The Act lays down the procedure for approval of plans before setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing the prescribed minimum (say, 10) persons or more with aid of power or another

prescribed minimum (say, 20) or more persons without the aid of power engaged in manufacturing process.

64. Labour Act

64.1. The Contractor should obtain the license under the provision of the contract labour (Regulation and Abolition) Act. 1970 and the contract labour (Regulation and Abolition) General Rules, 1971 including the provisions of amendments vide govt. (West Bengal) Notification No. 10134 / IW / II – 1675 dated 24th of October. 1975 and submit the same to the office of WBIDC latest before commencement of the work.

65. Loss And Damage

65.1. Neither the department nor the Engineer-in-Charge or his representative shall be answerable or accountable in any manner for any loss or damage that may happen to the work or any part thereof or to any of the materials or other things used in performing the work, or for injury to any person, either a workman or any member of the public, or for damage to any property for any cause which might have been provocated by the Contractor. The Contractor shall properly guard against all these injuries or damages to persons or property resulting from his operations under this contract at any time before issuance of the certificate of completion and maintenance. He shall indemnify and save harmless the Department from all suits or actions of every description brought for, or on account of, any injury or damage received or sustained by any person or persons by reason of the construction of the work, negligence in guarding the same, the use of improper materials or of any act of omission or deviation from the contract.

66. Clearance Of Site On Completion

66.1. On the completion of the works (as per Scope) the Contractor at his cost shall clear away and remove from the site all constructional plant, surplus materials, rubbish and temporary works of every kind, and level the whole of the site and works clean and in a workman like condition to the satisfaction of the Engineer-in-Charge.

66.2. The Contractor at his cost shall take care for cleaning the working site from time to time for easy access to work site and also from safety point of view.

67. Accident or Injury to Workmen

67.1. The Employer shall not liable for or in respect of any damages or compensation payable at law in respect or inconsequence of any accident or injury to any workman or other person in the employment of the Contractor or any sub-contractor, have and except any accident or injury resulting from any act or default of the employer, his agents, or servants. The Contractor shall indemnify and keep indemnified the Employer against all such damages and compensation, save and except as aforesaid and against all claims, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

68. Insurance against Accident etc. to Workmen:

68.1. The Contractor at his cost shall insure against all liabilities indicated in clause 40, 41 and 42 with an insurer approved by the Employer, and shall continue such insurance during the whole of the time that any person is employed by him on the works and shall, when required, produce to the Engineer-in-Charge or his representative such policy of insurance and the receipts for payment of the current premium. Provided always that, in respect of any persons employed by any sub-contractor, the Contractor's obligation to insure as aforesaid under this sub-clause shall be satisfied if the sub-contractor shall have insured against the liability in respect of such persons in such manner that the Employer is indemnified under the policy, but the Contractor shall require such sub-contractor to produce to the Engineer-in-Charge when required, such policy of insurance and the receipt for the payment of the current premium.

69. Inspection Facilities

69.1. The Contractor shall provide necessary facilities for inspection of work for quality control by the Engineer for the purpose and carrying his instructions as may be recorded in writing in Site Order Book.

SECTION-6

Technical Specifications

1. Work under this scope shall be carried out strictly in accordance with specifications attached and all relevant latest Indian standards, National building code (NBC) and any other statutory bodies.
2. Items not covered under these specifications shall be carried out as per specifications of the latest Indian standards, National building code (NBC) with latest amendments as applicable in the contract.
3. In the event of the works not covered by Indian standards, British / American Standards shall be followed.

A. SCOPE OF WORK:

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
BOQ for Main Entrance Gate (Civil Works)					
1.1	Earth work in filling in foundation trenches or plinth with good earth, in layers not exceeding 150 mm. including watering and ramming etc. layer by layer complete. (Payment to be made on the basis of measurement of finished quantity of work)	Cum			
	(iv) With carried earth arranged by the contractor within a radius exceeding 5 km. but not exceeding 10 km. including cost of carried earth.		630.00	491.79	3,09,827.70
	(a) With earth obtained from excavation of foundation		19.08	77.54	1,479.46
1.2	Earth work in excavation of foundation trenches or drains, in all sorts of soil (including mixed soil but excluding laterite or sandstone) including removing, spreading or stacking the spoils within a lead of 75 m. as directed. The item includes necessary trimming the sides of trenches, levelling, dressing and ramming the bottom, bailing out water as required complete.				
	(a) Depth of excavation not exceeding 1,500 mm.	Cum	53.01	119.27	6,322.50
	b) Depth of excavation for additional depth beyond 1,500 mm. and upto 3,000 mm. but not requiring shoring.	Cum	10.60	192.38	2,039.23
1.3	(A) Filling in foundation or plinth by silver sand in layers not exceeding 150 mm. as directed and consolidating same by thorough saturation with water ramming complete, including the cost of supply of sand. (Payment to be made on measurement of finished quantity)(B) Do-by fine sand	Cu.M	15.67	851.73	13,346.61
1.4	Single Brick Flat Soling of picked jhama bricks including ramming and dressing bed to proper level and filling joints with local sand.	Sqm	31.34	348.00	10,906.32
1.5	Ordinary Cement concrete (mix 1:2:4) with graded stone chips (20 mm nominal size) excluding shuttering and reinforcement,if any, in ground floor as per relevant IS codes.a) Pakur Variety	Cum.	3.134	5318.34	16,667.68
1.6	Hire and labour charges for shuttering with centering and necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor)(c) Steel shuttering or 9 to 12 mm thick approved quality ply board shuttering in any concrete work	Sqm	161.49	359.00	57,974.91

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
	(d) Extra for works beyond the roof of ground floor per	Sqm	192.00	377.00	72,384.00
	(e) Extra for staging beyond 4 m in any floor (Mode of measurement: area in plan x mean height of staging upto soffit of shuttering above initial 4 m)	CuM.	237.37	58.00	13,767.46
1.7	Controlled Cement concrete with well graded stone chips (20 mm graded nominal size) excluding shuttering and reinforcement with complete design of concrete as per IS : 456 and relevant special publications, submission of job mix formula after preliminary mix design after testing of concrete cubes as per direction of Engineer-in charge. Consumption of cement will not be less than 300 Kg of cement with Super plasticiser per cubic meter of controlled concrete but actual consumption will be determined on the basis of preliminary test and job mix foumula. In ground floor and foundation. [using concrete mixture] M 20 Grade (i) Pakur Variety	Cum.	25.73	6025.64	1,55,039.70
	Add extra over the rate of ground floor for basement and each additional floor above ground floor for items 4 to 10 (i) upto 4 th floor.	Cum.	29.953	6120.64	1,83,331.53
1.8	Reinforcement for reinforced concrete work in all sorts of structures including distribution bars, stirrups,binders etc. including supply of rods, initial straightening and removal of loose rust (if necessary), cutting to requisite length, hooking and bending to correct shape,placing in proper position and binding with 16 gauge black annealed wire at every inter-section, complete as per drawing and direction. (a) For works in foundation, basement and upto roof of ground floor / upto 4m.	MT	3.43	54400.74	1,86,594.50
	(b)Extra For works beyond the roof of ground floor/initial 4 m	MT	3.43	54843.74	1,88,114.03
1.9	Labour for Chipping of concrete surface before taking up Plastering work.	Sqm	353.49	21.00	7,423.29
1.10	Brick work with 1st class bricks in cement mortar (1:4) b) In superstructure, ground floor	Cum	3.26	5689.00	18546.14
1.11	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar including rounding off or chamfering corners as directed and raking out joints including throating, nosing and drip course, scaffolding/staging where necessary (Ground floor).[Excluding cost of chipping over concrete surface](ii) With 1:4 cement mortar(a) 20 mm thick plaster	Sqm	125.40	179.00	22446.60
	Add Extra for each additional floor over the rate for ground floor items(i) External plaster (a) Upto 1st floor	Sqm	231.40	183.00	42346.20

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1.12	(b) M.S.or W.I. Ornamental grill of approved design joints continuously welded with M.S, W.I. Flats and bars of gates fitted and fixed with necessary screws and lugs in ground floor. ii) Grill weighing above 16 Kg./sq.mtr and above (I) For hanging and locking arrangements including supply of materials and labour complete.(15% extra over the corresponding item of grill)(ii) For supplying fitting and fixing bottom rollers including all labour complete.(5% extra over the corresponding item of grill)	Qtl	10.60	9696.00	1,02,777.60
1.13	(a) Priming one coat on steel or other metal surface with synthetic oil bound primer of approved quality including smoothening surfaces by sand	Sqm	115.44	29.00	3347.76
1.14	(A) Painting with best quality synthetic enamel paint of approved make and brand including smoothening surface by sand papering etc. including using of approved putty etc. on the surface, if necessary :b) On steel or other metal surface With super gloss (hi-gloss) - (iv) Two coat (with any shade except white)	Sqm	115.44	79.00	9119.76
1.15	Wood work in door and window frame fitted and fixed in position complete including a protective coat of painting at the contact surface of the frame excluding cost of concrete, Iron But Hinges and M.S clamps. (The quantum should be corrected upto three decimals). (c) Sal : Siliguri.	Cum	0.04	87222.00	3488.88
1.16	Panel shutters of door and window, as per design (each panel consisting of single plank without joint), including fitting and fixing the same in position but excluding the cost of hige and other fittings.(ii) 40mm thick shutters with 19mm thick panel of size 30 to 45 cm (b) Sishu, Gamar, Champ, Badam, Bhola, Mogra, Hallak.	Sq.M.	2.52	2968.00	7479.36
1.17	Supplying, fitting & fixing of 2-Track / 3-Track Aluminium sliding Window of all Aluminium sections viz. window frame (top, bottom & side frame), shutter (top, bottom, side & interlock member) made of aluminium alloy extrusions conforming to IS 733-1983 &IS 1285-1975, annodised conforming to IS 18681983, fitted with all other accessories viz. PVC roller, EPDM gasket, maruti lock, screws etc. including labour charges for fitting & fixing of aluminium 2track/3-track sliding window with fixing of glass (excluding cost of glass) all complete as per architectural drawings and direction of Engineer-in-charge. 10-12 Micron thickness Annodizing film Natural white . For 3-Track window : Members for Bottom frame @ 1.233 Kg per Mtr. and for Top and Side frame @ 1.067 Kg per Mtr. and for shutter Bottom and Top member @ 0.472 Kg per Mtr., Style side member @ 0.493 Kg per Mtr. and Interlock member @ 0.612 Kg per Mtr [Note : for estimate purpose construction wing may consider weight of 2track Aluminium window @ 5.5 Kg per Sq.M.and 3-track Aluminium window @ 6.5 Kg per Sq.M] ii) 3 /4 track sliding window.	Kg.	28.08	448.00	12579.84

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1.18	Supplying bubble free float glass of approved make and brand conforming to IS: 2835-1987; (A) clear, toughened glass conforming to IS: 2553-1992 (part-II) (ii) 8mm thick	Sqm	4.32	1261.00	5447.52
1.19	Supplying Glazing Silicon of approved make and brand for fixing of Glass on Sub-frame as per direction of Engineer-in-charge for Structural Glazing/Curtain wall etc.Glazing Silicon for fixing Glass on Sub frame	Mtr.	27.00	112.00	3024.00
1.20	P.V.C Partition: Supplying,fitting and fixing the partition,frame will be made with rectangular steel tube of size 50mm x 25mm with wall thickness not less than 1.00mm. The vertical members duly welded to the horizontal members shall be placed between 1000mm to 1200mm apart the entire partition frame will be securedly fixed to the wall, ceiling and floor using rawlplug or wooden gutties and screws etc.the frame will be painted with synthetic paint, the section of the partition frame will then fitted with PRINTED LAMINATED P.V.C extruded hollow section of size 100mmx25mm. panel with approved quality fixed in the place by means of P.V.C extruded beading on both sides or P.V.C extruded angles (20mmx18mm) on one side and P.V.C extruded beading (9mmx9mm) on other side ,angle/beading will be fixed to the steel frame by 19mm (nos.6) self-tapping steel screw placed at an interval of 450mm and complete in all respect as per direction of Engineer-in-Charge with all labour and materials	Sqm	118.85	1971.00	234253.40
	Above Gr Floor	Sqm	151.76	1985.00	301243.60
1.21	Providing and fixing exterior quality Aluminium Composite Panel (ACP) wall cladding on existing Al. /MS frame work with GI brackets, ACP fixed on the existing frame work by folding the edges of ACP panel (Engraving the rear surface of ACP sheet) with CP angles, cleats and strainless Steel screws forming groves at the periphery of ACP panel. Such grooves filled with foam and silicon sealant etc. complete with all materials (but including the cost of silicon sealant), labour, scaffolding and all other incidental charges complete in all respect as per specification and direction of Engineer-in-charge. (Mode of payment is on finished surface area of ACP) b) 4mm thick(0.50mm AI+3.0 mm LdpE+0.50mm AI. PVDF Coating)	Sqm	527.11	2878.00	15,17,023.00
1.22	Supply, fittings and fixing of Biswa Bangla Logo made of FRP material and 1200mm dia size	Each	2.00	35000.00	70,000.00
1.23	Supply, fittings and fixing of WBIDC Logo made of FRP material and size as per drawing.	Each	2.00	35000.00	70,000.00
1.24	Supply, fittings and fixing of acrylic sign board as per detailed drawing.	inch	120.00	3200.00	3,84,000.00
A	**Total Construction Cost for Main Entrance Gate (Civil Part)=**				**40,32,342.58**
BOQ for Main Entrance Gate (Electrical Works)					

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1.25	Earthing with 15.88 mm dia 1.8 mtr. long G.I. earth spike against each pole	set	38.00	250.00	9,500.00
1.26	Supply , delivery and fixing of new generation, energy saving, environmental friendly, long life aesthetically designed aluminium landscape luminaire Projector Light 12W.Model:Insta Ray Product Code:LSPK68R108SW .Make: HAVELLS/Jaguar/K-LITE OR magic	each	10.00	6270.00	62,700.00
1.27	Supply, delivery and fixing of new generation, energy saving, environmental friendly, long life aesthetically designed Model: Cylindro fixture size: dia 90 mm, length 216 mm, height 222 mm for 35 W with honeycomb attachment. . SAPCode: CYlindrotss35W830s24dWHt..Make:HAVELLS/BAJAJ/K-LITE OR CG/Philips/Jaguar etc.	each	20.00	5940.00	1,18,800.00
1.28	Supply, delivery and fixing of new generation, energy saving, environmental friendly, long life aesthetically designed Model: LED Clean Room Bottom Opening Screw LessSAPCode:BOCR2X2R80WLED857SPCMSSL .Make: HAVELLS/BAJAJ/K-LITE OR CG/Philips/Jaguar etc. (2' x 2' LED Panel Light Fittings) 36 Watt	each	8.00	4800.00	38,400.00
1.29	Supplying of High Density polythene pipe conforming to IS 4984-1985, 6kg/sq.cm (working pressure), complete with fitting. 40 mm Dia.	RM	100.00	74.16	7,416.00
1.30	Supplying of High Density polythene pipe conforming to IS 4984-1985, 10kg/sq.cm (working pressure), complete with fitting.25 mm Dia.	RM	250.00	45.32	11,330.00
1.31	S&F medium gauge GI pipe(ISI-Medium) protection with necessary fittings and jointing materials as required. 32 mm dia Gi pipe.	RM	50.00	224.54	11,227.00
1.32	S&F medium gauge GI pipe(ISI-Medium) protection with necessary fittings and jointing materials as required. 25 mm dia Gi pipe.	RM	40.00	178.19	7,128.00
1.33	Supply of 1.1 KV grade PVC insulated Aluminum conductor armoured Cable 4 core 25 Sq.mm, Make:Incab/CCl/Gloster/Crystal / Havells / Polycab	RM	100.00	147.00	14,700.00
1.34	Supply of 1.1 KV grade PVC insulated Aluminum conductor armoured Cable 4 core 16 Sq.mm, Make:Incab/CCl/Gloster/Crystal / Havells / Polycab	RM	250.00	114.00	28,500.00
1.35	Supply of 1.1 KV grade PVC insulated copper conductor armoured Cable 2 core 2.5 Sq.mm, Make:Incab/CCl/Gloster/Crystal / Havells / Polycab	RM	150.00	77.00	11,500.00
1.36	Laying of one cable upto 50 Sq.mm through existing RCC / Hume / GI pipe open masonry trench for single 2,2,3.5& 4 core.	RM	500.00	44.29	22,145.00
1.37	Laying of High Density polythene pipe/MS/GI pipe in underground trench 460 mm wide x 760 mm average depth, filling the trench with shifted soil, levelling up and restoring surface duly rammed and as per direction of EIC.	RM	440.00	77.41	34,063.00

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1.38	MCB Encloser: Supplying and fixing double-door SPN MCB Distribution Board with IP-42/43 protection concealed in wall after cutting the wall & mending good the damages to original finish incl. Inter connection with suitable size of copper wire and neutral link & provision for earthing attachment. Legrand (2+4)	Set	1.00	1190.68	1,191.00
1.39	S&F of DP MCB: Supplying and fixing 240/415 V MCB of Breaking capacity 10kA & C characteristics on din rail of existing DBs and necessary connection. L&T6-32 Amp DP MCB	Set	1.00	164.80	165.00
1.40	Distribution wiring in 1.1 KV grade 2x22/0.3 (1.5 sqmm) single core stranded 'FR' PVC insulated & unsheathed copper wire(Brand approved by EIC) in suitable size PVC casing-capping(Precision make) with 1x22/0.3 (1.5 sqmm) single core stranded 'FR' PVC insulated & unsheathed copper wire for ECC, incl. necy. fittings etc. to light/fan/call bell point with Piano key type switch (Brand approved by EIC) fixed on sheet steel fabricated switch board with perspex /bakelite top cover on wall incl. necessary connection, earthing attachment and mending good damages to original finish a) Av. run 6 mtr [PVC casing capping on surface and Switch board concealed]				
	a) Av. run 8 mtr [PVC casing capping on surface and Switch board concealed]	Point	3.00	706.58	2,120.00
1.41	Distribution wiring in 1.1 KV grade 22/0.3 (1.5 sqmm) single core stranded 'FR' PVC insulated & unsheathed copper wire core stranded 'FR' PVC insulated & unsheathed copper wire (Brand approved by EIC) in 20mm size PVC rigid conduit 'FR'(Precision make), with 1.1 KV grade 1 x 22/0.3 (1.5 sqmm)single core stranded 'FR' PVC insulated & unsheathed copper wire as ECC, to 6A 3 pin flush type plug socket with piano key type switch (Brand approved by EIC) onsheet steel fabricated CRC MS switch board with bakelite/perspex top cover flushed in wall incl. necy. connection making earthing attachment, painting and mending good damages to building works.a)On Board	Point	10.00	864.17	8,642.00
1.42	Wiring in 1.1 KV grade single core stranded 'FR' PVC insulated & unsheathed copper wire (Brand approved by EIC) of following sizes in 25mm PVC casing-capping (Precision make) incl. necy. PVC clips, fittings etc.a) 2 x 36/0.3 (2.5 sqmm) + 1 x 22/0.3 (1.5 sqmm)	RM	5.00	105.06	525.00
1.43	Supply & delivery of 120 watt LED die-cast aluminium IP66 flood light,suitable for highlighting architectural facade and general purpose lighting. 120WLED757ASYMLTG Make :HAVELLS/BAJAJ/K-LITE OR Magic/CG	Each	2.00	9653.00	19,306.00
1.44	Supply & delivery of 4 ft LED Tube Light Luminarie complete, model- Smartbrite Xtra, CAT REF:BN100C LED40S-6500 PSU L120 GR MAKE:Philips/Havells/Crompton/K-Lite	Each	2	800.00	1600.00

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1.45	Fixing only fluorescent light fitting suspended 25 cm bellow the ceiling with 2 No. 20 mm dia EI conduit (14 SWG) supports incl. S&F EI conduit, ball socket/socket type ceiling plate and connecting the length of PVC insulated wire and painting etc. as required by 2x24/0.20 mm (1.5sqmm) flexible copper wire of 1.10 mt. length.	Each	38.00	220.42	8375.96
1.46	Supply of 1200 mm Ceiling fanFan.Make:Usha/Crompton/Khaitan/EPC	Each	1	1900.00	1900.00
1.47	Fixing only ceiling fan complete with blades, canopy, fork, rubber bush etc. incl. S&F connecting wire for down rod upto 30 cm incl. painting the rod with approved paint and making necessary connection as required by 2x1.5 sqmm flexible copper wire.	Each	1	67.98	67.98
	Extra for supplying additional wire for down rod & painting the rod exceeding 30 cm by 2x1.5 sqmm flexible copper wire.	RM	1	45.32	45.32
1.48	Fixing only Floodlight fittings on top of masonary structure by 3 Nos. 10 mm dia x 87 mm long rag bolts, nuts & double washers complete either 37 mm x 10 mm MS flat support/or by other means as required	Each	2.00	220.42	440.84
1.49	Supply & Fixing Socket type fan regulator (Step type)(Brand approved by EIC) on existing sheet metal switchboard with bakelite/perspex top cover by screw after making housing for regulator knob by cutting bakelite/perspex top cover incl. making necy. connections etc	each	1	243.08	243.08
1.50	Supply and fixing of feeder pillar box (overall approx dimension1400mmx750mmx525mm fabricated from 3mm and 6 mm thick MS Plate as per drawing in brick cement foundation(1:6) plastering (12 mm thk) neat cementing (1.5 mm thk) incl. supplying and fixing 250 mm long 16 mm dia bolts, nuts, washers, back plate etc. Incl.supplying and fixing sheet metal(16 SWG) iron clad bus bar chamber on angle iron frame with 4 bars, 415V, 63A, 4x20x5mm and 1 no 4P 32A MCB, 4 No 4P 16A MCB, 1 no Time Switch Model TSQ-100, Type-QTN, 1 no contactor cat no-SS90910 (or equivalent, 1 no auto/ manual selector, push button sets and two no earthen with 50 mm dia GI pipe 3.64 mm thk X 3.04 m long and 1x4 SWG GI (Hot dip) wire (4m long), 13 mm dia x 80 mm long GI bolts, Double nuts, Double washers incl. S&F 15 mm dia GI pipe protection (5 m long) to be fitted with bitumen partly under the ground level and partly above ground level driven to an average depth of 3.65 m. Below the ground level 4 no as per drawing and direction of EIC.	Job	1.00	27303.00	27,303.00
1.51	Service connection charges WBSEDCL	Item	1.00	30000.00	30,000.00
B	**Total Construction Cost for Main Entrance Gate (Electrical Part)=**				**4,79,334.18**
BOQ for Main Trunk Road (Length 1766m)					
2.1	Pumping out water from ponds or tanks	%Cum	58748.00	1044.00	6,13,329.12

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
2.2	Clearing and Grubbing Road Land Clearing and grubbing road land including uprooting wild vegetation, grass, bushes, shrubs, saplings and trees of girth upto 300 mm, removal of stumps of such trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned, upto a lead of 1000 m including removal and disposal of top organic soil not exceeding 150 mm in thickness as per Technical Specifications Clause 201 for Rural Roads of MORD.	Hectre	1.24	23363.00	28,970.12
2.3	Earthwork in cutting to form road section in correct profile including removal of spoils not exceeding initial lead of 50m and initial lift of 1.5m (ii) In mixed soil (i,e. clay mixed with kankar, pebbles, moorum etc.)	Cum	6334.26	89.90	5,69,449.97
2.4	**Construction of Subgrade with Fly ash / Pond ash available from coal or lignite burning Thermal Plants as waste material (70%) and fine Sand (30%):**Construction of Subgrade with fly ash (70%) conforming to table 1 of IRC: SP: 58 - 2001 obtained from coal or lignite burning thermal power stations as waste material and fine sand (30%) properly mixed by mechanical means, spread and compacted in layer of 200mm thickness each so as to achieve 98% of maximum dry density, as specified in IRC: SP: 58-2001 and as per approved plans with lead upto 1000 m as per direction of Engineer-in-Charge.	Cum	7417.20	792.45	58,75,534.98
2.5	**Granular Sub-base with Graded Material (Table:-400-1)** A. Plant Mix Method: Construction of granular sub-base by providing graded material, mixing in Wet Mix Plant at OMC, carriage of mixed material to work site, spreading in uniform layers with Motor grader on prepared surface in proper grade and camber, compacting with vibratory power roller to achieve the desired density, including lighting, guarding, barricading, including cost of all materials, machinery, tools and plants and cost of quality control complete as per Clause 401 of Specifications for Road & Bridge Works of MoRT&H (5th Revision).				
	GSB Gr-IV	Cum	2472.40	2533.49	62,63,800.68
	GSB.Gr-VI	Cum	2472.40	2253.64	55,71,899.54
2.6	**Prime Coat**:- Providing and applying primer coat with Cationic Bitumen Emulsion of approved grade conforming to IS: 8887-1978 and requisite quantity on prepared surface of granular base including cleaning of road surface and spraying primer using Mechanical means including cost and carriage of bitumen emulsion and all other incidental costs of work complete as per Clause 502 of Specifications for Road & Bridge Works of MoRT&H (5th Revision).				
	For WBM/WMM Surface (0.85kg/sqm)	Sqm	24724.00	32.79	8,10,699.96

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
2.7	**Tack Coat:-** Providing and applying tack coat with Cationic Bitumen Emulsion of approved grade conforming to IS: 8887-1978 on the prepared surface cleaned with Hydraulic broom,moistening the surface including cost and carriage of emulsion, hire charges of machinery and labour, cost of fuel and lubricants all complete as per Clause 503 of Specifications for Road & Bridge Works of MoRT&H (5th Revision). (0.25 kg/Sqm)	Sqm	24724.00	10.50	2,59,602.00
2.8	**Wet Mix Macadam Base Course:** Providing, laying, spreading and compacting graded stone aggregate to Wet Mix Macadam specification including screening of aggregates and granular materials, premixing the material with water at OMC in Wet Mix Plant, carriage of mixed material by tipper to site, laying in uniform layers with Paver in Sub- base / Base course on well prepared surface and compacting with Vibratory Roller to achieve the desired density, including supply of all materials, machinery, fuel and lubricants, including incidental costs for lighting, guarding, barricading, making earthen bundh to protect the edges including cost of quality control complete as per Clause 406 of Specifications for Road & Bridge Works of MoRT&H (5th Revision).	Cum	6181.00	3004.15	1,85,68,651.20
2.9	**Dense Bituminous Macadam:** Providing and laying dense bituminous macadam with Hot Mix Plant producing an average output of 75 tonnes per hour using coarse aggregate, fine aggregate, filler and bituminous binder as per design Job Mix Formula conforming Marshall Method as per specification, including screening, cleaning of chips and preparing a uniform and quality mix in Hot Mix Plant and ensuring a homogeneous mix, in which all particles of the mineral aggregates are coated uniformly, transporting the hot mix to work site, laying the mixed materials at specified laying temperature with a hydrostatic paver finisher with sensor control to the required grade, level and alignment over prepared surface coated with tack coat, rolling with smooth wheeled, vibratory and tandem rollers for break down, inter-mediate and finished rolling to achieve the desired density of at least 98% of that of Laboratory Marshall specimen, hand packing and pinning to give an even surface including cost and carriage of bitumen, coarse and fine aggregates and filler materials and hire charges of machinery and equipment for construction and quality control, fuels and lubricants and wages of operational staff complete as per Clause 505 of Specifications for Road & Bridge Works of MoRT&H (5th Revision).				
	A. For Grading 1 (37.5 mm nominal size, 75-100 mm thick.) (i) Using Batch Type HMP of minimum capacity 100-120 TPH.	Cum	2719.64	8535.46	2,32,13,378.40

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
2.10	**Bituminous Concrete:** Providing and laying bituminous concrete with Hot Mix Plant using coarse aggregates, fine aggregates, filler materials and bituminous binder of required specification including screening, cleaning of chips and preparing a uniform and quality mix in Hot Mix Plant and ensuring a homogeneous mix, in which all particles of the mineral aggregates are coated uniformly, transporting the hot mix to work site, laying the mixed materials at specified laying temperature with a hydrostatic paver finisher with sensor control to the required grade, level and alignment over prepared surface coated with tack coat, rolling with smooth wheeled, vibratory and tandem rollers for break down, inter-mediate and finished rolling to achieve the desired density of at least 98% of that of Laboratory Marshall specimen, including cost and carriage of bitumen, coarse and fine aggregates and filler materials and hire charges of machinery and equipment for construction and quality control,fuels and lubricants and wages of operational staff complete as per Clause 507 of Specifications for Road & Bridge Works of MoRT&H (5th Revision).				
	B. For Grading 2 (13.2 mm nominal size, 30mm/40 mm thick.) (i) Using Batch Type HMP of minimum capacity 100-120 TPH.	Cum	988.96	9785.48	96,77,448.30
2.11	**Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface** :-Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35. The finished surface to be level, uniform and free from streaks and holes complete as per Clause 803 of Specifications for Road & Bridge Works of MoRT&H (5th Revision).	Sqm	618.10	584.00	360970.40
2.12	**Road Studs:** Supplying & Providing and fixing of road stud 100x 100 mm, die-cast in aluminium, resistant to corrosive effect of salt and grit, fitted with lens reflectors, installed in concrete or asphaltic surface by drilling hole 30 mm upto a depth of 60 mm and bedded in a suitable bituminous grout or epoxy mortar, all as per BIS 873 part 4:1973	Nos	294.00	255.00	74970.00
2.13	Earth work in filling in compound, tank, low land, ditches etc. with good earth, in layers not exceeding 150 mm. including breaking clods and consolidating the same by ramming and dressing complete. (Payment will be made on profile measurement before and after the work) b) (iii) With carried earth arranged by the contractor within a radius exceeding 5 km. but not exceeding 10 km. including cost of carried earth.	Cum	2189.84	512.36	11,21,986.42
2.14	Supplying and stacking of good earth (adequate for horticulture work) at site including royalty (earth measured in stack will be reduced by 20% for payment)	cum	1766.00	306.00	5,40,396.00

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
2.15	Supplying and stacking sludge (adequate for Horticulture work) at site in dry cake form from approved disposal work site including royalty, all lead and lift etc. (Sludge measured in stack will be reduced by 8%).	cum	353.20	457.00	1,61,412.40
2.16	Spreading of sludge, dump manure,/farm yard manure/animel dung manure and good earth in required thickness. This includes supply of labour, tools & plants excluding materials.	sqm	3532.00	1.75	6,181.00
2.17	Supplying and fixing grasses tiles of grass Maxican Carpet/Selection No. 1 Healthy & fresh grasses (size 1'x1' or bigger) including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn free from wees and fit for mowing including supplying good earth as required by Engineer-in-charge. (Rate includes supply of labour, tools & plants including materials)	Sqm	3532.00	201.42	7,11,415.44
2.18	Preparation of beds for hedging and shrubbery by excavating 60cm deep and trenching the excavated base to a further depth of 30cm, refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 (8 parts of stacked volume of earth after reduction by 20%, one part of stacked volume of sludge or manure after reduction by 8%), flooding with water, filling with earth if necessary watering and finally fine dressing, levelling etc. including stacking and disposal of materials declared unserviceable and surplus earth by spreading and levelling as directed, within a lead of 50m lift upto 1.5m complete.This includes supply of labour, tools & plants including materials. Planting hedge plants in two rows at 30cm apart	Sqm	1059.60	35.30	37,403.88
2.19	Supplying and Planting of different plant / trees (Supplying well grown plants bushy and healthy, minimum height as specified i.e. exposed height including all leads & lift, carriage, handling, manuring, applying presticide and fertilizer etc .xxvii) Areca Palm 4 - 5 suckers of height 120 cm to 135 cm in earthen pots of size 25 cm.	each	354.00	163.00	57,702.00
2.20	Cast in Situ Cement Concrete M 20 Kerb with Channel Construction of cement concrete kerb with channel with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M10 grade foundation 150 mm thick, kerb channel 300 mm wide, 50 mm thick in PCC M20 grade, sloped towards the kerb, kerb stone with channel laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 409 of Specifications for Road & Bridge Works of MoRT&H (5th Revision). (The rate is inclusive of cost of all materials, labour, hire and usage charges of machinery and all incidental charges in this connection.)B) Using Concrete Batching and Mixing Plant	Metre	7064.00	525.00	37,08,600.00
2.21	Single Brick Flat Soling of picked jhama bricks including ramming and dressing bed to proper level and filling joints with local sand.	Sqm	26.39	348.00	9,183.72

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
2.22	Cement concrete with graded jhama khoa (30 mm size) excluding shuttering In ground floor and foundation. (a) 1:3:6 proportion	Cum	1.98	4439.00	8,789.22
2.23	125 mm. thick brick work with 1st class bricks in cement mortar (1:3) in ground floor.	Sqm	37.12	741	27,505.92
2.24	(b) 75 mm. thick brick work with 1st class bricks set in cement, sand mortar (1:3) in ground floor including H.B. netting in every alternate layers.	Sqm	16.24	535	8,688.40
2.25	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar including rounding off or chamfering corners as directed and raking out joints including throating, nosing and drip course, scaffolding/staging where necessary (Ground floor).[Excluding cost of chipping over concrete surface](ii) With 1:4 cement mortar(c) 10 mm thick plaster	Sqm	41.76	125.00	5,220.00
2.26	Neat cement punning about 1.5mm thick in wall, dado, window sill, floor etc. NOTE: Cement 0.152 cu.m per100 sq.m.	Sqm	41.76	34.00	1,419.84
2.27	Supplying, fitting and fixing in position FRP/GRP/COMPOSITE UV stabilizer Gully Pit Cover with high abrasion surface of 7mm top thicknes, density of 2KG/m³ of approved make with rim of approved make (Heavy type) (i) 40 M.T. Gully pit cover (yard gully) with arrangement for opening of sizeFrame Clear Opening Nos. 450 mm X 450 mm. Cover Out to Out 550 mm X 550 mm.	Nos	58.00	9544.00	5,53,552.00
C	**Total Construction Cost for Main Trunk Road (1766 m)=**				**7,88,48,160.91**
BOQ for Arterial Road (Length 1734m)					
3.1	Pumping out water from ponds or tanks	Cum	44926.80	10.44	4,69,035.79
3.2	Clearing and Grubbing Road Land Clearing and grubbing road land including uprooting wild vegetation, grass, bushes, shrubs, saplings and trees of girth upto 300 mm, removal of stumps of such trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned, upto a lead of 1000 m including removal and disposal of top organic soil not exceeding 150 mm in thickness as per Technical Specifications Clause 201 for Rural Roads of MORD.	Hectre	2.95	23363.00	68,920.85
3.3	Earthwork in cutting to form road section in correct profile including removal of spoils not exceeding initial lead of 50m and initial lift of 1.5m ii) In mixed soil (i,e. clay mixed with kankar, pebbles, moorum etc.)	Cum	5425.28	89.90	4,87,732.67
3.4	**Construction of Subgrade with Fly ash / Pond ash available from coal or lignite burning Thermal Plants as waste material (70%) and fine Sand (30%):**Construction of Subgrade with fly ash (70%) conforming to table 1 of IRC: SP: 58 - 2001 obtained from coal or lignite burning thermal power stations as waste material and fine sand (30%) properly mixed by mechanical means, spread and compacted in layer of 200mm thickness each so as to achieve 98% of maximum dry density, as specified in IRC: SP: 58-2001 and as per approved plans with lead upto 1000 m as per direction of Engineer-in-Charge.	Cum	3641.40	792.45	28,85,627.43

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
3.5	**Granular Sub-base with Graded Material (Table:-400-1)** A. Plant Mix Method: Construction of granular sub-base by providing graded material, mixing in Wet Mix Plant at OMC, carriage of mixed material to work site, spreading in uniform layers with Motor grader on prepared surface in proper grade and camber, compacting with vibratory power roller to achieve the desired density, including lighting, guarding, barricading, including cost of all materials, machinery, tools and plants and cost of quality control complete as per Clause 401 of Specifications for Road & Bridge Works of MoRT&H (5th Revision).				
	GSB Gr-IV	Cum	1213.80	2533.49	30,75,150.16
	GSB.Gr-VI	Cum	1213.80	2253.64	27,35,468.23
3.6	**Prime Coat**:- Providing and applying primer coat with Cationic Bitumen Emulsion of approved grade conforming to IS: 8887-1978 and requisite quantity on prepared surface of granular base including cleaning of road surface and spraying primer using Mechanical means including cost and carriage of bitumen emulsion and all other incidental costs of work complete as per Clause 502 of Specifications for Road & Bridge Works of MoRT&H (5th Revision). For WBM/WMM Surface (0.85kg/sqm)	Sqm	12138.00	32.79	3,98,005.02
3.7	**Tack Coat:-** Providing and applying tack coat with Cationic Bitumen Emulsion of approved grade conforming to IS: 8887-1978 on the prepared surface cleaned with Hydraulic broom, moistening the surface including cost and carriage of emulsion, hire charges of machinery and labour, cost of fuel and lubricants all complete as per Clause 503 of Specifications for Road & Bridge Works of MoRT&H (5th Revision). (0.25 kg/Sqm)	Sqm	12138.00	10.50	1,27,449.00
3.8	**Wet Mix Macadam Base Course:** Providing, laying, spreading and compacting graded stone aggregate to Wet Mix Macadam specification including screening of aggregates and granular materials, premixing the material with water at OMC in Wet Mix Plant, carriage of mixed material by tipper to site, laying in uniform layers with Paver in Sub- base / Base course on well prepared surface and compacting with Vibratory Roller to achieve the desired density, including supply of all materials, machinery, fuel and lubricants, including incidental costs for lighting, guarding, barricading, making earthen bundh to protect the edges including cost of quality control complete as per Clause 406 of Specifications for Road & Bridge Works of MoRT&H (5th Revision).	Cum	3034.50	3004.15	91,16,093.18

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
3.9	**Dense Bituminous Macadam:** Providing and laying dense bituminous macadam with Hot Mix Plant producing an average output of 75 tonnes per hour using coarse aggregate, fine aggregate, filler and bituminous binder as per design Job Mix Formula conforming Marshall Method as per specification, including screening, cleaning of chips and preparing a uniform and quality mix in Hot Mix Plant and ensuring a homogeneous mix, in which all particles of the mineral aggregates are coated uniformly, transporting the hot mix to work site, laying the mixed materials at specified laying temperature with a hydrostatic paver finisher with sensor control to the required grade, level and alignment over prepared surface coated with tack coat, rolling with smooth wheeled, vibratory and tandem rollers for break down, inter-mediate and finished rolling to achieve the desired density of at least 98% of that of Laboratory Marshall specimen, hand packing and pinning to give an even surface including cost and carriage of bitumen, coarse and fine aggregates and filler materials and hire charges of machinery and equipment for construction and quality control, fuels and lubricants and wages of operational staff complete as per Clause 505 of Specifications for Road & Bridge Works of MoRT&H (5th Revision).				
	A. For Grading 1 (37.5 mm nominal size, 75-100 mm thick.) (i) Using Batch Type HMP of minimum capacity 100-120 TPH.	Cum	1031.73	8535.46	88,06,290.15
3.10	**Bituminous Concrete:** Providing and laying bituminous concrete with Hot Mix Plant using coarse aggregates, fine aggregates, filler materials and bituminous binder of required specification including screening, cleaning of chips and preparing a uniform and quality mix in Hot Mix Plant and ensuring a homogeneous mix, in which all particles of the mineral aggregates are coated uniformly, transporting the hot mix to work site, laying the mixed materials at specified laying temperature with a hydrostatic paver finisher with sensor control to the required grade, level and alignment over prepared surface coated with tack coat, rolling with smooth wheeled, vibratory and tandem rollers for break down, inter-mediate and finished rolling to achieve the desired density of at least 98% of that of Laboratory Marshall specimen, including cost and carriage of bitumen, coarse and fine aggregates and filler materials and hire charges of machinery and equipment for construction and quality control,fuels and lubricants and wages of operational staff complete as per Clause 507 of Specifications for Road & Bridge Works of MoRT&H (5th Revision).				
	B. For Grading 2 (13.2 mm nominal size, 30mm/40 mm thick.)(i) Using Batch Type HMP of minimum capacity 100-120 TPH.	Cum	485.52		47,51,046.25

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
3.11	**Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface** :-Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35. The finished surface to be level, uniform and free from streaks and holes complete as per Clause 803 of Specifications for Road & Bridge Works of MoRT&H (5th Revision).	Sqm	606.90	584.00	3,54,429.60
3.12	**Road Studs:** Supplying & Providing and fixing of road stud 100x 100 mm, die-cast in aluminium, resistant to corrosive effect of salt and grit, fitted with lens reflectors, installed in concrete or asphaltic surface by drilling hole 30 mm upto a depth of 60 mm and bedded in a suitable bituminous grout or epoxy mortar, all as per BIS 873 part 4:1973	Nos	289.00	255.00	73,695.00
3.13	Cast in Situ Cement Concrete M 20 Kerb with Channel Construction of cement concrete kerb with channel with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M10 grade foundation 150 mm thick, kerb channel 300 mm wide, 50 mm thick in PCC M20 grade, sloped towards the kerb, kerb stone with channel laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 409 of Specifications for Road & Bridge Works of MoRT&H (5th Revision). (The rate is inclusive of cost of all materials, labour, hire and usage charges of machinery and all incidental charges in this connection.)B) Using Concrete Batching and Mixing Plant	Metre	3468.00	525.00	18,20,700.00
3.14	Single Brick Flat Soling of picked jhama bricks including ramming and dressing bed to proper level and filling joints with local sand.	Sqm	26.39	348.00	9,183.72
3.15	Cement concrete with graded jhama khoa (30 mm size) excluding shuttering In ground floor and foundation. (a) 1:3:6 proportion	Cum	1.98	4439.00	8,789.22
3.16	125 mm. thick brick work with 1st class bricks in cement mortar (1:3) in ground floor.	Sqm	37.12	741	27,505.92
3.17	(b) 75 mm. thick brick work with 1st class bricks set in cement, sand mortar (1:3) in ground floor including H.B. netting in every alternate layers.	Sqm	16.24	535	8,688.40
3.18	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar including rounding off or chamfering corners as directed and raking out joints including throating, nosing and drip course, scaffolding/staging where necessary (Ground floor).[Excluding cost of chipping over concrete surface](ii) With 1:4 cement mortar(c) 10 mm thick plaster	Sqm	41.76	125.00	5,220.00
3.19	Neat cement punning about 1.5mm thick in wall, dado, window sill, floor etc. NOTE:Cement 0.152 cu.m per100 sq.m.	Sqm	41.76	34.00	1,419.84

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
3.20	Supplying, fitting and fixing in position FRP/GRP/COMPOSITE UV stabilizer Gully Pit Cover with high abrasion surface of 7mm top thicknes, density of 2KG/m³ of approved make with rim of approved make (Heavy type) (i) 40 M.T. Gully pit cover (yard gully) with arrangement for opening of size Frame Clear Opening Nos. 450 mm X 450 mm. Cover Out to Out 550 mm X 550 mm.	Nos	58.00	9544.00	5,53,552.00
D	**Total Construction Cost for Arterial Road (1734 m)=**				**3,57,84,002.43**
BOQ for Diversion Road (Length 1811m)					
4.1	Pumping out water from ponds or tanks	Cum	19273.00	10.44	2,01,210.12
4.2	Clearing and Grubbing Road Land Clearing and grubbing road land including uprooting wild vegetation, grass, bushes, shrubs, saplings and trees of girth upto 300 mm, removal of stumps of such trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned, upto a lead of 1000 m including removal and disposal of top organic soil not exceeding 150 mm in thickness as per Technical Specifications Clause 201 for Rural Roads of MORD.	Hectre	1.27	23363.00	29,671.01
4.3	**Granular Sub-base with Graded Material (Table:-400-1)** A. Plant Mix Method: Construction of granular sub-base by providing graded material, mixing in Wet Mix Plant at OMC, carriage of mixed material to work site,spreading in uniform layers with Motor grader on prepared surface in proper grade and camber, compacting with vibratory power roller to achieve the desired density, including lighting, guarding, barricading, including cost of all materials, machinery, tools and plants and cost of quality control complete as per Clause 401 of Specifications for Road & Bridge Works of MoRT&H (5th Revision).				
	GSB Gr-IV	Cum	1086.60	2533.49	27,52,890.23
	GSB.Gr-VI	Cum	1086.60	2253.64	24,48,805.22
4.4	Supplying, spreading and consolidating Moorum to a depth of 75 mm at desired density and C.B.R. as per specification with power roller to proper gradient and camber including watering as necessary, and lighting, guarding, barricading and making adequate earthen bundh where necessary to protect the edges and curing with water for 2 to 3 days, mending cracks by rolling where necessary including all incidental charges of roller, cost of fuel & lubricants etc. complete as per specification.	Cum	1629.90	1888.18	30,77,544.58
4.5	**Construction of Subgrade and Earthen Shoulders:** Construction of subgrade and earthen shoulders with approved material obtained from borrow pits with all lifts and leads, transporting to site, spreading, grading to required slope and compacted to meet requirement of Table 300.2 with lead upto 1000 m as per Technical Specification Clause 303.1 for Rural Roads of MORD. (Borrow pit /pre work post workmeasurement)	Cum	869.28	289.90	252004.27

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
4.6	**Hard Shoulder:**-Water Bound Macadam Sub Base by consolidating Jhama metal / Laterite chelly or stone metal / shingles of specific size in hard crust to requisite thickness (measured after compaction) in layers including screening of metals etc. as necessary, hand packing, sweeping, watering and rolling in stages with power roller to proper line, grade and camber, lighting, guarding & barricading and making necessary earthen bundh of one metre width on each side where necessary to protect edges and preparing the bed by necessary cutting or filling and rolling all complete including the cost of all materials and hire and labour charges of all men and machineries and compacting to the required density, as per Clause 404 of Specifications for Road & Bridge Works of MoRT&H (5th Revision).	Cum	543.30	766.55	4,16,466.62
E	**Total Construction Cost for Diversion Road (1811 m)=**				**91,78,592.06**
BOQ for Protection Work					
5.1	Supplying Eucalyptus-bullah piles at work site, including dressing and making one end pointed. (iii) 150mm diameter	m	48126.00	217.00	1,04,43,342.00
	i)100mm dia	m	8018.08	96.00	7,69,735.68
5.2	Labour for driving Sal-bullah / Eucalyptus bullah piles by monkey in sorts of soil including hoisting and placing piles in position, protecting the pile head with iron ring and cutting and shaping heads before and after driving and including hire and labour for necessary driving appliances and all tackles. (iii) 150mm diameter	m	24063.00	105.00	25,26,615.00
5.3	Coal tarring on wooden surfaces including cost of materials i) Double coat	Sqm	25104.82	36.00	9,03,773.52
5.4	Supplying empty Cement bags in good condition.	100 bags	40090.00	330.00	1,32,297.00
5.5	Filling empty Cement bags with dry earth or sand, stitching the bag (cost of thread included) and carrying and placing them in position and all incidental charges complete but excluding cost of sand and gunny bags.	100 bags	40090.00	1738.00	6,96,764.20
5.6	Labour for fitting and fixing 10 cm. to 13 cm. diameter Sal-bullah/Eucalyptus-bullah as ties and runners including necessary nails, bolts and nuts.	m	8018.08	20.60	1,65,172.45
F	**Total Construction Cost for Protection Work=**				**1,56,37,699.85**
BOQ for Boundary Wall					
6.1	Earth work in excavation of foundation trenches or drains, in all sorts of soil (including mixed soil but excluding laterite or sandstone) including removing, spreading or stacking the spoils within a lead of 75 m. as directed. The item includes necessary trimming the sides of trenches, levelling, dressing and ramming the bottom, bailing out water as required complete.(a) Depth of excavation not exceeding 1,500 mm.	Cu.M	13.92	119.27	1660.24

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
6.2	a) Earth work in filling in foundation trenches or plinth with good earth, in layers not exceeding 150 mm. including watering and ramming etc. layer by layer complete. (Payment to be made on the basis of measurement of finished quantity of work) (a) With earth obtained from excavation of foundation.	Cu.M	4.17	77.54	323.34
6.3	(A) Filling in foundation or plinth by silver sand in layers not exceeding 150 mm. as directed and consolidating same by thorough saturation with water ramming complete, including the cost of supply of sand. (Payment to be made on measurement of finished quantity)	Cu.M	0.78	543.51	423.94
6.4	Single brick flat soling of picked jhama bricks including ramming and dressing bed to proper level and filling joints with powdered earth or local sand.	Sqm	7.84	348.00	2728.32
6.5	Cement concrete with graded jhama khoa (30 mm size) excluding shuttering In ground floor and foundation. (a) 1:3:6 proportion	Cum	0.78	4439.00	3462.42
6.6	Hire and labour charges for shuttering with centreing and necessary staging upto 4 m. using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams, columns, lintels curved or straight including fitting, fixing and striking out after completion of works. (upto roof of ground floor) (c) Steel shuttering or 9 to 12 mm thick approved quality ply board shuttering in any concrete work as per decision & direction of Engineer-in-charge.	Sqm	42.90	359.00	15401.10
6.7	Ordinary Cement concrete (mix 1:1.5:3) with graded stone chips (20 mm nominal size) excluding shuttering and reinforcement if any, in ground floor as per relevant IS codes. (i) Pakur Variety	Cum.	4.86	5871.92	28537.53
6.8	Reinforcement for reinforced concrete work in all sorts of structures including distribution bars, stirrups,binders etc. including supply of rods, initial straightening and removal of loose rust (if necessary), cutting to requisite length, hooking and bending to correct shape,placing in proper position and binding with 16 gauge black annealed wire at every inter-section, complete as per drawing and direction. (a) For works in foundation, basement and upto roof of ground floor / upto 4m.	MT	1.170	54400.74	63,648.87
6.9	Brick work with 1st class bricks in cement mortar (1:6)				
	(a) In foundation and plinth	Cum	2.03	5198.00	10,551.94
	(b) In superstructure, ground floor	Cum	2.08	5420.00	11,273.60
6.10	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar including rounding off or chamfering corners as directed and raking out joints including throating, nosing and drip course, scaffolding/staging where necessary (Ground floor).[Excluding cost of chipping over concrete surface](ii) With 1:4 cement mortar(c) 10 mm thick plaster	Sqm	40.00	125.00	5,000.00

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
6.11	Applying Exterior grade Acrylic primer of approved quality and brand on plastered or cencrete surface old or new surface to receive decorative textured (matt finish) or smooth finish acrylic exterior emulsion paint including scraping and preparing the surface throughly, complete as per manufacturer's specification and as per direction of the EIC. In Ground Floor: (b) Two Coats	%Sqm	40.00	4510.00	1804.00
6.12	Applying Acrylic Emulsion Paint of approved make and brand on walls and ceiling including sand papering in intermediate coats including putty (to be done under specific instruction of Superintending Engineer) : (Two coats) i) Standard Quality	Sqm	40.00	62.00	2480.00
6.13	Supplying fitting and fixing 600 mm (±30 mm) diametre R.B.T(Reinforced Barbed Tape) Concertina fencing on wall top using concertina coils stretched to approx.6 meters length at site clipped with two nos. of horizontal R.B.T strands which will be tensioned and fixed with the vertical M.S angle iron posts by means of security fasteners (such as 'C' clips, R.B.T clips etc.)	Mtr	10.00	408.00	4080.00
6.14	Supplying at site or stackyard or as directed PCC (1 : 2 :4) Fencing Post 215 cm 150 mm X 150 mm section at bottom, 100 mm X 100 mm section at top with T-Base 300 mm X 150 mm X 100 mm, having 4 nos 6 mm dia vertical M.S. reinforcement and 6 mm dia binders @ 200 mm centres, finished smooth etc., complete.	Each	4.00	441.00	1764.00
	Total Construction Cost for Boundary Wall (For 10m length)=				**1,53,139.30**
G	**Total Construction Cost for Boundary Wall (For 6812m length)=**				**10,43,18,286.80**
BOQ for Concrete Drain					
7.1	(B) Filling in foundation or plinth by silver sand in layers not exceeding 150 mm as directed and consolidating the same by thorough saturation with water, ramming complete including the cost of supply of sand. (payment to be made on measurement of finished quantity)	Cum	890.40	543.51	4,83,723.90
7.2	Single Brick Flat Soling of picked jhama bricks including ramming and dressing bed to proper level and filling joints with local sand.	Sqm	11872.00	348.00	41,31,456.00
7.3	Cement concrete with graded jhama khoa (30 mm size) excluding shuttering In ground floor and foundation. (a) 1:3:6 proportion	Cum	890.40	4439.00	39,52,485.60
7.4	Hire and labour charges for Shuttering with or without staging upto 4.0 m height using approved stout props with wooden planks/ply wood/steel sheet plate with required bracing for any kind of plain or reinforced concrete works in all sorts of minor structure including culvert, box culvert, crossdrain etc. The rate is inclusive of fitting, fixing and striking out after completion of work as perspecification and direction.				
	(b) Where staging is not required.	Sqm	45744.88	214.00	97,89,404.32

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
7.5	Controlled Cement concrete with well graded stone chips (20 mm nominal size) excluding shuttering and reinforcement with complete design of concrete as per IS : 456 and relevant special publications, submission of job mix formula after preliminary mix design after testing of concrete cubes as per direction of Engineer-in charge. Consumption of cement will not be less than 300 Kg of cement with Super plasticiser per cubic meter of controlled concrete but actual consumption will be determined on the basis of preliminary test and job mix foumula. In ground floor and foundation.[using concrete mixture] M 25 Grade				
	(i) Pakur Variety	Cum	5751.686	6365.64	3,66,13,187.93
7.6	Reinforcement for reinforced concrete work in all sorts of structures including distribution bars, stirrups,binders etc. including supply of rods, initial straightening and removal of loose rust (if necessary), cutting to requisite length, hooking and bending to correct shape,placing in proper position and binding with 16 gauge black annealed wire at every inter-section, complete as per drawing and direction. (a) For works in foundation, basement and upto roof of ground floor / upto 4m.	MT	564.185	54400.74	3,06,92,353.50
7.7	Red oxide wash of approved shade including cleaning and smoothening surface thoroughly (without specific permission from the Engineer-incharge this item of work must not be done on an old painted surface which has not received such red oxide wash before) :External surface (Ground floor)(b) Two coats (on new works only).	Sqm	11872.000	33.11	3,93,081.92
7.8	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar including rounding off or chamfering corners as directed and raking out joints including throating, nosing and drip course, scaffolding/staging where necessary (Ground floor).[Excluding cost of chipping over concrete surface] (ii) With 1:4 cement mortar (c) 10 mm thick plaster	Sqm	34204.540	125.00	42,75,565.00
7.9	Neat cement punning about 1.5mm thick in wall, dado, window Sill, floor etc. NOTE: Cement 0.152 cu.m per 100 Sq.m.	Sqm	34204.000	34.00	11,62,954.36
H	**Total Construction Cost for Concrete Drain=**				**9,14,94,212.53**
BOQ for Utility Trench (Length 5396m)					
8.1	(A) Filling in foundation or plinth by silver sand in layers not exceeding 150 mm. as directed and consolidating same by thorough saturation with water ramming complete, including the cost of supply of sand. (Payment to be made on measurement of finished quantity)	Cu.M	1335.60	543.51	725911.96

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
8.2	Single Brick Flat Soling of picked jhama bricks including ramming and dressing bed to proper level and filling joints with local sand.	Sqm	17808.00	348.00	61,97,184.00
8.3	Cement concrete with graded jhama khoa (30 mm size) excluding shuttering In ground floor and foundation. (a) 1:3:6 proportion	Cum	1335.60	4439.00	59,28,728.40
8.4	Hire and labour charges for Shuttering with or without staging upto 4.0 m height using approved stout props with wooden planks/ply wood/steel sheet plate with required bracing for any kind of plain or reinforced concrete works in all sorts of minor structure including culvert, box culvert, crossdrain etc. The rate is inclusive of fitting, fixing and striking out after completion of work as perspecification and direction.				
	(b) Where staging is not required.	Sqm	1131.00	214.00	2,42,034.00
8.5	Ordinary Cement concrete (mix 1:1.5:3) with graded stone chips (20 mm nominal size) excluding shuttering and reinforcement if any, in ground floor as per relevant IS codes.				
	(i) Pakur Variety	Cum	1335.600	5871.92	78,42,536.35
8.6	Reinforcement for reinforced concrete work in all sorts of structures including distribution bars, stirrups,binders etc. including supply of rods, initial straightening and removal of loose rust (if necessary), cutting to requisite length, hooking and bending to correct shape,placing in proper position and binding with 16 gauge black annealed wire at every inter-section, complete as per drawing and direction. (a) For works in foundation, basement and upto roof of ground floor / upto 4m.	MT	149.978	54400.74	81,58,914.18
8.7	Brick work with 1st class bricks in cement mortar (1:6)(a) In foundation and plinth	Cum	2374.40	5198.00	1,23,42,131.20
8.8	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar including rounding off or chamfering corners as directed and raking out joints including throating, nosing and drip course, scaffolding/staging where necessary (Ground floor).[Excluding cost of chipping over concrete surface](ii) With 1:4 cement mortar(c) 10 mm thick plaster	Sqm	27157.20	125.00	33,94,650.00
8.9	Neat cement punning about 1.5mm thick in wall, dado, window sill, floor etc. NOTE:Cement 0.152 cu.m per100 sq.m.	Sqm	27157.20	34.00	9,23,344.80
I	**Total Construction Cost for Utility Trench (For 5396m length)=**				**4,57,55,434.89**
BOQ for Cross Drainage Work (Hume Pipe)					
9.1	(A) Filling in foundation or plinth by silver sand in layers not exceeding 150 mm. as directed and consolidating same by thorough saturation with water ramming complete, including the cost of supply of sand. (Payment to be made on measurement of finished quantity)	Cu.M	83.28	543.51	45263.51

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
9.2	Bedding for Pipe i) Type A (Concrete Cradle) Bedding Laying concrete cradle bedding with M15 Grade Cement Concrete as per Clause 1105 (i) for Rural Roads of MORD	Cum	23.94	5165.13	123653.21
9.3	Providing and Laying Reinforced Cement ConcretePipe NP4 as per design in Single Row Providing and laying reinforced cement concrete pipe NP4 with spigot socket for culverts on first class bedding of granular material in single row including fixing with cement mortar 1:2 as per Technical Specification Clause 1106 for Rural Roads of MORD..(A) 1200 mm dia	metre	48.00	10134.84	486472.32
	B) 900 mm dia	metre	30.00	7047.20	211416.00
J	**Total Construction Cost for Cross Drainage Work=**				**8,66,805.05**
BOQ for Box Culvert					
10.1	Excavation for Structures Earth work in excavation of foundation of structures as per drawing and technical specification,including setting out, removing, spreading or stacking of spoils within a lead of 150 m. as directed and including trimming the sides of the trenches, leveling, dressing and ramming the bottom, and backfilling with approved material complete as per direction of the Engineer-in-Charge . I. In all sorts of soil excluding marshy soil & rocks (soft or hard) by manual means. a) upto 3 m depth (iii) Without pumping out water but including shoring as required	Cum	1116.14	115	1,28,356.10
10.2	(A) Filling in foundation or plinth by silver sand in layers not exceeding 150 mm. as directed and consolidating same by thorough saturation with water ramming complete, including the cost of supply of sand. (Payment to be made on measurement of finished quantity)	Cu.M	554.08	543.51	3,01,148.02
10.3	Single brick flat soling of picked jhama bricks including ramming and dressing bed to proper level and filling joints with powdered earth or local sand.	Sqm	380.00	348.00	1,32,240.00
10.4	Ordinary Cement concrete (mix 1:2:4) with graded stone chips (20 mm nominal size) excluding shuttering and reinforcement,if any, in ground floor as per relevant IS codes.a) Pakur Variety	Cum	56.43	5318.34	3,00,113.93
10.5	Hire and labour charges for shuttering with centreing and necessary staging upto 4 m. using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams, columns, lintels curved or straight including fitting, fixing and striking out after completion of works. (upto roof of ground floor) (c) Steel shuttering or 9 to 12 mm thick approved quality ply board shuttering in any concrete work as per decision & direction of Engineer-in-charge.	Sqm	971.32	359.00	3,48,703.88

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
10.6	Plain / Reinforced Cement Concrete in Open foundation with or without reinforcements, in any part of foundation of bridges / culverts with graded stone chips of appropriate nominal sizes, including screening and cleaning of coarse aggregates, zfine aggregate (sand) conforming to proper grading zone, both of approved quality and cement, as necessary, cost of curing with water, including cost and carriage of all materials and including preparation of design mix, approval of the same by the Engineer-in-Charge, cost for quality control, sampling, testing etc. including cost of formwork but excluding reinforcement complete as per drawing and technical specifications. RCC M25	Cum	379.03	6206.680	23,52,517.92
10.7	Supplying, fitting and placing un-coated HYSD bar reinforcement in Bridge Foundation including initial straightening, straightening of coils bars, removal of loose rust (if any), cutting to requisite length bending, binding with annealed wire not less than 1 mm in size and conforming to IS 280 at every intersection hooked and bent to correct shape and placed on forms etc. including cost of black annealed wire and cost of loading, unloading, carriage of all steel materials complete as per drawing and technical specifications and direction of Engineer-in-charge.	MT	44.63	59335.03	26,48,122.39
10.8	Labour for Chipping of concrete surface before taking up Plastering work.	Sqm	971.320	21.00	20,397.72
10.9	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar including rounding off or chamfering corners as directed and raking out joints including throating, nosing and drip course, scaffolding/staging where necessary (Ground floor).[Excluding cost of chipping over concrete surface](ii) With 1:4 cement mortar(c) 10 mm thick plaster	Sqm	1139.32	125.00	1,42,415.00
10.10	Neat cement punning about 1.5mm thick in wall, dado, window sill, floor etc. NOTE:Cement 0.152 cu.m per100 sq.m.	Sqm	1139.32	34.00	38,736.88
K	**Total Construction Cost for Box Culvert=**				**64,12,751.84**
BOQ for Miscellaneous items Part I					
11.1	Design, fabrication, Supply installation, testing & comissioning of 325Watts Solar Panels Poly Crystalline (24V) modules and accessories conforming to IEC 61215 & IEC 61730 & conforming to the other standards with suitable mounting, fixing arrangement on the GI/steel structure.	Set	4	17,500.00	70,000.00
11.2	Supply installation, testing & comissioning of energy storage solar battery with capacity of 150Ah,Material: PVC, Extremely high purity corrosion-resistant spine alloy composition , Higher AH Efficiency >90% & WH Efficiency > 80%.	no.	2	16,000.00	32,000.00
11.3	Supply ,Installation and Commissioning of Air Conditioning sytem with 1.5 Ton 5 Star rated Inverter type facilities.Make: Carrier/Daikin/ Voltas or Equivalent.	Unit	3	51000.00	1,53,000.00

Sl No	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
11.4	Supply ,Installation,Testing and Commissioing of Computer with following specification Processor - dual core 2.4 GHz+ (i5 or i7 series Intel processor or equivalent AMD) RAM - 16 GB,Hard Drive - 256 GB or larger solid state hard drive, Graphics Card - any with isplayPort/HDMI or DVI support - desktop only, Monitor - 23" widescreen LCD with DisplayPort/HDMI or DVI support - desktop only, Operating System - Windows 10 Home or Professional editions	Set	5	50000.00	2,50,000.00
11.5	Supply ,Installation,Testing and Commissioing of Laserjet colour Printer/ scanner Make: HP/ Epson or equivalent,with Print Speed Upto 25/26 ppm A4/letter (Normal), First page out in as fast 8 seconds, 600 MHz processor with 256MB RAM, Duty Cycle up to 15000 pages per month, Color flatbed scanner with ADF Automatic duplex printing Wifi (802.11b/g/n), Built-in Fast Ethernet 10/100Base-TX network portPhone line port (in/out), 7.6 cm color touchscreen, Auto-on/Auto-off technology	Set	1	20000.00	20,000.00
L	**Total Construction Cost for Miscellaneous items Part I =**				**5,25,000.00**
BOQ for Miscellaneous items Part II					
11.6	Supply ,Installation of MS prefabricated portable cabin, cabin wall made of rock wool sandwich panel and roof made of galvanized cold form steel roof frame. Size 9m X 3.5m., including one personal cabin of 3.5m X 3m and one toilet of 1.8 m X 1m.	Sqm	31.5	9,061.00	2,85,421.50
11.7	Supply & Installation of premium quality executive office table made of fine laminated wood, Size:71" X 30" X30"	Nos.	1	22,101.00	22,101.00
11.8	Supply & Installation of revolving executive chair with adjustable height, made with premium leather.	Nos.	1	10,602.00	10,602.00
11.9	Supply & Installation of working station/table made of premium metal, Size:48" X 24" X 30"	Nos.	4	11,494.00	45,976.00
11.10	Supply & Installation of revolving premium quality office chair made of fabric material with mesh type back support.	Nos.	20	3,536.00	70,720.00
11.11	Supply & delivery of office almirah made of steel, with proper locking arrangment of size:78"X38"X19"	Nos.	3	15,472.00	46,416.00
M	**Total Cost for Miscellaneous work Part II =**				**4,81,237.00**
O	**Total Construction Cost (A+B+C+D+E+F+G+H+I+J+K+L+M)=**				**39,38,13,860.00**
P	**Add 9 % CGST and 9% SGST (on O) =**				7,08,86,494.80
Q	**Construction Cost including @18% GST (O+P) =**				46,47,00,354.80
	Add labour cess @1% on total construction cost(including GST)				46,47,003.55
	Total				46,93,47,358.35
	Say				46,93,47,358.00

B. **METHODOLOGY OF WORK**

- **METHODOLOGY FOR SUBGRADE CONSTRUCTION:**

i) Scope of Work:-

The work shall consist of Construction of Sub-grade with approved and specified materials obtained from approved borrow areas or suitable material obtained from roadway excavation and drain excavation and in accordance with clause 305 of MORT&H specification.

ii) Reference: –

Reference Documents:-

1. Ministry of Road Transport & Highway Specifications.
2. Technical Specifications
3. Relevant contract drawings.
4. IS 2720 Codes.

iii) Setting Out: –

After completion of site clearance/embankment the limits of sub-grade shall be marked by fixing pegs on both sides at regular intervals. The chainage boards and working bench mark shall be set outside the limits of construction areas.

iv) Selection of Material and Borrow areas: –

- **Material:**

The material used in Sub-grade shall be soil, moorum, gravel, a mixture of these or any other material approved by the Engineer. It shall be free from logs, stumps, roots, rubbish & any other material detrimental to the stability of structure. The material for sub-grade shall be obtained from the approved source with preference to the material becoming available from nearby roadway excavation or any other excavation under the contract. The material requirements shall be in accordance with clause 305.2 of MORT&H.

- **Borrow Material:**

Samples should be taken from the known borrow area & to be tested as per IS 2720 for the suitability in use in embankment as per project specification. On confirmation of the suitability material the area shall be properly demarcated and satisfy the clause 305.2.2.2 or project specification

v) Equipments: –

The following equipments shall be carried out for the Sub-grade Construction. If desired the contractor shall demonstrate the efficacy of the type of equipment to be used, before commencement of work.

1. Hydraulic Excavator
2. Dozer
3. Dumper (Tipper Trucks)
4. Motor Grader
5. Vibratory Roller
6. Water Tanker
7. Tractor Trolleys
8. Survey Kit

vi) Method of Operation: –

- After completion of embankment, the limits of sub-grade shall be marked by fixing pegs at regular intervals before commencing the earthwork. Construction toe line shall be more than the design toe line for proper construction of the edges.
- The Embankment top shall be leveled to facilitate placement of first layer of Sub-grade, scarified, mixed with water and then compacted by rolling so as to achieve minimum dry density as specified in the modified Technical specification. Sub-grade treatment specified for Sub-grade shall be carried out as per approved drawing. Unsuitable material occurring in sub-grade foundation shall be removed as per direction and approval of the Engineer and replaced by approved materials laid in layers and suitably compacted to the required and specified degree of compaction. Excavation at approved borrow areas shall be carried out with excavator and transportation of excavated material shall be done by dumpers/ tractor trolley.

- Maximum Dry density of borrow area soil shall be determined, and the soil shall be tested for dry density, if found less than 97% of M.D.D., the layer shall be scarified mixed with required quantity of water and compacted with soil vibratory roller to achieve minimum required specified dry density.
- For construction adjacent to the existing embankment a continued, horizontal benching 300 mm wide or as per drawing shall be provided in the existing embankment.
- The sub-grade material shall then be spread in layers not exceeding 250 mm compacted thicknesses or as per direction of the Engineer over the entire area with the dozer and finished by a motor grader.
- When the existing embankment to be widened continuous horizontal benches shall be cut out into the old slope to ensure adequate bond. Where water is required to be added the same shall be sprinkled from a water tanker fitted with sprinkler, uniformly on the surface but without flooding and shall be mixed thoroughly in soil by blending or harrowing until uniform moisture content is obtained throughout the depth of the layer. If the material delivered to the roadbed is too wet, it shall be dried by aeration and exposure to the sun till the moisture content is accepted for compaction.
- The compaction shall be done with the help of Vibratory Roller of 8 – 10 Ton static weight with plainor pad foot drum or heavy pneumatic tyred roller of adequate capacity capable to achieve required compaction. Compaction trial shall be carried out on a suitable stretch to determine the no. of passes required for particular type of soil, dumped for sub-grade, to achieve densities specified in the table 300-2 of the Technical specification. Based on the trial actual compaction will be carried out with required no. of passes of Vibratory Roller until the specified density is achieved. Rolling shall progress parallel to the centerline of the road uniformly overlapping each preceding track by one-third width. Rolling shall be continued till the specified density is achieved as per table 300-2. In case specific compaction is not achieved the material in the soft area shall be removed and replaced with approved material. Densities shall be tested by sand replacement method / nuclear density gauge.
- Subsequent layers shall be placed only after the finished layer has been tested as per the clause and

Sl No.	Item	Ref. Code	Frequency
1	Sub-Grade		
1.1	Sand Content/Gradation test	IS-2720 (Part 4)	2 Tests/3000 m^3
1.2	Atterberg's limits	IS-2720 (Part 5)	2 Tests/3000 m^3
1.3	Modified Proctor Test	IS-2720 (Part 8)	2 Tests/3000 m^3
1.4	Moisture Content	IS-2720 (Part 2)	2 Tests/3000 m^3
1.5	CBR Test for sub-grade (soaked)	IS-2720 (Part 16)	1 Tests/3000 m^3
1.6	Density of compacted Layer	IS-2720 (Part 28)	10 Tests/2000 m^3

accepted. The top levels of the sub-grade shall be checked with reference to the longitudinal and cross profile of the road as per drawing to keep the variation within tolerance limit as per table or as per standard specification.

vii) Quality Control:-

- Minimum compaction for sub-grade layers is 97% of modified proctor value of project specification.

viii) Work Safety:-

- During construction of widening works, adequate safety and traffic signs shall be installed adjacent to the road shoulders to protect the ongoing works as per location specific safety plan. For locations where the dumping of embankment materials by tippers are performed from the road shoulder, a minimum of 2 flagmen with reflective vests and holding a red flag each be deployed to control the traffic which may be affected by the unloading operation.
- All locations adjacent to existing road where embankment construction is in progress shall be provided with safety and road signs.
- No machines or equipment's shall be permitted to remain on the existing road or shoulder unattended at all times unless it is properly protected and secured in a safe manner.
- The Safety Officer shall make frequent patrols along the highway to ensure that the safety equipment and signs are operational at all time.

- Trucks sometimes fall over a tip head because the driver backs over the edge or the edge collapses under the weight of the truck. A protective berm or timber baulk should be used. Alternatively, a signalman should be deployed in order to avoid this possibility.
- When excavating trenches, place the excavated material at least 600 mm clear of the edge, where there is no danger of it falling back into or collapsing the side of the trench.

ix) Environmental Safety: –

- Nearby streams, water courses, lakes, reservoir shall be protected from contamination by the soil erosion from areas exposed during excavation by constructing temporary berms, dykes, sediment Basins, slopes, drains & by the use of temporary mulches, seeding or other control devices.
- Vehicles tracks shall be kept moist to prevent flying of dust particles with the vehicle movement.

Density requirement of embankment and subgrade materials:

Sl. No.	Type of Work	Minimum laboratory dry unit weight when tested as per IS:2720(Part 8)
1.	Embankment upto 3 m height, not subjected to extensive flooding	Not less than 15.2 KN/cum
2.	Embankments exceeding 3 m height	Not less than 16 KN/cum
3.	Subgrade	Not les than17.5KN/cum

It shall be ensured that the subgrade material when compacted to the density requirements as in Table below shall yield the specified design CBR (5%) value of the subgrade.

Sl. No.	Type of work/material	Relative compaction as % of max. Laboratory dry density as per IS: 2720(Part8)
1.	Sub grade	Not less than 98%
2.	Embankments	Not less than 95%

- We propose construction of Subgrade with fly ash (70%) conforming to table 1 of IRC: SP: 58 - 2001 obtained from coal or lignite burning thermal power stations as waste material and fine sand (30%) properly mixed by mechanical means, spread and compacted in layer of 150mm thickness each so as to achieve 98% of maximum dry density and 17.5 KN/cum dry unit weight, as specified in IRC: SP: 58-2001.
- We propose construction of embankment with fly ash conforming to table 1¬ of IRC: SP: 58 - 2001 obtained from coal or lignite burning thermal power stations as waste material and compacted in layer of 200mm thickness each so as to achieve 95% of maximum dry density and 15.2 KN/cum dry unit weight, as specified in IRC: SP: 58-2001 or, Earth fill having 95% of maximum dry density and 15.2 KN/cum dry unit weight.

▪ METHODOLOGY FOR GRANULAR SUB BASE (GSB) CONSTRUCTION:

Granular-Sub-base is often used as sub base layer of the pavement . The main role of this layer is to spread evenly the load over the subgrade .The sub base shall consist of a uniform mixture of granular material placed on a subgrade, uniformly moistened, shaped, and compacted, all in accordance with the contract documents. The work shall consist of laying and compacting of well-graded materials on a prepared and approved sub-grade. Materials shall be laid in one or more layers as per line and level, grade and cross section shown in the drawing and as per clause 401 of MORT&H specification. In the following sequence we had to carry out the work:

i) Reference
ii) Setting Out.
iii) Selection of Material.
iv) Equipments.
v) Methods of Operation.
vi) Quality Control.
vii) Work Safety.
viii) Environmental Safety.

i. Reference:-

Reference Documents:-

i) Ministry of Road Transport& Highways Specifications

ii) Technical Specifications
iii) Relevant contract drawings.
iv) IS 2386 Codes.

ii. Setting Out:-

After the layer of Sub-grade has been approved, then line and level are carried out to fix the granular sub-base layer (herein after called GSB layer). Pegs are fixed at regular intervals on the safe side of the road edge where blade of grade will not disturb the peg while blending of the GSB materials. On each pegs top level of GSB layer is marked. The chainage boards and working bench mark shall be set outside the limits of construction areas.

iii. Selection of Material:-

- **Material**

The material used in GSB shall be mixture of natural sand, moorum, gravel, crushed stone in specified grading given in Table 400-1.Crushed slag, crushed concrete, brick ballast and kankar can also be used on the prior approval of the Engineer or competent authority. It shall be free from organic or other deleterious materials. The material for GSB shall be obtained from the approved source and shall be in accordance with clause 401 of MORT&H specification.

- **Physical requirement**

The material shall have Impact Value 40% Maximum when tested in compliance with IS: 2386(Part 4) or IS 5640. The water absorption value of coarse aggregate shall be determined as per IS: 2386 (Part 3); if the value is greater than 2%, the aggregate shall be tested for wet Impact value (IS 5640).

The Contractor shall before the commencement of the construction of the sub-base course, submit to the Engineer, the results for approval of the laboratory testing on the physical properties defined above. The construction of the sub-base course shall be taken up only upon the Engineer's approval of the material.

- **Strength of GSB**

Prior to actual execution, it shall be ensured the material to be used in sub-base satisfies the requirement of CBR and other physical requirements when compacted and finished as per table 400-2.The minimum CBR 30% is required.

iv. Equipments:-

The following equipments shall be carried out for the Sub grade Construction:

a. Excavator
b. Dumper
c. Motor Grader
d. Vibro Roller (80 to 100 KN) and pneumatic tire roller (200 to 300 KN weight with minimum tire pressure of 0.7 Mpa)
e. Water Tanker
f. Tractor trolleys
g. Survey Kit / instrument

v. Method of Operation:-

- **Preparation of GSB**

Prior to laying of GSB material, the sub-grade already finished to clause: 301 or 305 of MORT&H as applicable shall be prepared. Approved sub-grade layer is rolled with two passes by smooth wheel roller with slight sprinkle of water.

- **Spreading and compacting**

The GSB Material is spread with the help of motor grader on the approved layer of Sub-grade in single layer of 200 mm with Grading either IV or V. During spreading and mixing by grader in site, water is sprinkled over the material by water browser mounted on water tanker. Sufficient water is added, taken into account of evaporation losses so that Moisture content of the materials should lie in between 1% to 2% of below optimum moisture content. Immediately rolling starts with vibratory roller of 80 to 100 KN static weight with plain drum or with pneumatic tire rollers of 200 to 300 KN weight having tire pressure of minimum 0.7 Mpa. Rolling is done from lower edge towards upper edge longitudinally for the portion having unidirectional cross fall and super elevation.

Each pass of the roller shall uniformly overlap not less than one third of the track made in the previous pass.

Sl No.	Item	Ref. Code	Frequency
1	**Granular Sub Base**		
1.1	Gradation	IS-2720 (Part 4)	1 Test/400 m^3
1.2	Atterberg's limits	IS-2720 (Part 5)	1 Test/400 m^3
1.3	Moisture Content prior to compaction	IS-2720 (Part 2)	1 Test/400 m^3
1.4	Field Density of compacted layer	IS-2720 (Part 28)	1 Test/1000 m^3
1.5	Deleterious content test	IS-2720 (Part 27)	As required
1.6	CBR	IS-2720 (Part 16)	Minimum 30% as required

During rolling, grade and cross fall shall be checked and any high spot or depressions, which become apparent, corrected by adding or removing fresh materials. The speed of roller shall not exceed 5km/h. Rolling shall be continued till the density of the layer is achieved at 98% of the Maximum Dry Density.

- **Arrangement of traffic**

During the period of construction, arrangement of traffic shall be maintained as per clause 112.

vi. Quality Control:-

Table 400-1 Grading of GSB Material

IS Sieve designation	Grading -1	Grading -2	Grading -3	Grading -4	Grading -5	Grading -6
75.00mm	100	-	-	-	100	-
53.00mm	80-100	100	100	100	80-100	100
26.5mm	55-90	70-100	55-75	50-80	55-90	75-100
9.5mm	35-65	50-80	-	-	35-65	55-75
4.75mm	25-55	40-65	Oct-30	15-35	25-50	30-55
2.36mm	20-40	30-50	-	-	Oct-20	Oct-25
0.85mm	-	-	-	-	02-Oct	-
0.425mm	Oct-15	Oct-15	-	-	0-5	0-8
0.075mm	<5	<5	<5	<5	-	0-2

Table 400-2 Physical Requirement for Material for GSB

Aggregate Impact Value	IS: 2386(Part 4) or IS: 5640	40 Maximum
Liquid Limit	IS: 2720(part 5)	Maximum 25
Plasticity Index	IS: 2720(part 5)	Maximum 6

Control Tests for Granular Sub-Base: Post Construction

1. Tolerance in Surface Level: +10 mm, -20 mm
2. permissible undulation (with 3 m straight edge) : 8 mm
3. no. of undulations permitted in any 300 m length, exceeding 16 mm:20

Control on the quality of materials and works shall be exercised by the Engineer in accordance with section 900 of MORT&H.

vii. Work Safety:-

Safety will be provided as per location specific safety plan.

Following safety point should be kept in mind when using Motor Grader

1. Drive at a slow speed in congested areas.
2. Give the right-of-way to loaded vehicles. Watch for overhead dangers.
3. Know your work area: check weight limitations, types of surfaces, and clearances.
4. Report defective equipment immediately Select a safe parking area.
5. Remove ignition key when leaving grader.
6. Ground the blade when leaving grader unattended.
7. Use colored flags at each end of mould board when blading

viii. Environmental Safety:-

- Nearby Streams, water courses, lakes, reservoir shall be protected from contamination by the soil erosion from areas exposed during excavation by constructing temporary berms, dykes, sediment Basins, slopes, drains & by the use of temporary mulches, seeding or other control devices.
- Vehicles / tracks shall be kept moist to prevent flying of dust particles with the vehicle movement.

METHODOLOGY FOR W.M.M (Wet Mix Macadam) CONSTRUCTION:

Wet Mix Macadam consist of laying spreading and compacting of clean, crushed, well-graded granular materials on a prepared and approved Granular sub-Base. The material is well mixed with water and rolled to a dense mass. It shall be laid on one or more layers as per line and level, grade and cross section shown in the drawing or as directed by the Engineer. The thickness of single compacted Wet Mixed Macadam (WMM) Base shall not be less than 75 mm. Maximum thickness of single compacted layer base can be up to 250 mm upon approval of Engineer.

1. Reference
2. Setting Out.
3. Selection of Material.
4. Equipments.
5. Methods of Operation.
6. Quality Control.
7. Work Safety.
8. Environmental Safety.

1.0 Reference

Reference Documents:-
I) Ministry of Road Transport& Highways Specifications
II) Technical Specifications
III) Relevant Drawings.
IV) IS 2720 Codes.

2.0 Setting Out

After the layer of GSB Sub-Base has been approved, then line and level are carried out to fix the Wet Mix Macadam base layer (herein after called WMM Base). Pegs are fixed at regular intervals on the safe side of the road edge where blade of grader should not disturb the peg while blending of the Base materials. On each peg's top level of Base layer is marked. The chainage boards and working bench mark shall be set out side the limits of construction areas.

3.0 Selection of Material

3.1 Aggregate

Coarse aggregate shall be crushed stone or crusher run as per IRC 109 or clause 406.2.1 of MORT&H specification.

3.2 Physical requirement

The constituents of the aggregates shall be produced by integrated crushing and screening plant (Impact or Cone type) and, unless otherwise instructed by the Engineer, crushing shall be carried out in at least two stages. The fraction of material passing through 4.75mm sieve shall also be crusher run screening only. The aggregate shall conform to the physical requirements set forth in Table 400-12 of MORT&H. or IRC 109 clause 3.1.1 If the water absorption value test of coarse aggregate is greater than 2 per cent, the soundness test shall be carried out on the materials delivered to site.

3.3 Grading Requirement

The aggregate shall conform to the grading given in table 406.2.1.2 of technical specification or IRC 109 -2015. Material finer than 425 micron, shall have Plasticity Index (PI) less than 6. The final gradation approved within these limits shall be well graded from coarse to fine and shall not vary from low limit on one sieve to high limit of adjacent sieve or vice versa.

4.0 Equipments

The following equipments shall be carried out for the WMM

1. Wet Mix Macadam Plant
2. Dumper / Tippers.
3. Vibro Roller (80 to 100 KN)
4. Water Tanker
5. Paver finisher.
6. Survey kit / instrument

5.0 Method of Operation

5.1 Preparation of WMM Base (As per clause 406.3.1):

5.1.a Provision of lateral confinement of aggregates

Proper arrangement shall be made for the lateral confinement of wet mix during laying. This shall be done by laying materials on adjoining shoulder along with that of WMM layer. The preparation of mix, spreading of mix and compaction are done sequentially.
The sequence of operation shall be followed as described in clause: 406.3.3 of MORT&H.

5.2 Preparation of mix

Wet mix Macadam shall be prepared in an approved WMM mixing plant having provision for controlled addition of water and forced/positive mixing arrangement. Optimum moisture for mixing shall be determined in accordance with IS: 2720 (Part 8) after replacing the aggregate fraction retained on 22.4 mm sieve with materials of passing from 22.4 and retained on 4.75 mm. While adding water, evaporation loss shall also be taken into account. The mixed material should be uniformly wet and no segregation shall be permitted.

5.3 Spreading of mix

Immediately after mixing, the aggregate shall be spread uniformly and evenly upon the approved GSB layer. Materials should neither be dumped in heap nor their hauling over a partly completed stretch. The first layer will be laid by motor grader and the second layer mix shall be spread by a WMM paver finisher capable of paving minimum 4.5m to 9.0m width. The layer may be tested by depth block during construction. No segregation of materials are allowed. The aggregates should be of uniform gradation with no pockets of fine materials.

5.4 Compaction

After the mix has been laid on site to the required thickness, grade and camber, then compaction is carried out with suitable roller to the full depth. For a thickness up to 200mm in a single layer, compaction shall be done with vibratory roller of 80 to 100 KN static weights with plain drum or equivalent capacity roller. Rolling is done from lower edge towards upper edge longitudinally for the portion having unidirectional cross fall and super elevation. Each pass of the roller shall uniformly overlap not less than one third of the track made in the previous pass. During rolling, grade and cross fall shall be checked and any high spot or depressions, which become apparent, corrected by adding or removing fresh materials. The speed of roller shall not exceed 5km/h. Rolling shall be continued till the density of the layer is achieved 98% of the Maximum Dry Density.

Rolling should not be done when the WMM layer is soft or yielding or when it causes a wave like motion. If level difference or irregularities develop during rolling which exceeds 12 mm when tested with 3 metre straight edge, the surface should be loosened and premixed materials added or removed as required before rolling again. In no case the unmixed material be permitted to make up the depressions.

5.5 Opening to traffic

After testing the compaction & level of WMM course the road shall be allowed to dry for 24 hours. Preferably no vehicular traffic should be allowed on the finished WMM surface till it has dried and covered with wearing course.

6.0

Sl No.	Item	Ref. Code	Frequency
1	**Wet Mix Macadam (WMM)**		
1.1	AIV/LAV	IS-2386 (Part 4) Or IS -5640	1 Test/1000 m^3
1.2	Gradation	IS-2386 (Part 1)	1 Test/200 m^3
1.3	Flakiness & Elongation Index	IS-2720 (Part 8)	1 Test/500 m^3
1.4	Atterberg's limits	IS-2720 (Part 5)	1 Test/200 m^3
1.5	Field Density of compacted layer	IS-2720 (Part 8)	1 Test/1000 m^3

Quality Control

Physical Requirement of coarse aggregate for Wet Mix Macadam for Sub-base /Base Courses

Sl No.	Test	Test Method	Requirement
1	Los Angles Abrasion Value/Impact Value	IS: 2386 (part 4) or IS-5640	40 Percent (Max)/30 Percent Max
2	Combined Flakiness and Elongation Indices (Total)	IS: 2386 (part 1)	35 Maximum Max

WET MIX MACADAM SUB BASE /BASE

Table 400- 13: Grading Requirement of Aggregate for Wet Mix Macadam

Sieve Size	Percentage Passing
53.00	100
45.00	95-100
26.50	-
22.40	60-80
11.20	40-60
4.75	25-40
2.36	15-30
600 micron	8-22
75 micron	0-5

1. Control Tests for Granular WMM Base: Post Construction
2. Tolerance in Surface Level : +10 mm
3. permissible undulation (with 3 m straight edge) : 8 mm
4. no. of undulations permitted in any 300 m length, exceeding 12 mm: 20
5. Control on quality of materials and works shall be in accordance to section 900 of MORT&H.

7.0 Work Safety

1.Safety will be provided location specific safety plan.

8.0 Environmental Safety

1.Nearby Streams, water courses, lakes, reservoir shall be protected from contamination by the soil erosion from areas exposed during excavation by constructing temporary berms, dykes, sediment Basins, slopes, drains & by the use of temporary mulches, seeding or other control devices.

2.Vehicles tracks shall be kept moist to prevent flying of dust particles with the vehicle movement.

- **METHODOLOGY FOR DENSE BITUMINOUS MACADAM (DBM) CONSTRUCTION:**

This work shall consist of laying in a single course a 50 to 100 mm – thick layer of DBM on a previously primed and approved Wet Mix Macadam Layer, as per specified lines & grades and in accordance with clause 507 of MORT&H specification or project specification.

1. Reference Documents.
2. Materials.
3. Mix Design.
4. Plants & Equipments.
5. Construction Operations.
6. Arrangement For Traffic.
7. Quality Control

i) REFERENCE:-

Reference Documents:-
1. Ministry of Road Transport & Highway Specifications.
2. Technical Specifications
3. Relevant Drawings.

ii) MATERIALS:-

The source and test report of all material will be submitted to the Engineer for approval before using the material as per clause 505.2 of MORT&H.

- **Bitumen**

Bitumen shall be Viscosity grade or as per specified in the contract .

- **Coarse Aggregates**

Coarse aggregate shall be obtained from the approved quarry. One cone crusher shall be installed at the quarry site. This crusher shall produce aggregates cubical / angular type so that flakiness and elongation indices are contained within the specified limit. The coarse aggregate shall satisfy specification as per Table .

- **Fine Aggregate**

Fine aggregates shall be of the fraction passing 2.36 mm sieve and retained on 75 micron sieve, consisting of crusher run screening, sand or a mixture of both. Natural sand is not allowed as a fine aggregate in bituminous mix.

- **Filler**
  Filler shall consisting of crusher dust, hydrated lime, or cement and shall satisfy the grading limit set in Table 500-9.The PI should not be more than 4.However, It is not applicable in case , if filler is Lime or Cement. Where aggregate fails to comply the water sensitivity test then 2% by weight of aggregate lime or cement is required.

iii) MIX DESIGN:--

- **Requirement of Mix**

  Apart from conformity with grading and quality requirements of individual ingredients, the mix shall meet the requirements set out in Table-500-11, MORT&H specifications. .Job mix formula shall be submitted 21 days in advance when going to start the bituminous work.

- **Binder Conten**t

  The binder content shall be determined to achieve the requirements set out in Table-, MORT&H specifications and traffic volume specified in the contract. The Marshal method for determining the optimum binder content shall be adopted as described in the Asphalt Institute Manual MS-2.If the specific gravity of aggregate is more than 2.7 ◦C The minimum bitumen content can be reduced subsequently. Where the maximum size of aggregate is more than 26.5 mm , the modified marshal test by using 150 mm diameter mould as specified in MS-2 and ASTM D 5581 shall be used. When the modified procedure is used. The minimum stability should be multiplied by 2.25 and minimum flow should not be less than 3mm.

- **JOB MIX FORMULA**

  Job mix formula should be as per clause. The .Job Mix formula should be true representative of material used and satisfy all the criteria set forth in Table.

- **Plant Trials**

  After the job mix formula approved plant trial should be done to confirm the bituminous mix design. The formula should be within limit as per set forth in Table 500-13 and shall satisfy the quality control criteria as per section 900. or project specification

iv) PLANTS & EQUIPMENTS:-

i) Hot Mix Plant
ii) Paver finisher with electronic sensor.
iii) Steel Tandem Rollers with required weight
iv) Pneumatic Roller with required weight
v) Bitumen Sprayer
vi) Dumpers
vii) Air compressor
viii) Pegs for putting levels
ix) Mechanical broom
x) Straight edge
xi) Camber plate
xii) Thermometer
xiii) Gauge for checking thickness
xiv) Survey Kit / instrument.

v) CONSTRUCTION OPERATIONS:-

- **Weather and Seasonal Limitations**

  The work of laying shall not be taken up during rainy or foggy weather/ the base course is damp or wet or during dust storm or when the atmospheric temperature in shade is 10 deg. or less as specified in clause 504.3.1 0f the MORT&H specifications.

- **Preparation of Base**

The WMM surface already prepared to the specified lines, grades and cross sections shall be swept clean free from dust and foreign matters using mechanical broom or blown off by compressed air as specified in the MORT&H specifications.

- **Tack Coat**

  The binder for tack coat shall be RS-I Grade Emulsion and shall be applied as per clause 503 of the MORT&H specifications.

- **Preparation and Transportation of Mix**

  DBM should be produced on batch basis by weight in Hot Mix Plant. The mixing will be done in a twin shaft pug-mill, which will produce a homogeneous mix. The mixture shall be transported from the batching plant in tippers covered with tarpaulin (if required) so as to maintain the temperature and dust.

- **Spreading**

  The mix shall be transported to the site by the dumpers, which shall slowly discharge the mix in the paver hopper, while both the tipper and paver will move forward steadily and slowly. The automatic sensor shall ensure that the mix is being laid to the proper line and grade and level. The direction of the paver will be guided by the string lines fixed with the stack & arms on both sides of the edges 0.5 m away from the edge. The paving will be done in one go for the full width of 9 meter. The minimum temperature of the mix at the time of laying shall be VG30/VG40——- 140°C/160 °C . Transverse joints shall be cut vertically with asphalt cutter and a coat of hot bitumen shall be applied before placing materials.

- **Compaction**

  As soon as the mix has been laid to the paver, compaction shall be done with the help of a set of rollers moving at a speed not exceeding 5 km/hour following close to the paver. Rolling sequence will be as under or as established during laying trial stretch. Compaction subsequently completed before the temperature falls below the minimum rolling temperatures VG30/VG40——90°C/100 °C. Longitudinal joints shall be rolled immediately behind the paving operation. After this, rolling shall commence at the edges and progress towards the centre longitudinally except that on super elevated and unidirectional cambered portions, it should be started from the lower edge to the upper edge & parallel to the centre line of the pavement. Rolling shall be done continuously until all roller marks have been removed from the bituminous surface.
  i) Initial or breakdown rolling shall be done with 80-100 KN dead weight smooth wheeled rollers.
  ii) Intermediate rolling shall be done by 8-10 tons dead weight or vibratory roller or with a pneumatic tire roller of 12 to 15 tons weight having nine wheels, with a tyre pressure of at least 5.6 kg/sqcm. The finish rolling shall be done with 6 to 8 tons smooth wheeled tandem rollers and the no. of passes required shall be decided after laying a trial bed. During rolling, wheels of rollers shall be kept moist by sprinkling water from the water storage fitted with the roller to prevent the mix from adhering to the wheels. The roller shall proceed on the fresh material with rear or fixed wheel leading so as to minimize the pushing of the mix.
  In portions in camber, rolling should begin at the edge with the roller forward and backward until the edges have been firmly compacted. The roller shall then progress gradually towards the center parallel to the center line uniformly overlapping each of the preceding tracks by one-third width until the entire surface has been rolled.
  Along forms, kerb and walls where rolling cannot be done by rollers, shall be compacted with mechanical tampers or a plate compactor or rammers as may be feasible. Any undulations / displacement found as a result of reversing of the direction of a roller or due to some other reasons shall be rectified as specified or removed and made good to the satisfaction of the Engineer. All the field tests such as checking of compaction by core cutting, surface irregularity by using a straight edge and checking of cross slope by camber plate and level, rate of spray of tack coat / prime coat using trays, temperature of mix using digital thermometer. Depth of the layer using thickness gauge etc. shall be carried out as per the requirements.

vi) ARRANGEMENT FOR TRAFFIC:-

The works shall be so executed that there is a minimum disturbance to the traffic. The traffic shall be diverted by making proper diversions at suitable locations and in accordance with clause of MORT&H. Signboards indicating the locations of these diversions shall be fixed at desired positions.

vii) QUALITY CONTROL:-

Following are the list of Control Tests to be carried out in the laboratory prior construction on DBM Materials:

Pre -construction activities of aggregates

Sl. No.	Test	Test Methods	Specification
a.	Aggregate Impact Value	IS: 2386 Part IV	Max 27 %
b.	Grading of Aggregates and Screening	IS: 2386 Part I	Grading 1/2 of Table 500-8
c.	Flakiness and Elongation Index of Aggregates (Combined)	IS: 2386 Part I	Max 35 %
d.	L.A.A.	IS: 2386 Part 4	Max 35 %
e.	Soundness Test - Sodium Sulphate Soundness Test - Magnesium Sulphate	IS: 2386 Part 5	Max 12 % Max 18 %
f.	Water Absorption	IS: 2386 Part 3	Max 2 %
g.	Stripping value of Aggregate	IS: 6241	Minimum retained 95%

Pre-Construction test for Filler

S. No.	Test	Test Methods	Specification
a.	Grading		Table 500-10
b.	Plasticity Index		PI<4

B) Frequency of tests to be performed during Construction of DBM

S. No.	Test	Test Methods	Specification
a.	Quality of Binder	IS: 73, IS: 217, IS: 8887 as applicable	Number of samples per lot as per specified frequencies.
b.	Los Angles Abrasion Value/ A.I.V.	IS: 2386 Part IV	One test per 350 cum
c.	Stripping Value of Aggregate	IS: 6241	Initially one set of 3 representative specimen for each source of supply. Subsequently when warranted by changes in quality of aggregates.
d.	Flakiness Index of Aggregate	IS: 2386 Part 1	One test per 350 cum
e.	Water Absorption of Aggregate	IS: 2386 Part 3	One test for each source of supply. Subsequently when warranted by changes in quality of aggregates.
f.	Grading of all in Aggregates	IS: 2386 Part 1	One set of tests on individual constituents and mixed aggregates from the dryer for each 400 tones of mix subjected to a minimum of two per plant per day
g.	Temperature of Binder of laying and Rolling		Regularly and as directed by the Engineer
h.	Binder Content	Extraction Test with specified solvent	One test for each 400 tones of mix subjected to a minimum of two per plant per day
i.	Rate of Spread of Premix		After every 5th load.

C) Allowable surface finish level Dense Graded Bituminous Macadam base layer: Post Construction:

Tolerance in Surface Level: +6 mm
Max. Permissible undulation (with 3 m straight edge): 6 mm
Max. no. of undulations permitted in any 300 m length, exceeding 10 : 20 mm
Control on quality of materials and works shall be exercised by the Engineer in accordance with section – 900 of MORT&H

Composition of Dense Bituminous Macadam:

Grading	1
Nominal aggregate size	37.5 mm
IS Sieve (mm)	Cumulative % by weight of total aggregate passing

45	100
37.5	95-100
26.5	63-93
19	-
13.2	55-75
9.5	-
4.75	38-54
2.36	28-42
1.18	-
0.6	-
0.3	7-21
0.15	-
0.075	2-8
Bitumen Content % by mass of total mix	Min 4.0

Grading requirement for mineral filler (2% by volume) :

IS Sieve (mm)	**Cumulative Percent passing by weight of total aggregate**
0.6	100
0.3	95-100
0.075	85-100

- For Specification, Mode of Measurement as well as Manufacturer of Materials the decision of Engineer, WBIDC shall be abiding for both Scheduled and Market Rate items.

- **Specification of RCC Work:**

- Shuttering shall be done using Steel plate or 9 to 12 mm thick approved quality ply board.
- Surface contact with concrete shall be free from adhering grout, nails, splits and other defects.
- All the joints are perfectly closed and lined up.
- The shuttering and framing is sufficiently braced.
- All the props of approved sizes are supported on double wedges and when taken out, these wedges are eased and not knocked out.
- All the framework is removed after 21 days of curing without any shocks or vibrations.
- All reinforcement bars conform IS specifications and are free from rust, grease oil etc.
- The steel grills are perfectly as per detailed specifications.
- The covers to concrete are perfectly maintained as per code.
- Bars of diameter beyond 25mm diameter are bent when red hot.
- The materials proportion should be as per the specifications of the concrete.
- The water to be used in concrete work shall be clean and fresh.
- All reinforcement shall be of steel which shall comply with the standard requirements. All bars shall be placed as per design given by the engineer and utmost care shall be taken to keep them in the same position while packing concrete around them. Before laying the concrete the reinforcement shall be got approved by the engineer.
- The sand to be used shall be clean and coarse and shall be free from any organic or vegetable matter. The sand shall be washed, if there is any trace of earth in it.

- The coarse aggregate shall consists of 67% of black trap metal (known as kapachi) varying in size from 20 mm to 40 mm and 33% of black trap metal (known as grit) varying in size from 20 mm to 6 mm. The coarse aggregate for the concrete work shall be clean and free from impurities such as earth, coal dust and other organic materials. The unclean aggregates shall have to be screened and washed before use.
- The construction and arrangement of formwork shall be such that it can be removed in part as and when required without affecting or damaging the adjoining forms. The surface of formwork shall be oiled before placing of concrete.
- The props to be used for centering shall be of timber bullies. The spacing of bullies shall not be more than 120 cm centre to centre. The bullies shall be supported at the base on 40 mm thick wooden plate having area not less than 0.10 sq m. Necessary wedges shall be provided to maintain level before and during the casting of concrete.
- The centering for the work shall be sufficiently strong and rigid an d in good condition so as to turn out a good smooth surface. The framework shall include all the forms of temporary or permanent nature required to be used during to be used during casting of planks or any other suitable material as approved by the engineer.
- The mixing of concrete shall be done in a mechanical mixer or by hand operations depending on the quantity of the concrete which shall be decided by the engineer.
- Centering shall be removed only after obtaining the written permission of the engineer.
- The items of plaster and white or colour wash shall be carried out as per specifications of the corresponding items.
- The cement concrete work shall be kept well- watered for at least 20 days.
- The concrete shall be laid in forms and tapped in such a way that no honeycomb surface appears on removal of the forms. All edges and corners of the concrete surface shall remain unbroken, sharp and straight in line.
- Before starting laying of concrete in position, the centering shall be well watered.

SPECIFICATION FOR GENERAL CIVIL ENGINEERING WORKS.

1. REQUIREMENTS:

1.1. Application of specification and item of work:

This specification forms part of the contract and shall be read in conjunction with other documents forming the contract, viz. Notice inviting Tender (N.I.T.), conditions and requirements of tendering, Scope of work and technical information, General conditions of contract, General and Technical Specification, drawings and schedule of probable items of works.

The offered rates must cover the cost of all materials, all taxes & duties in vogue, labour, tools, machinery, plant, explosives, scaffolding, staging, shoring, props, bamboos, ropes templates, pegs, and all appliances and operations whatever necessary for efficient execution and completion of the work.

All works are to be executed in accordance with descriptions in the schedule of item of works along with the specifications, terms, conditions provided elsewhere in the tender documents.

Item of works and their details, which are not covered by this specification, shall be carried out as per those of P.W. Department, Govt. of West Bengal.

Manner of works not included above, should be carried out as per relevant provisions of Manual on Water Supply and Treatment published by CPHEEO, relevant I.S. specifications and code of practice and as per manufacturer's specification (where ever necessary).

The overall outline of works to be done by the contractor and the detail has been mentioned in the item of works in the schedule and in the specification, drawing and elsewhere in the tender documents. Each scheduled item has to be carried out and completed by the contractor at the accepted rate covering the full extent outlined in the schedule and specification and not withstanding any omission in mentioning of supply and execution of such component of works except in special case specifically mentioned. Items indicated in the schedule are exhaustive. Yet if there by any short fall felt by the tenderer he may include the same while quoting his rate so as to make the item complete in all respect for successful completion of the work.

The contractor's works shall be guided by the total requirement briefly outlined and shall include additional works other than those component of works mentioned in the item to complete the work. The tenderer or the contractor has to completely execute the full requirements ensuring performance guarantee of each component of the works, equipment and machinery so that all the individual components are brought up to the optimum condition for sustained and satisfactory operation individually and collectively.

1.2. Site Condition:

The contractor is to visit the site and ascertain local conditions, traffic restrictions, and obstructions in the area before submission of tender paper to satisfy himself.

1.3. Setting out and leveling:

The contractor is to set out and level the works, and will be responsible for the accuracy of the same; he is to provide all instruments and proper qualified staff required for checking the contractor's work.

1.4. Safety Code:

The contractor shall take adequate precaution to provide complete safety for prevention of accidents on the site.

1.5. Keeping works free from water:

The contractor shall provide and maintain at his own cost, electrically or other power driven pumps and other plant and equipment to keep the site and foundation pits and trenches free from water and continue to do so till the site is handed over to the complete satisfaction of E.I.C.

1.6. Clear Site:

The site during the execution of works should have sober and tidy appearance with everything necessary for the work neatly and systematically arranged.

The contractor at his own cost shall clear the site of all trees, roots and obstructions. Where excavation is required, that should be done strictly upto the required level. Any surplus earth should be spread over the low lands or used in earth filling works for development of site.

After the completion of the work, the entire site shall be cleared satisfactorily with (a) all pits, diggings and trenches properly filled up (b) all surfaces adequately dressed (c) all surplus materials, sheds, tents and all other ancillaries removed from the site at his own cost.

1.7. Bench Marks and Ground Water Gauges:

The contractor shall establish and protect surveyor's benchmarks and base line marks from damage or movement during work at his cost.

1.8. Inspection:

The contractor shall inspect the site of work and ascertain site conditions and the nature of soil to be excavated.

1.9. Contractor's Staff:

The contractor must provide at all times efficient staff of trustworthy, skillful and experienced assistants capable of carrying out the work in accordance with the drawings and specifications and to correct levels.

1.10. Measurement of Work :

The CONTRACTOR shall be available at site at all reasonable times to take joint measurement of work done for the purpose of payment and shall also provide without any extra charges, the necessary measuring instruments and men.

1.11. List of I.S. Code of Practices :

A list of important Indian Standard is given which does not cover all the relevant sides of practices. Wherever reference towards the Indian standards mentioned below or otherwise appears in the specification, it shall be taken as reference to the latest version of the standard.

SL. NO	IS NO.	DESCRIPTION
1	IS-8142 : 1976	Tests for setting time of concrete.
2	IS 269 – 2015	Specification for 33,43,53 Grade ordinary portland cement

SL. NO	IS NO.	DESCRIPTION
3	IS 383-2016	Specification for coarse and fine aggregate
4	IS-516 : 1959	Tests for strength of concrete.
5	IS 10262 – 1982	Guide Lines for Concrete Mix Design
6	IS-9013 : 1978	Tests for compressive strength.
7	IS-4031	Tests for cement.
8	IS-1786 : 1985	High yield strength deformed bar (Grade Fe 500) & Tor steel reinforcement.
9	IS-2751 : 1966	Welding of reinforcement.
10	IS-2502 : 1963	Bending & fixing of bars for concrete reinforcement.
11	IS-9077 : 1979	Corrosion protection of steel reinforcement in R.C.C. structure.
12	IS-2062 : 1992	Structural steel.
13	IS-2062 (Grade-A)	Low Carbon structural steel.
14	IS-800 : 1984	Use of structural steel in general building construction.
15	IS-808 : 1989	Rolled Steel Beams, Channels and angles.
16	IS-1038 : 1983	Steel doors, windows & Ventilators.
17	IS 458 – 1988	Specifications for pre cast concrete pipes.
18	IS 3597 – 1985	Methods of Tests for concrete pipes
19	IS-780 : 1984	Sluice valves for water works purposes. (Small dia-50 mm to 300 mm size).
20	IS-2906 : 1984	- Do - (Higher dia-350 mm to 1200 mm size).
21	IS 2116 – 1980	Specification for sand for masonry mortar
22	IS:2720 (Part .I) 1983	Preparation of dry sample (soil)
23	IS:2720 (Part .III) 1980 Sect/1	Determination of water content (moisture content)
24	IS: 2720 (Part. III) 1980 Sect/2	Determination of specific gravity of fine-grained soil
25	IS: 2720 (Part. III) 1980 Sect/2	Determination of specific gravity of fine, medium & coarse-grained soil
26	IS:2720 (Part.4) 1985	Grain size analysis
27	IS:2720 (Part.5) 1985	Determination of Liquid and plastic limit
28	IS: 2720 (Part. VI) 1987	Determination of shrinkage factors
29	IS: 2720 (Part. VII) 1980	Determination of water content - dry density relation using light compaction.
30	IS:2720 (Part.8) 1983	Determination of water content - dry density relation using heavy compaction
31	IS:2720 (Part IX) 1971	Determination of water content - dry density relation using constant wt. soil method.
32	IS: 2720 (Part. X) 1991	Determination of Unconfined compressive strength
33	IS: 2720 (Part. XIII) 1986	Direct shear test
34	IS:2720 (Part.14) 1983	Determination of Density Index (R.D) of cohesion less soil.
35	IS:2720 (Part.15) 1986	Determination of consolidation properties
36	IS:2720 (Part.17) 1986	Determination of permeability
37	IS:2720 (Part.28) 1974	Determination of dry density of soils, in place by the sand replacement method
38	IS:2720 (Part.29) 1975	Determination of dry density of soils, in place by the core-cutter method
39	IS 2250 – 1981	Code of practice for preparation and use of masonry mortar
40	IS-3950 : 1979	Surface boxes for sluice valves.
41	IS-13095 : 1991	Butterfly valves for general purposes.
42	IS-12969 : 1990	Method of test for quality characteristics of valves
43	IS-12992 : 1993	Spring loaded safety relief valves.
44	IS-5312 : 1984	Swing check type reflux valves
45	IS-3042 : 1965	Single faced sluice gate (200 mm – 1200 mm).
46	IS-1661 : 1972	Cement & Cement lime plaster finishes.
47	IS-782 :1978	Caulking Lead.
48	IS-11606	Methods for sampling of C.I. Pipes & Fittings.

SL. NO	IS NO.	DESCRIPTION
49	IS-10221 : 1982	Coating & wrapping of underground mild steel pipe lines.
50	Is-2911 : 1979 (Part-I Section –2)	Design & construction of bored cast in situ concrete piles.
51	IS-2911 : 1985 (Part –4)	Load test on piles.
52	IS-816 : 1991	Use of metal is welding for general construction in mild steel.
53	IS-1024 : 1979	Welding in bridge and structure subject to dynamic loading.
54	IS-822 : 1970	Procedure for inspection of welds.
55	IS-814 : 1991	Electrodes for manual metal arc welding.
56	IS-3950 : 1979	Surface boxes for sluice valves.
57	IS-5312 (Part-I) : 1984	Swing check type reflux (non-return) (single door) valves.
58	IS-5312 (Part-II) : 1986	-do- (Multi door pattern)
59	IS-5822 : 1994	Laying of Electrically Welded Steel Pipes for water supply.
60	IS-823	Procedures for manual are welding of mild steel.
61	IS-4353	Submerged Arc Welding of Mild Steel and Low Alloy Steels.
62	IS-73-07 (Part – I)	Approved tests for welding procedures (fusion welding of steel)
63	IS-7310 (Part – I)	Approved tests for welders working to approved welding procedure (Part I: fusion welding of steel).
64	IS-2595 : 1978	Code of practice for radiographic testing.
65	IS-4853 : 1968	Recommended practice for radiographic examination of fusion welded circumferential joints Steel Pipes.
66	IS-1182 : 1967	Recommended practice for radiographic examination of fusion welded butt joints.
67	SP-34	Hand book of concrete Reinforcement and detailing.
68	SP-23	Hand book of concrete Mix Design.
69	IRC-SP-63	Guideline for use of interlocking concrete block pavement.

All relevant IS code mentioned in the Tender Document to be followed as per latest edition/ addendum.

2. Materials to be Supplied by Contractor

The contractor shall supply all materials required for successful completion of the work. The quality of such materials as stated above shall conform to the requirements of the BIS (Bureau of Indian Standard), P.W.D. or any other approved standard specification. In all cases, the latest modification or revision of such specifications will be applicable for use.

All sampling, testing and transportation of such materials shall take place under the direction of the Engineer-in-Charge at the testing laboratory as may be designated by the Department at the cost of the Contractor. Tests will be made in accordance with the standard methods of testing of the I.S. or other standard specifications. The Engineer-in-Charge has full power to reject or condemn any workmanship or materials that he may deem unsuitable.

All materials not conforming to the requirements of these specifications shall be considered as defective and shall be rejected for use and shall be removed by the Contractor from the site of the work within 24 hrs. at his own cost.

In case of non-compliance with such orders, the Engineer-in-Charge shall have the full authority to cause such removal at the cost and expense of the Contractor and the contractor shall not be entitled to any loss or damage on that account. The Engineer-in-Charge will have full right to inspect the store of materials supplied by the Contractor for the use of this contract work.

All materials and workmanship shall be of the respective kinds described in the contract and in accordance with the Engineer-in-Charge's instructions and shall be subjected from time to time to such tests as the Engineer-in-Charge may direct at the place of manufacture or fabrication, or on the site or at such other place or places as may be specified in the contract, or at all or any of such places. The Contractor shall provide such assistance, instruments, machines, labour and materials as are normally required for examining, measuring and testing any work and the quality, weight or quantity of any materials used and shall supply samples of materials before incorporation in the works for testing as may be selected and required by the Engineer-in-Charge, be it at site or at the manufacturer/Vendor's premises. Contractor will have to procure materials from manufacturers Vendor as may be approved by the E.I.C. No variation will be allowed Contractor will have to furnish original documentary evidence of procurement of the materials from the

specified agencies along with their Certificate of Guarantee/Warranty along with two sets of photocopy of the same to the EIC before release of payment. The EIC will keep one set of photo copy with him and send the other set to the Superintending Engineer after due authentication by him. The original document will be returned to the contractor thereafter by the EIC.

In any case if Department will inspect solely than the charges of inspection @ 1% of the cost of materials to be deducted from his Bills. In this regard decision of E-I-C will be final & binding.

Cost of samples – all samples of materials as may be required by the Engineer-in-Charge shall be furnished by the Contractor at the cost and expense of the Contractor.

If the rate for completed items of work are inclusive of supply of stone materials, the Contractor shall arrange for procurement of such stone materials required for the work by his own resources and it shall be clearly understood that the Department Shall not sponsor any traffic movement by wagon for stone materials. The Contractors are therefore, required to quote their rates considering the above situation and no claim whatsoever on this account shall be entertained by the Department.

3. Safety Measures and Public Convenience

The Contractor shall in the course of execution of the work take all necessary precautions for the protection of all persons and property at his cost. The entire site of works shall be well illuminated from sunset to sunrise at his cost.

The Contractor shall take adequate measures to protect the work and prevent accidents during the Project work and prevent accidents during the construction. He shall provide and maintain temporary side-walks access to construction site and where necessary, danger signals, Road closed sign, watchman and necessary appliances for properly safeguarding life and site of work for safety. The lamp must kept bit from sunset till at least one hour after sunrise. He shall protect; all excavations equipment and materials with barricades and danger signals so that no life may be endangered. The contractor shall in include all costs for these works within his rates and no extra claim whatsoever on this account will be entertained.

The Contractor shall so conduct his operation as to cause the least possible obstruction and inconvenience to the other users and contractors in adjacent site. He shall have under construction not more than such amount of work as he can handle properly with due regard to the right of others.

4. First-Aid Facilities

The Contractor shall provide at his own cost for medical attention to be promptly available when necessary. He shall for this purpose provide a number of First-Aid stations at suitable location within easy reach of the workmen and other staff engaged in the Works. Each First-Aid station shall be properly equipped and will remain in charge of a suitably qualified person. The Contractor shall also provide for transport of serious case to the nearest hospital. All these arrangements shall be to the approval of the Engineer-in-Charge.

The Contractor shall provide, to the satisfaction of Govt. or Local Authority concerned, adequate medical attendance for his employees and labours.

5. Construction Records

The Contractor shall keep and supply to the Engineer-in-Charge the up-to-date records of the dimensions and positions of all permanent works (showing therein any approved deviation between the drawing and the work as actually executed). The information available from the records must be adequate and complete to enable preparation of completion drawing by the Contractor at his own cost from these records.

6. Insurance against Accident etc. to Workmen:

The Contractor at his cost shall insure against all liabilities indicated in clause 40, 41 and 42 with an insurer approved by the Employer, and shall continue such insurance during the whole of the time that any person is employed by him on the works and shall, when required, produce to the Engineer-in-Charge or his representative such policy of insurance and the receipts for payment of the current premium. Provided always that, in respect of any persons employed by any sub-contractor, the Contractor's obligation to insure as aforesaid under this sub-clause shall be satisfied if the sub-contractor shall have insured against the liability in respect of such persons in such manner that the Employer is indemnified under the policy, but the Contractor shall require such sub-contractor to produce to the Engineer-in-Charge when required, such policy of insurance and the receipt for the payment of the current premium.

7. Testing & Testing Equipment

Testing of materials to be used in the permanent work or of the quality of finished items shall have to be done

from laboratory (approved by the E.I.C) at the expense of the Contractor.

Should the E.I.C. consider it necessary to satisfy himself as to quality of work, the Contractor shall offer sample of work done as necessary, pull down reasonable part of the work required for such inspection and testing. The contractor shall bear the cost of pulling down and shall make good the same at his own cost and to the full satisfaction of the E.I.C. without any extra cost.

The Contractor shall provide at his own cost necessary equipments for such testing which by nature of work may have to be done at work site. These include sufficient number of slump cones, standard 150 mm metal cube moulds, set of I.S. sieves, weighing balances, graduated measuring cylinders, equipment for in-situ density test, holding detector, thermometers and any other miscellaneous equipment that may be required by the Engineer-in-Charge. The Contractor shall also provide at his cost facilities for curing of concrete cubes for testing purpose. The Contractor shall afford at his own cost necessary facilities in providing requisite materials and assistance that may be required by EIC including transportation charges to laboratory.

8. Completion Certificate:

The Engineer-in-Charge will issue certificate of completion of work when all works itemized in the Schedule of work and the entire work as per drawing or otherwise undertaken have been completed in all respect and Maintenance period will start from the date of issue of completion certificate.

The Final Bill for the work shall be paid by EIC on completion of work in all respect including submission of the following documents by the Contractor in quadruplicate.

a. Material reconciliation statement.

b. Still photographs of work execution.

9. Safety Requirements:

CONTRACTOR shall use safety belts, whenever his workmen work at a high altitude to avoid risk of any accident or fall Hard Top Hats to be used by the CONTRACTOR's workmen at the places wherever required.

First Aid and other medical facilities to be provided at the work site by the CONTRACTOR.

CONTRACTOR's personnel working at site should have Identity Badges during their stay inside the plant. Prior approval of identity badges or cards by Engineer-in-Charge shall be obtained by the CONTRACTOR.

The CONTRACTOR shall take all precaution for work safety and to prevent accident to men working under him or to other CONTRACTOR's working at site.

10. Approval Of Materials:

Sample of materials in sufficiently large quantity with descriptive data thereof shall be furnished by the contractor to the Engineer-in-charge well before the collection of such materials and equipments so as to permit inspection, testing and approval. The sample shall be properly marked to show the name of the materials, name of manufacturer, place of origin and item for which it is to be used. After approval, the sample shall be available for inspection at all time.

Third party inspection of such materials has to be arranged by the agency as per direction of E.I.C.

11. MATERIALS:

- **Stone Chips:** These should be obtainable by the contractor from Chandil / Pakur, well graded conforming to the standard specifications of P.W.D. for M-10, M-15, M-20, M-25, M-30 etc. as the case may be or approved by the Engineer-in-charge.
- **Sand :** Sand for construction purpose shall have to be collected either from ILLAMBAZAR/ MURAROI/ GOPIBALLAVPUR / MOGRA or river bed of Damodar/ Mayurakshi/ Kangsabati or Ajoy and should be coarse, cleaned, screened and washed & of quality conforming to the standard specification of P.W.D/ this Directorate and also to be approved by the Engineer-in-charge.
- **Brick :** Bricks shall be of first class quality, well burnt in kiln, sound hard , true to shape and of the standard dimensions, and to be got approved by the Engineer-in-charge before use.
- **Plasticiser:** Super-Plasticiser of SIKA / DUPLAST/ CERA PLAST/ Fosroc /Dr. Fixit makes conforming to IS: 2645-1975 & IS: 9103-1974 must be used.
- **Cement:** The cement shall conform to relevant I.S. grade Portland Slag Cement. Cement tests shall have to be carried out at contractor's expenses as and when directed. The contractor shall make

arrangement with necessary equipment to carry out crushing strength of 150 cm. Cube concrete blocks for 7 days & 28 days of proper curing. Testing procedure, sample size shall be in accordance with relevant I.S.

- **Steel / Reinforcement:** - Reinforcement for reinforced concrete work in all sorts of structures including distribution bars, stirrups, binders etc. initial straightening and removal of loose rust (if necessary), cutting to requisite length, hooking and bending to correct shape, placing in proper position and binding with 16 gauge black annealed wire at every inter-section, placing in position etc. must be completed as per drawing and direction.

12. Brick Masonry:

Brickwork shall be laid in English bond with mortar in proportion 4:1 unless otherwise specified. Brick work shall always be carried up regularly in plumb and true to plan and lines, in level along the entire length. No brick work shall be carried up more than one scaffolding height of 1.5 metre in the stage. Bricks are to be well soaked with water before use and brick work shall be kept clean and joints raked out for subsequent pointing or plastering.

Brick work in foundation and superstructure not in contact with water shall be provided with 19 mm and 12 mm thick plaster to rough and fair faces respectively with cement sand mortar in 1:6 proportions. Brick work in contact with water shall be in cement sand mortar in 1:4 proportion 19 mm thick plaster with water proofing compound as per specification including 1.5 mm thick cement punning in the water contact face. 12 mm thick plastering in 1:6 cement sand mortar in the outer face shall be provided. "Cement Brick" will mean brick work in cement sand mortar in proportion as mentioned above.

18.1. Mixing and Laying:

For nominal mix, all concrete work in foundation, superstructure etc. shall be properly mixed in a good quality machine mixer. In no circumstances hand mixing will be allowed. However in special condition, with the permission of the Engineer-in-Charge hand mixing may be allowed. In that case 10% extra cement shall have to be used for which no extra payment shall be made. Concrete shall be laid properly and vibrated thoroughly with the help of mechanical vibrator as per direction of the Engineer-in-Charge.

18.2. Mortar and Concrete:

Contractors are particularly warned against the use of inferior materials or use of incorrect proportion of different materials in the make-up of concrete or mortar. Detection of any such practice will lead to rejection of all such works and imposition of penalty. Engineer-in-Charge has the right to reject any mortar or concrete, which does not conform to the specification. Cube test for concrete shall have to be done as per IS: 456-2000 and other relevant codes with all cost bear by the contractor.

The water cement ratio is to be determined by proper slump test or as provision of relevant I.S. Codes.

In case of slump test the slump cones (300 mm dia. At bottom and 100 mm at top) are to be kept at site at the cost of the Contractor.

18.3. Finishing:

If the surface of the concrete is found uneven or spongy in appearance, the Contractor shall have to rectify or reconstruct at his own cost.

Approved quality super Plasticizer in appropriate quantity by weight of cement has to be used as per relevant I.S. Code. The water cement ratio should not exceed 0.45.

All R.C.C. work forming part of water retaining structure shall be done with M20 grade of concrete/ M25 grade of concrete as per IS: 456 with cement content not less than 400 kg. /cu.m. and 420 kg/cu.m of concrete respectively. Approved quality super Plasticizer in appropriate quantity by weight of cement has to be used as per relevant I.S. Code. The water cement ratio should not exceed 0.45.

The concrete shall be cured as per IS: 456-2000.

13. Storage of Materials:

Agency has to arrange for storage of materials at the site as per IS: 4082 (specifications for storage of materials) at his own cost. Storage should be in such a way that any personnel of the WBIDC can access & check the quality of materials (mainly of cement & steel) during the work.

14. Joints in Concrete Structure:

Type of joints, spacing of joints, use of all jointing materials and other features pertaining to the provision of

movement joints in liquid-retaining structures shall be as per relevant I.S. Codes.

15. Reinforcement of R.C.C. Works:

The M.S. work should include cutting to sizes, bending, hooking and fabricating including the supply of B.W.G. wire, and all other works according to specification, drawing or otherwise.

The M.S. reinforcement rods if to be procured by the tenderer shall be HYSD bars (Fe-500) as per relevant IS Code. The contractor shall intimate the department regarding the quantity of steel to be procured by him in the works and the same may be supplied at the agreed rate specified in General terms and conditions.

16. Lap Length :

The Lap length of reinforcement shall be provided as given below; unless otherwise specified in drawing.
Compression & Tension members like column, struts beam, slab, wall etc. @ 50 times the dia of bar.
Following Development length/Anchorage length shall be provided.

Concrete Grade	M 15	M 20	M 25
Development Length	68 D	51 D	46 D
Anchorage		As per I.S. – 456-2000	

The reinforcement work will include cutting to sizes, bending, hooking binding with 14 to 18 S.W.G. soft pliable wire etc. as per P.W.D. schedule. The work shall also be inclusive of stirrups, distributors, binders etc.

17. Shuttering And Staging:

The form work shall conform to IS: 4990, code of practice Shuttering in form work shall be either made of steel or plyboard. Surface of shuttering in contact with concrete shall be made smooth & at joints rendered smooth. In every case the joints of the shuttering are to be such as to prevent the loss of liquid from the concrete.

All shuttering form work must be adequately stayed and braced to the satisfaction of the Engineer-in-charge for properly supporting the concrete during the period of hardening. All form works shall be removed without shock or vibration. Before the formwork is stripped, concrete surface shall be exposed when necessary in order to ascertain that the concrete has set and hardened sufficiently.

18. Curing and Finishing:

The joint shall be cleaned off the grey cement slurry with wire/coir brush or trowel to a depth of 2 mm to 3 mm and all dust and loose mortar removed. Joints shall then be flush pointed with white cement. The floor shall then be kept wet for 7 days. After curing the surface shall be washed and finished clean. The finished floor and wall shall not sound hollow when tapped with a wooden mallet.

19. Plastering, Painting & Surface Treatment:

Cement Plaster

26.1. Cement:

It should be fresh Portland cement (not less than grade 43) as specified in relevant I.S. Different Types of cement shall not be mixed together. In case more than one type of cement is used, a record shall be kept showing the location and the types of cement used.

26.2. Sand:

It shall be hard, durable, clean and free from adherent coatings and organic matter and shall not contain the amount of clay, silt and fine dust more than 5% by mass. It shall not also contain any harmful impurities such as iron pyrites, alkalis, salts, coal or other organic impurities, mica, shale or similar laminated materials, soft fragments, sea shale in such a form or in such quantities as to affect adversely the hardening, strength or durability of the mortar. The grading of sand for use in Plaster shall be conforming to I.S.: 1542-1977.

In case the sand is damp at the time of preparation of mortar, its quantity shall be increased suitably to allow for bulkage in conforming to I.S. 2386 (Part-III) 1963.

26.3. Preparation of Mortar:

The materials shall be at first mixed dry thoroughly in suitable proportion as stated in the schedule till uniform colour reaches and then shall be mixed wet adding water slowly and gradually for at least four times to give a uniform paste. The mix as prepared shall be used within 30 minutes. Wherever plasticizer is required to use, the quantity of water shall be reduced in such a proportion that required consistency is achieved.

26.4. Preparation of Surface:

The surface of wall shall be brushed, cleaned, washed, watered and wetted with water before plastering. All the projections extending more than 13 mm from the general face of the masonry should be knocked off so as to maintain thinner plaster layer. All the joints in masonry should be raked for a depth of about 20 mm. In case of plastering on concrete surfaces, the face should be roughened by chipping of about 5 mm. Oily, greasy and efflorescence spots should be removed either by brushing, scrapping or both.

26.5. Laying:

In order to maintain uniform thickness of the plaster, the screeds are formed on the prepared wall surface before actual plastering is started. Patches of plaster 15 cm x 15 cm are first of all applied at an interval of about 2 m both horizontally and vertically over the surface. The two dots lying in vertical strips of mortar are formed between dots. Then the plastering shall be started from the top and worked towards the bottom. The whole surface shall be made flush between the screeds with wooden straight edges and rubbed thoroughly with wooden floats. Rounding of corners if desired by the Engineer-in-charge shall be carried out in one operation.

26.6. Curing :

The plastered surface shall be kept wet by sprinkling water after 12 hours for atleast 7 days and shall be protected from rain or sun.

26.7. Thickness:

Unless otherwise specified or desired by E.I.C. the thickness of plaster shall be as follows:-

a.	Plumbed Surface of Brick work	-	15 mm
b.	Rough Surface of brickwork	-	20 mm
c.	Vertical concrete surface	-	10 mm
d.	Ceiling of Roof, Chajja etc.	-	10 mm

Cement Pointing to Exposed Brick Facing Where shown on the approved drawings or specified in schedule of work, exposed brick faces shall be cement ruled pointed. The mortar shall be raked out of the joints to a depth of 6 mm. The dust shall be brushed out of the joints.

20. Bolts & Nuts:

Make: GKW / TATA or Equivalent
Bolts and nuts conform to the requirements of turned grade bolts of symbol 4D, 5D and 53 specification - IS : 1363 (latest edition) – Technical supply conditions for threaded fastener. The screw thread shall conform to coarse series – medium class referred in IS : 1367 (latest edition)/.

21. Gaskets:

Gaskets for flange joints shall be made of natural rubber conforming to IS specifications.

22. Lightning Conductor:

This is to be done as per schedule strictly in accordance with I.E.E. rules and regulations .The Rate includes supply of all necessary labour and materials including cutting and threading of pipes and specials where necessary for which no extra claim will be entertained . The earthing conductor is to be placed below the lowest sub-soil water level during dry weather and away from the underground pipes as far as possible as determined by the Engineer-in-charge of the work. All fitting, fixing, painting and earthling works for the lightning conductor are included in this work.

23. ROOF TREATMENT:

Clean the roof surface by wire brush & water jet properly. Apply 1st coat of cement slurry admixed with diluted Sika Raintile-1/Sike Latex Powder (S: W: C=1:4:6) or equivalent upto a height of 150mm on vertical surface of the parapet wall. Apply 2nd coat of the above slurry after drying of 1st coat. While the 2nd coat of cement slurry is still tacky, a screed concrete (1:1.5:3) shall be laid with 6mm down aggregate admixed with Sika Plastocrete super or equivalent (conforming to IS: 264) with a minimum average thickness of 50mm laid with proper slope.
The junction with parapet wall will be properly finished with slope using cement sand mortar (1:4) admixed with diluted Sika Raintile-1/Sika Latex Powder (1:6) or equivalent with ratio not 0.5 (Diluted admixture : cement). Proper curing shall be done after completion of the treatment.

Section 8

<u>As per BOQ quantity</u>

Form - I

DIFFERENT FORMS INCLUDING FORM OF BID

Draft Contract Agreement

THIS AGREEMENT ("Contract Agreement") is made on the day of, 2023 at Kolkata.

BETWEEN:

West Bengal Industrial Development Corporation Limited, (Govt. of West Bengal undertaking), (hereinafter referred to as "WBIDC") which expression shall, unless it be repugnant to the context or meaning thereof, include its administrators, successors in office and assigns) of One Part

AND

…….. LIMITED, a company incorporated under the provisions of the Companies Act, 1956 and having its registered office at (hereinafter referred to as the "Contractor") which expression shall, unless it be repugnant to the context or meaning thereof, include its administrators, successors in office) of the Other Part.

Whereas the WBIDC has invited e-Tender, e-Tender Reference No. : WBIDC/IP/HIP/IDW (Part –A)/2023/2(2nd Call)for the work "Construction of boundary wall & main entrance gate, internal road network system, storm water drainage system, waste water drainage system at Haldia Industrial Park."

AND WHEREAS the Contractor in Pursuant to that advertisement has participated in the tender process and thus become a successful bidder accordingly and has agreed to execute upon and subject to the conditions set forth herein and Schedule of items and quantities, General Conditions of Contract, Special Conditions of Contract including all other conditions as mentioned in the tender document, specifications and all correspondence exchanged by or between the parties from the submission of tender till the award of work, both letters inclusive, (all of which are collectively hereinafter referred to as "the said conditions") the work shown upon the said drawings and/or described in the said specification and included in the schedule of items and quantities at the respective rates therein set forth amounting to the sum of Rs…… (Rupees……only) as therein arrived at or such other sum as shall become payable there under (Hereinafter referred to as "the said Contract amount")

NOW IT IS HEREBY AGREED AS FOLLOWS:

1. In consideration of the said contract amount to be paid at the times and in the manner set forth in the said conditions, the Contractor shall upon and subject to the said conditions execute and complete the work show upon the said drawings and described in the said specifications and the schedule of items and quantities.
2. The WBIDC shall pay the Contractor the said amount, or such other sum as shall become payable, at the times and in the manner specified in the said conditions.
3. The said conditions and Appendices thereto shall be read and considered as forming part of this Agreement, and the parties hereto shall respectively abide by, submit themselves to the said conditions and perform the agreement on their part respectively in the said conditions contained.
4. Following documents mentioned herein shall form and part this contract:
   a) e-Tender Document vide ref. No. . . . . Date . . . . . .
   b) Section–1:List of Important Dates, Press Notice, Notice Inviting e-Tender (NIeT)
   c) Section – 2: Background Information
   d) Section – 3: Instructions to Bidders (ITB)
   e) Section – 4: Qualification Information
   f) Section – 5: General Conditions of Contract
   g) Section – 6: Technical Specifications
   h) Section – 7: Tender Drawings
   i) Section – 8: Bill of Quantities
   j) Section –9: Different Forms including Form of Bid
   k) Letter of Acceptance (LoA)/ Work Order vide ref. no. . . . . Date . . . . . .
   l) Any other documents related to this Tender Purpose.
5. The WBIDC reserves to itself the right of altering the drawings and nature of the work by adding to or omitting any items of work or having portions of the same carried out without prejudice to this contract.
6. Time shall be considered as the essence of this contract and the contractor hereby agrees to commence the work on the day of handing over of the site or within fourteenth days from the date of issue of formal work

order/ LOA whichever is later as provided for in the said conditions and to complete the Defect liability period for 36 months.

7. All payments by the WBIDC under this contract will be made at Kolkata and 30 days from receipt of the bill.
8. In case of any dispute by and between the contracting parties the same shall be referred to the Managing Director of WBIDC whose opinion shall be prevailed as final and binding on all the parties and shall be subject to Kolkata jurisdiction only.
9. The various clause & sub-clause of the tender document along with its annexures and modifications made thereon by WBIDC shall be read and be treated as forming part of this Agreement and parties hereto will respectively be bound thereby and to abide by and submit themselves to the conditions and stipulations and perform the provisions of this Agreement on their parts respectively.
10. That the several parts of this contract have been read by the contractor and fully understood by the contractor.

In witness whereof the Employer and the contractor have set their respective hands to those presents through their duly authorized official and the said two duplicates hereof to be executed on its behalf or the day and year first herein above written.

_____	_____
Signed on behalf of WBIDC	Signed on behalf of the Contractor
by its duly authorized official	
In the presence of:	In the presence of:
1. Signature_____	1. Signature_____
Name with address_____	1. Name with address_____
_____	_____
2. Signature _____	2. Signature_____
Name with address_____	Name with address_____
_____	_____

Form - II

FORMAT OF BANK GUARANTEE AS PERFORMANCE /SECURITY DEPOSIT

To

_____ (Name of the 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) herein after "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 Nationalised 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) _____(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) as aforesaid without your needing to prove or to show grounds or reasons for a 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 hereunder or of any of the Contract documents which may be made between you and the Contractor shall in anyway 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 a date 45 days after the expiry of defect liability period of thirty six (36) months after intended completion date.

Signature and seal of the guarantor _____

Name of Bank _____

Address _____

Date _____

Form - III

Form of Bid

Notes on Form of Bid

The Bidder shall fill in and submit this Bid form with the Bid.

_____ [Date]

To

[Name of Employer]

Authorised Address of communication: ……..

Telephone No. (s): Office:……

Mobile No. …….

Facsimile (FAX) No. …….

Electronic Mail Identification (E-mail ID)……

Description of the Works: _____

1. I/We offer to execute the works described above and remedy any defects therein, in conformity with the Conditions of Contract, specifications, drawings, Bill of Quantities and Addenda for Item Rate Contract of Total Bid Price of Rs. _____ (BOTH IN FIGURES AND WORDS).
2. We undertake to commence the works on receiving the Notice to Proceed with work in accordance with the contract documents.
3. This Bid (including all amendments and minutes of pre-bid meeting) and your written acceptance of them shall constitute a binding Contract between us.
4. We understand that you are not bound to accept the lowest or any Bid you receive.
5. We hereby confirm that this Bid complies with the Bid validity and Earnest money required by the bidding documents and specified in the Instructions to Bidders (ITB).

Authorized Signature: _____

Name and Title of Signatory: _____

Name of Bidder: _____

Address: _____

APPROVED VENDOR LIST

A tentative approved Vendor List is appended below. However, WBIDC may change details at a later date if required and the successful Bidder shall abide by the same.

A. Civil

Sl. No.	Equipment Vendors	Name Of Vendors
1.	CEMENT	LAFARGE / ULTRATECH / AMBUJA/KONARK/RAMCO
2.	SAND	ILLAMBAZAR/ MURAROI/ GOPIBALLAVPUR / MOGRA
3.	REINFORCEMENT STEEL	BALAJI SHAKTI (JAI BALAJI INDUSTRIES LTD) /JSW/ SUL/ SRMB/ELEGANT/ CAPTAIN/ANKIT
4.	STRUCTURAL STEEL	BALAJI SHAKTI (JAI BALAJI INDUSTRIES LTD) /JSW/ SUL/ SRMB/ELEGANT/ CAPTAIN/ANKIT
5.	STONE CHIPS	PAKUR / CHANDIL / RAMPURHAT
6.	WATER PROOFING MATERIAL	FOSROC / SIKA/ DR. FIXIT/ DUPLAST/CERAPLAST
7.	SUPER PLASTICIZER	FOSROC / SIKA/ DR. FIXIT/ DUPLAST/CERAPLAST
7.	PAINT	ASIAN / BERGER
8.	CI PIPES & SPECIALS	ELECTRO STEEL / JINDAL / JAI BALAJI
9.	G.I. PIPES	TATA/ JINDAL / NEZONE
10.	G.I. FITTINGS	R. BRAND

B. Electrical

Sl. No.	Equipment Vendors	Name Of Vendors
1.	MCCB/MPCB	L&T/SIEMENS/SCHNEIDER/ABB/GE-POWER
2.	CONTROL SWITCHES	KAYCEE/ L&T/TELECMECHANIQUE
3.	LIGHT FIXTURES	HAVELLS/PHILLIPS/JAQUAR OR EQV.
4.	FAN FIXTURES	USHA/CROMPTON/HAVELLS OR EQV.
5.	POWER & CONTROL TERMINAL	WAGO/ELMEX/CONNECTWELL
6.	HT MOTOR	BHEL/CGL/KEC/ABB/SIEMENS/
7.	LT MOTOR	CGL/KEC/ABB/SIEMENS/ BHARAT BIJLEE
8.	HT CABLE	POLYCAB/CCI/GLOSTER/UNIVERSAL CABLE/NICCO
9.	LT CABLE	POLYCAB/GLOSTER/FINOLEX/INCAB
10.	CONTROL CABLES	POLYCAB/GLOSTER/FINOLEX/INCAB
11.	INSTRUMENTS CABLES	DELTON/ KAPP/ CORDS CABLES
12.	CABLE LUGS	CONNECTWELL/ PHONIX/DOWELL
13.	CABLE GLANDS	ELECTROMAG/DOWELL/REPUTED

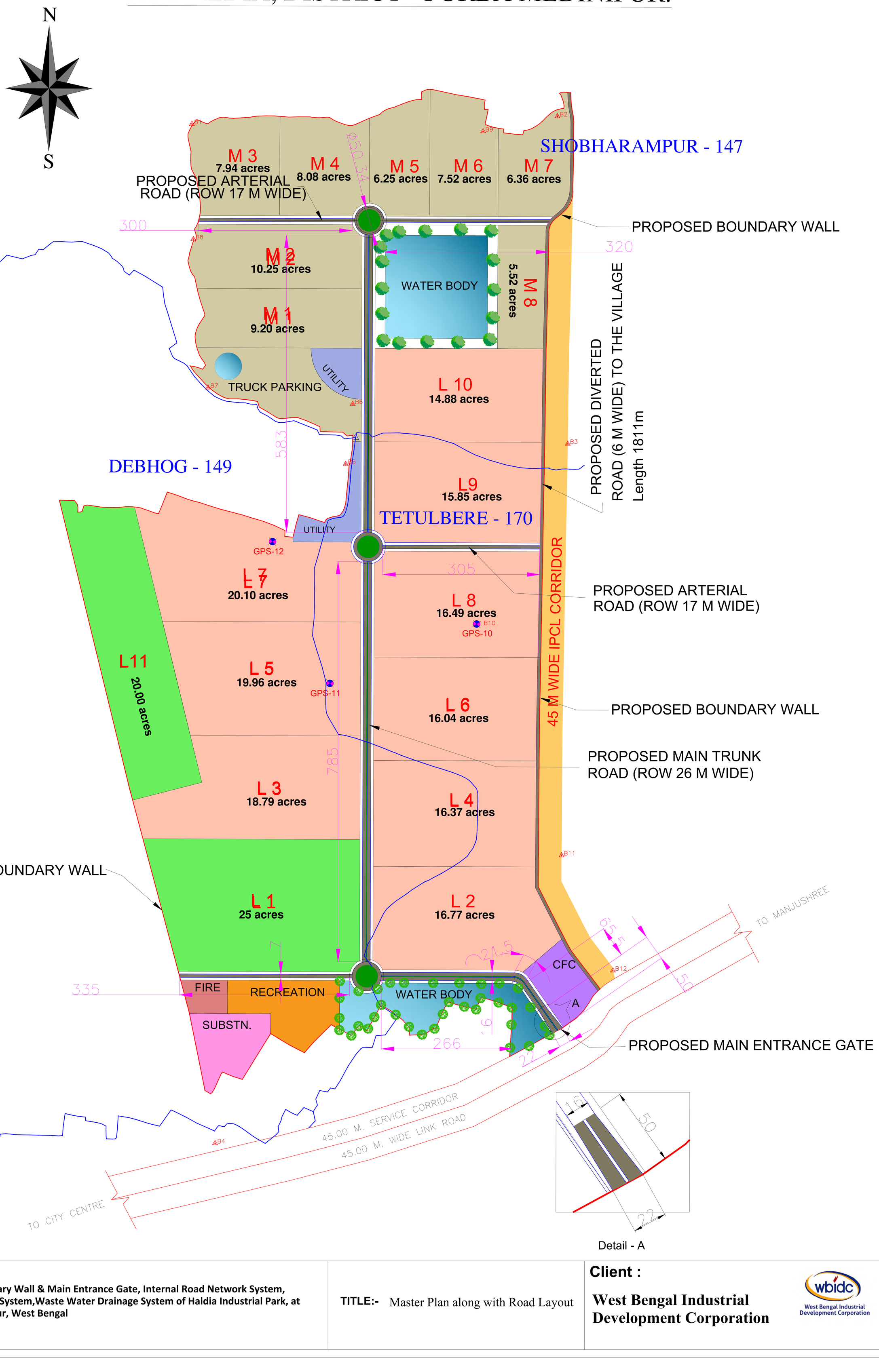
C. Electronics

Sl. No.	Equipment Vendors	Name Of Vendors
1.	COMPUTER	DELL/ASUS/ LENOVO
2.	PRINTER/SCANNER	HP/EPSON/ CANNON
3.	AIR CONDITIONER	CARRIER/DAIKIN/VOLTAS/VESTAR/ LG

Note: - Any other make not mentioned above in the vendor's list may be added at a later date if required, subject to approval of WBIDCL.

Tender Drawings

MASTER PLAN HALDIA INDUSTRIAL PARK"
AT HALDIA, DISTRICT - PURBA MEDINIPUR.



PROJECT NAME:

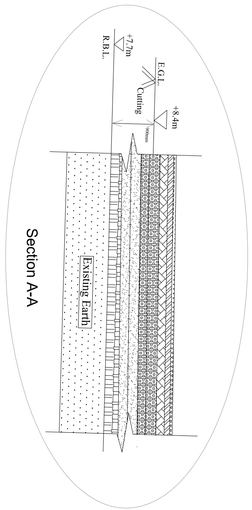
Construction of Boundary Wall & Main Entrance Gate, Internal Road Network System, Storm Water Drainage System,Waste Water Drainage System of Haldia Industrial Park, at Haldia, Purba Medinipur, West Bengal

TITLE:- Master Plan along with Road Layout

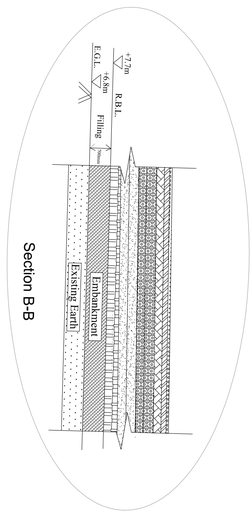
Client :

West Bengal Industrial Development Corporation

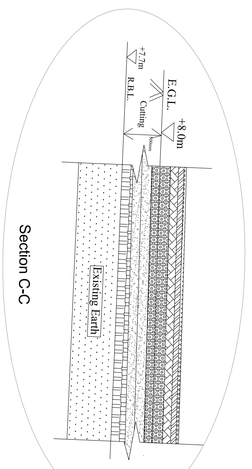
West Bengal Industrial Development Corporation



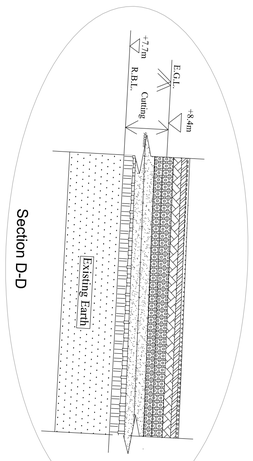
Section A-A



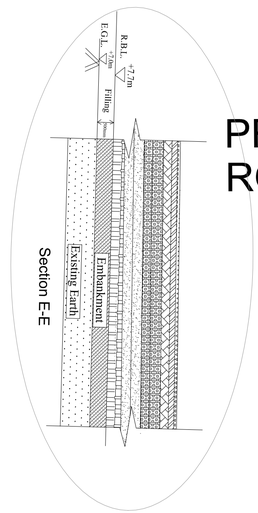
Section B-B



Section C-C



Section D-D



Section E-E

PROPOSED ARTERIAL ROAD (ROW 17 M WIDE)

PROPOSED ARTERIAL ROAD (ROW 17 M WIDE)

PROPOSED DIVERTED ROAD (6 M WIDE) TO THE VILLAGE

PROPOSED MAIN TRUNK ROAD (ROW 26 M WIDE)

PROPOSED ARTERIAL ROAD (ROW 17 M WIDE)

PROPOSED MAIN TRUNK ROAD (ROW 26 M WIDE)

INDUSTRIAL ZONE

RELIANCE

TBM-2
R.L.=8.836
TEMPLE

TBM-1
R.L.=9.581

N = 2440693.923
E = 613011.459

N = 2440711.241
E = 612948.167

LOW LAND

BOUNDARY WALL

NALA

PETROL PUMP

ATM

REFERENCE LEVEL= 10 MTS

TO CITY CENTER

TO MANPUR/HEE

PROPOSED ROAD LAYOUT

LEGEND

SL.NO.	DESCRIPTION	SYMBOL
1.	BOUNDARY WALL	
2.	AREA	
3.	ROAD	
4.	LOW LAND	
5.	RTS	
6.	DEACH	
7.	ELECTRIC POL	
8.	TOWER	
9.	NAYANJULI	
10.	TEMPLE	

Existing Earth Layer

FLY ASH/EARTH (EMBANKMENT) [Material having Dry Unit Wt. Not less than 15.2KN/cum & Dry Density Not Less than 95%] [Variable thickness)

300 MM FLY ASH (70%) & SAND (30%) (SUB GRADE) [Material having Dry Unit Wt. Not less than 17.5KN/cum & Dry Density Not Less than 98%]

100 MM GSB LAYER I (GR.-VI)

100 MM GSB LAYER II (GR.-IV)

100 MM WMM STONE CONSOLIDATION

150 MM WMM STONE CONSOLIDATION

110/80 MM DENSE BITUMINOUS MACADAM

40 MM BITUMINOUS CONCRETE

20 MM PREMIX CARPETING

TITLE

TOPOGRAPHICAL SURVEY OF HALDIA INDUSTRIAL PARK
AT HALDIA , PURBA MEDINIPUR

NOTE

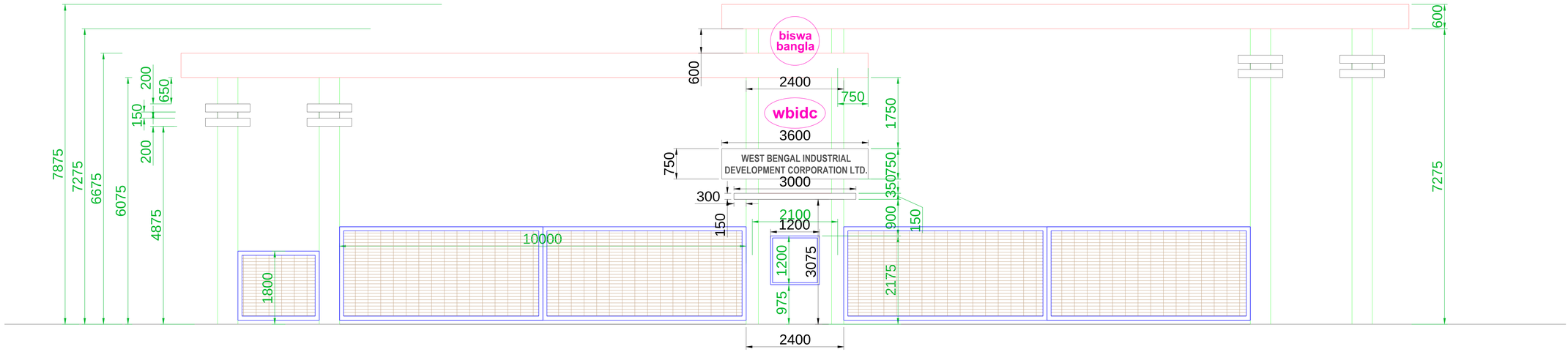
1. ALL DIMENSIONS ARE IN METRE.
2. DRAWIING PREPARED BASED ON GPS CO ORDINATE
3. REFERENCE LEVEL TAKEN FROM MAIN ROAD WHOSE VALUE = 10.000 M. RESPECT OF MAIN ROAD (ASSUMED 10.000 MTS.)

Client :
West Bengal Industrial Development Corporation Limited
Govt. of West Bengal Undertaking

THE DRAWING IS FOR TENDER PURPOSE ONLY

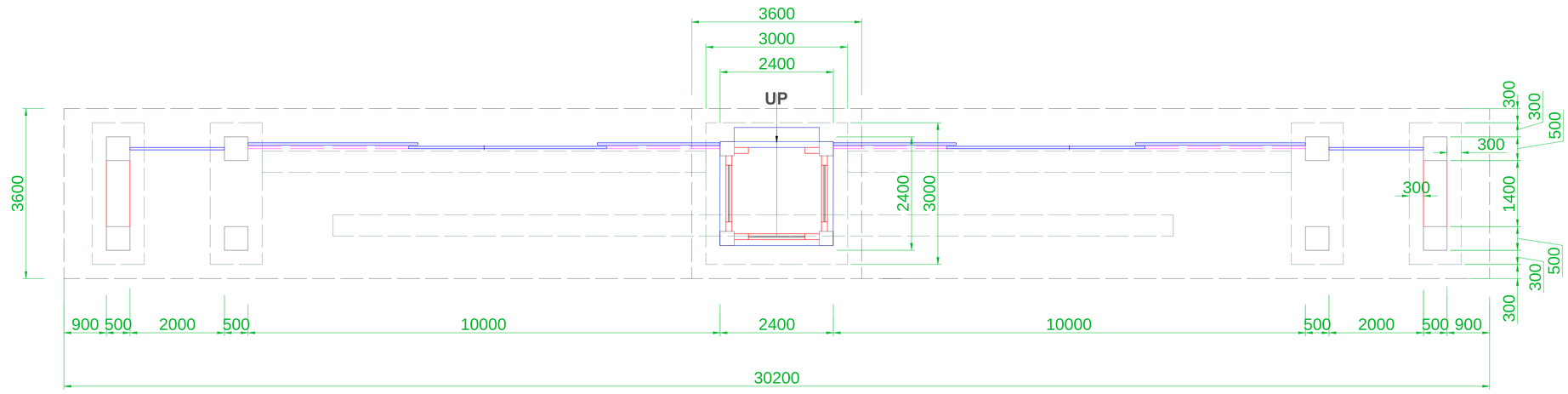
PROJECT NAME:

Construction of Boundary Wall & Main Entrance Gate, Internal Road Network System, Storm Water Drainage System, Waste Water Drainage System of Haldia Industrial Park, at Haldia, Purba Medinipur, West Bengal



FRONT ELEVATION

SCALE = 1:100



PLAN

SCALE = 1:100

*All Dimensions are in m.m.

PROJECT NAME:

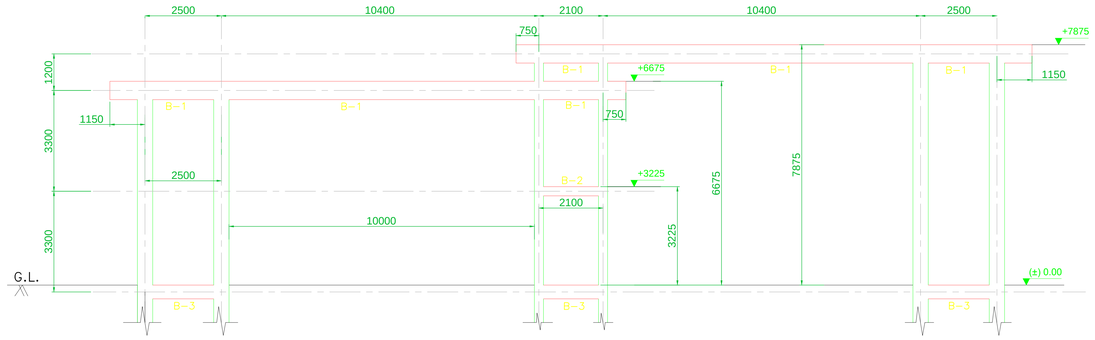
Construction of Boundary Wall & Main Entrance Gate, Internal Road Network System, Storm Water Drainage System,Waste Water Drainage System of Haldia Industrial Park, at Haldia, Purba Medinipur, West Bengal

TITLE:- Architectural Drawing of Main Entrance Gate

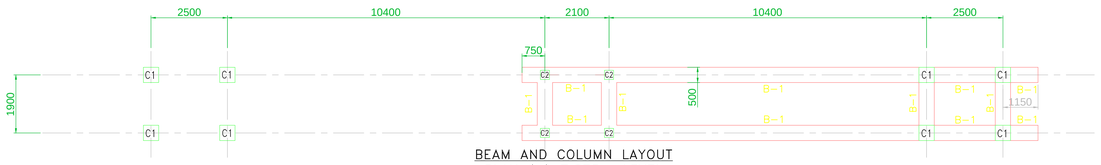
Client :

West Bengal Industrial Development Corporation

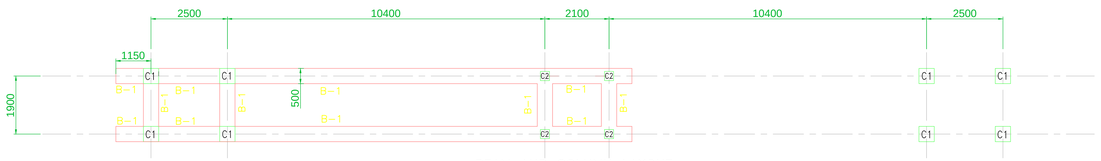
West Bengal Industrial Development Corporation



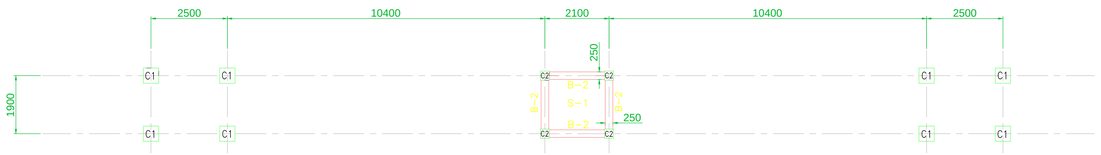
FRONT ELEVATION



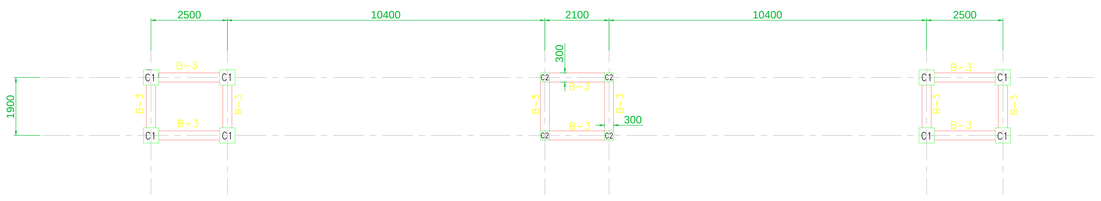
BEAM AND COLUMN LAYOUT
PLAN (+) 7.875m LEVEL



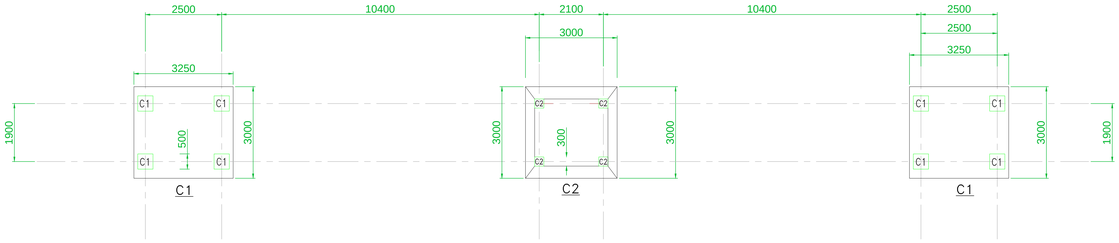
BEAM AND COLUMN LAYOUT
PLAN (+) 6.675m LEVEL



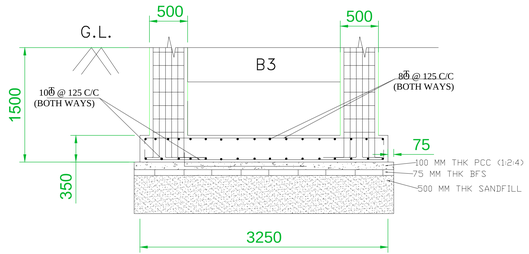
BEAM, SLAB AND COLUMN
LAYOUT PLAN (+) 3.225m
LEVEL



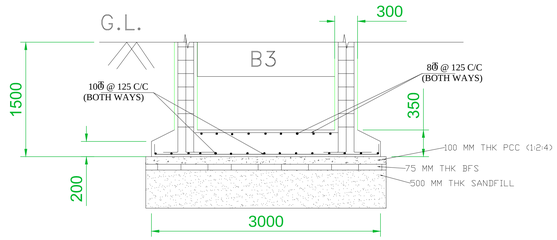
BEAM AND COLUMN LAYOUT
PLAN (±) 0.00m LEVEL



PLAN VIEW OF FOUNDATION



SECTIONAL ELEVATION OF
FOUNDATION MARKED "C1"



SECTIONAL ELEVATION OF
FOUNDATION MARKED "C2"

SCHEDULE OF COLUMNS

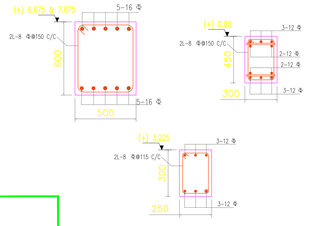
COLUMN MARKED	NOS. OF COLUMNS	COLUMN SIZE (mm x mm)	FOUNDATION TO +7.875 m LEVEL	LINKS
C1	08	500X500	500 / 500 — REINFORCEMENT: 4-16 ϕ & 14-12 ϕ; LINKS: 8 ϕ@175 C/C (4 NOS. CLOSED LINK PER SET)	
C2	04	300X300	300 / 300 — REINFORCEMENT: 8-12 ϕ; LINKS: 8 ϕ@175 C/C (1 NOS. CLOSED LINK PER SET)	

SCHEDULE OF BEAMS

BEAM MARKED	BEAM SIZE		TOP REINFORCEMENT		BOTTOM REINFORCEMENT		STIRRUPS (AT SUPPORT)	STIRRUPS (AT SPAN)
	WIDTH	DEPTH	ALTHROUGH	EXTRA AT SUPPORT	ALTHROUGH	EXTRA AT SPAN		
B-1	500	600	5-16 ϕ	-	5-16 ϕ	-	2L-8 ϕ@150 C/C	2L-8 ϕ@150 C/C
B-2	250	300	3-12 ϕ	-	3-12 ϕ	-	2L-8 ϕ@115 C/C	2L-8 ϕ@115 C/C
B-3	300	450	5-12 ϕ	-	5-12 ϕ	-	2L-8 ϕ@150 C/C	2L-8 ϕ@150 C/C

SLAB THICKNESS – 110 (S1)

REINFORCEMENT	POSITION
8T @ 200 mm C/C (ALL THROUGH)	BOT.
8T @ 200 mm C/C (ALL THROUGH)	TOP



CROSS SECTIONS OF
BEAMS

NOTES:-

1. (±) 0.00 M. LEVEL REFERS TO G.L.
2. UNLESS OTHERWISE STATED ALL CONSTRUCTION ACTIVITIES SHALL BE CARRIED OUT CONFORMING TO RELEVANT (INDIAN) STANDARD CODES OF PRACTICE.
3. ALL DIMENSIONS ARE IN MILLIMETERS & LEVELS ARE IN METER, EXCEPT OTHERWISE MENTIONED ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. ALL LEVELS GIVEN IN STRUCTURAL DRAWINGS ARE IN ACCORDANCE WITH ARCHITECTURAL DRAWINGS. AND INDICATE STRUCTURAL LEVEL ONLY (WITHOUT FINISH). HOWEVER ARCHITECTURAL DRAWING TO BE COORDINATED FOR ALL LEVELS.
4. ALL STRUCTURAL DRAWINGS SHALL BE READ ALONG WITH THIS DRAWING AS WELL AS RELEVANT ARCHITECTURAL DRAWINGS.
5. ANY DISCREPANCY IN THE STRUCTURAL AND ARCHITECTURAL DRAWINGS SHALL BE BROUGHT TO THE NOTICE OF STRUCTURAL CONSULTANT BEFORE EXECUTION OF WORK.
6. UNLESS OTHERWISE SPECIFIED ALL REINFORCEMENT TO BE USED SHALL BE TMT. BARS OF GRADE Fe-500/500 D CONFORMING TO IS-1786-2008.
7. ADEQUATE CHAIR BARS TO BE PROVIDED TO KEEP THE TOP REINFORCEMENT IN PROPER POSITION.
8. UNLESS OTHERWISE STATED LAP LENGTH OF BARS SHALL BE DEVELOPMENT LENGTH=50xBAR DIA.
9. CONCRETE NOMINAL COVER TO MAIN REINFORCEMENT SHALL BE AS FOLLOWS:
   i) FOUNDATION : (50/50/50)MM
   ii) FOUNDATION BEAM : 50 MM
   iii) COLUMNS : 40 MM
   iv) BEAMS : 25 MM
10. GRADE OF CONCRETE WILL BE M20 FOR FOUNDATION AS PER IS: 456:2000.
11. DEVELOPMENT LENGTH 50XD FOR LAP & SPICES SHOULD BE PROVIDED AS PER THE PROVISIONS LAID DOWN IN SP34:1987
12. DESIGNER DOESN'T HAVE ANY RESPONSIBILITIES REGARDING SITE SUPERVISION & CONSTRUCTION ISSUES.

*All Dimensions are in m.m.

PROJECT NAME:

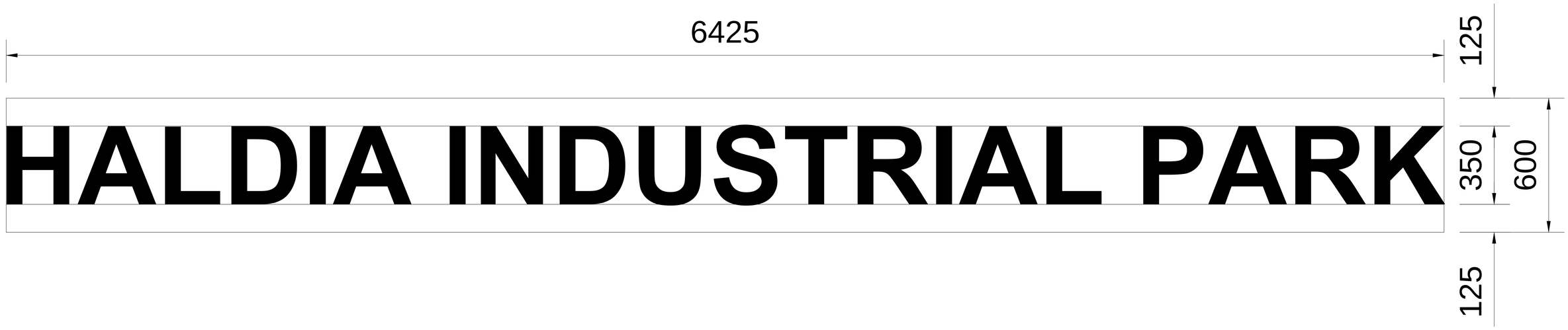
Construction of Boundary Wall & Main Entrance Gate, Internal Road Network System, Storm Water Drainage System,Waste Water Drainage System of Haldia Industrial Park, at Haldia, Purba Medinipur, West Bengal

TITLE:- Structural Drawing of Main Entrance Gate

Client :

West Bengal Industrial Development Corporation

West Bengal Industrial Development Corporation



Note:

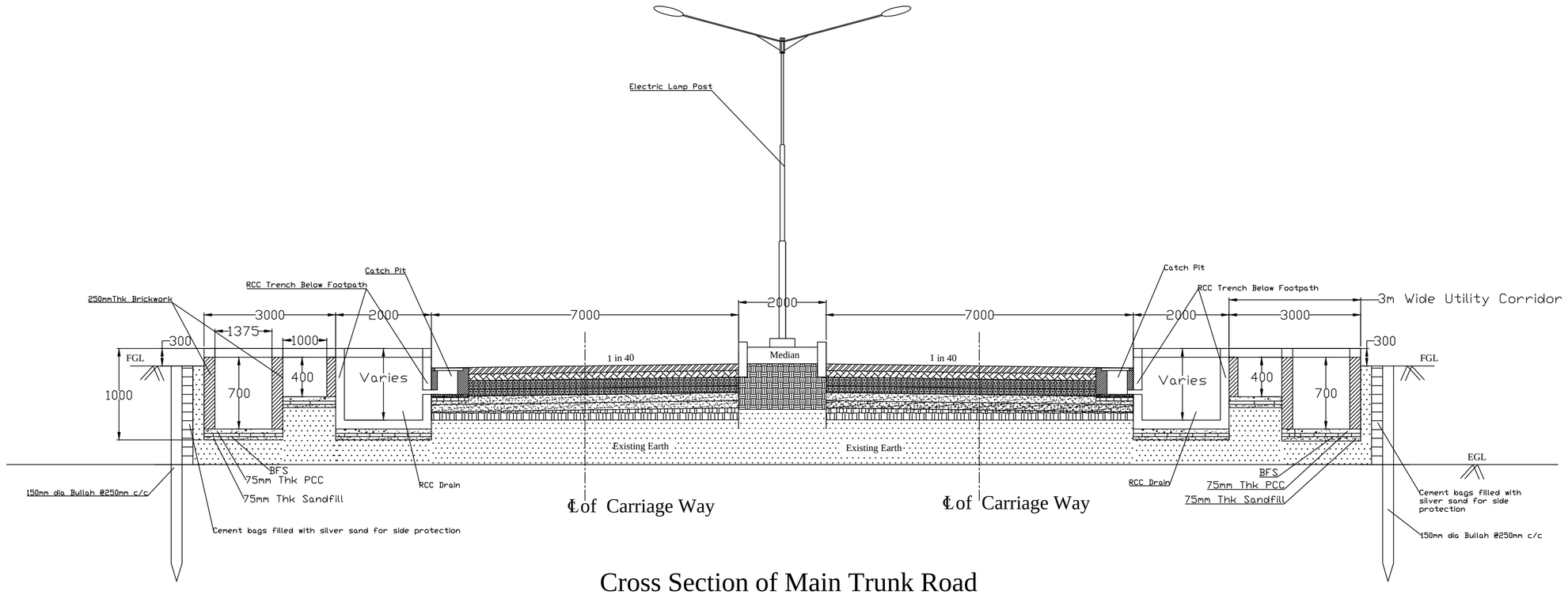
1. **All the letters are 20mm thick**
2. **All dimensions are in mm unless otherwise mentioned**

PROJECT NAME: **Construction of Boundary Wall & Main Entrance Gate, Internal Road Network System, Storm Water Drainage System,Waste Water Drainage System, vetting, preparation of bid documents for selection of Contractor through E-Tendering and bid evaluation, at Haldia Industrial Park, Haldia, Purba Medinipur**	**TITLE:-** Lettering Detail of Main Entrance Gate	**Client :** **West Bengal Industrial Development Corporation** wbidc West Bengal Industrial Development Corporation

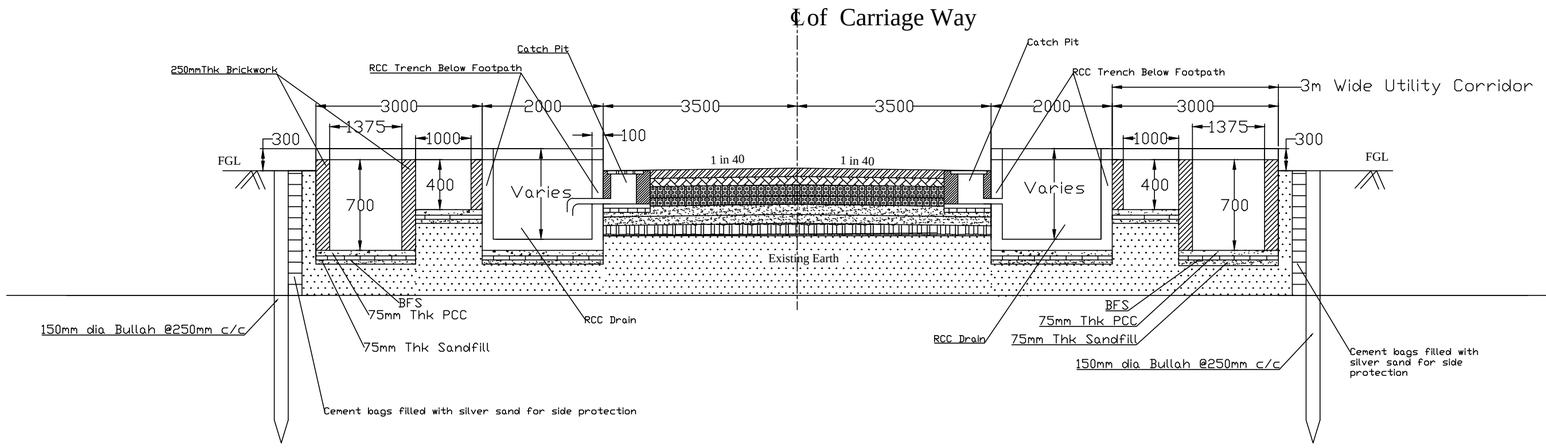
Note:

1. All the letters are 10mm thick
2. All dimensions are in mm unless otherwise mentioned

PROJECT NAME: **Construction of Boundary Wall & Main Entrance Gate, Internal Road Network System, Storm Water Drainage System,Waste Water Drainage System, vetting, preparation of bid documents for selection of Contractor through E-Tendering and bid evaluation, at Haldia Industrial Park, Haldia, Purba Medinipur**	**TITLE:-** Lettering Detail of Main Entrance Gate	**Client :** **West Bengal Industrial Development Corporation** wbidc West Bengal Industrial Development Corporation



Cross Section of Main Trunk Road



Cross Section of Arterial Road

40 MM BITUMINOUS CONCRETE

110 MM DENSE BITUMINOUS MACADAM

150 MM WMM

100 MM WMM

100 MM GSB LAYER II (GR.-IV)

100 MM GSB LAYER I (GR.-VI)

300 MM FLY ASH (70%) & SAND (30%) (SUB GRADE) [Material having Dry Unit Wt. Not less than 17.5KN/cum & Dry Density Not Less than 98%]

EARTH FILL

*All dimensions are in mm

PROJECT NAME:

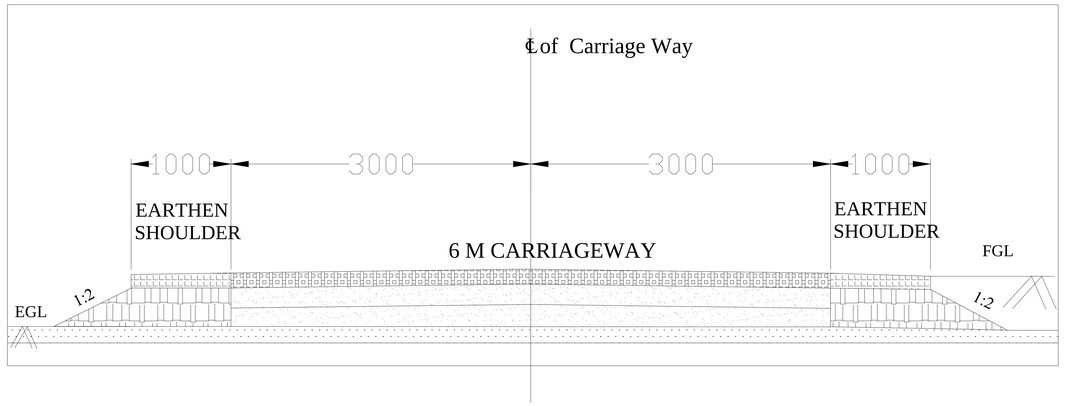
Construction of Boundary Wall & Main Entrance Gate, Internal Road Network System, Storm Water Drainage System,Waste Water Drainage System of Haldia Industrial Park, at Haldia, Purba Medinipur, West Bengal

TITLE:- Cross Section of Main Trunk Road & Arterial Road

Client :

West Bengal Industrial Development Corporation

West Bengal Industrial Development Corporation



150 MM MOORUM LAYER

100 MM GSB LAYER II (GR.-IV)

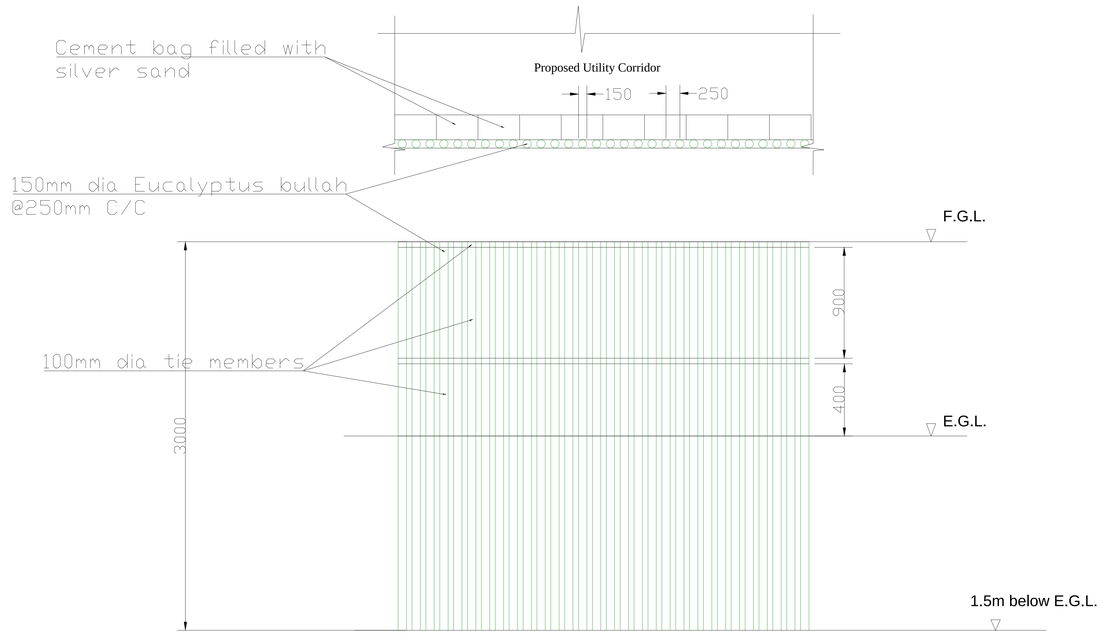
100 MM GSB LAYER I (GR.-VI)

200 MM EARTHEN SOULDER

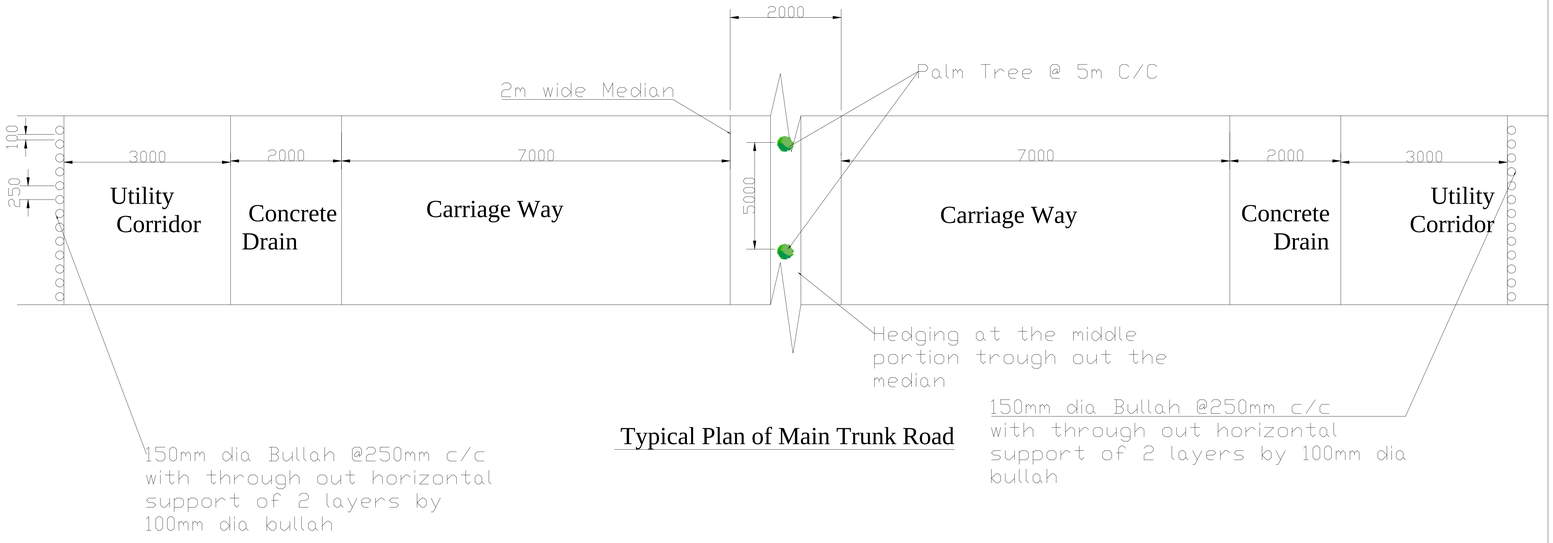
150 MM JHAMA (Hard Shoulder)

EXISTING EARTH LAYER

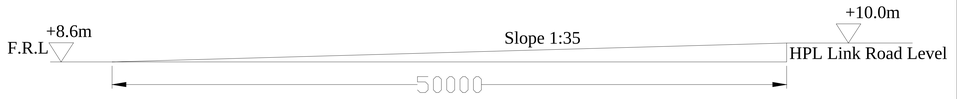
Cross Section of Diversion Road



Detailed Drawing of Bullah Pilling (Protection Work)



Typical Plan of Main Trunk Road



Sectional Elevation of main trunk road at entrance area

F.R.L.= Finished Road Level

*All Dimensions are in m.m.

PROJECT NAME:

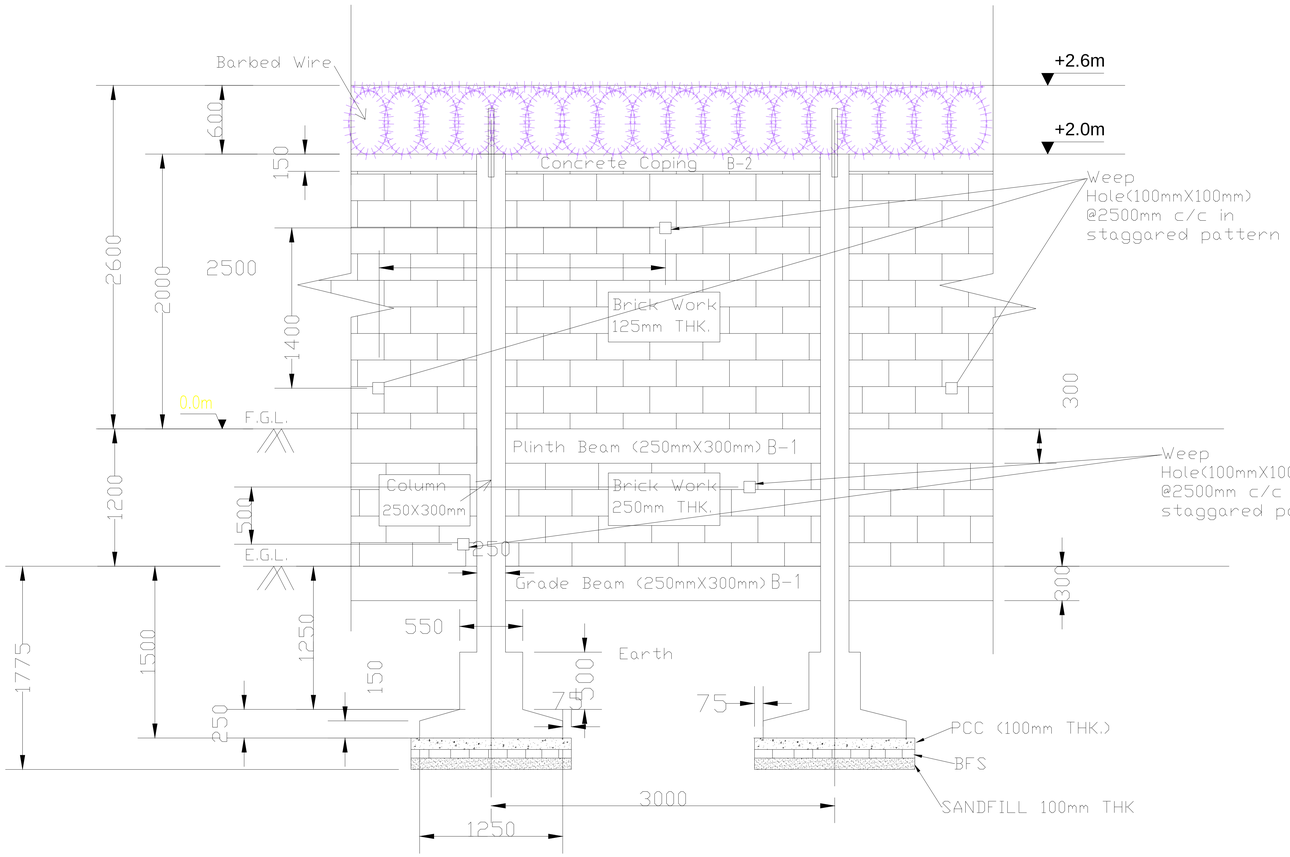
Construction of Boundary Wall & Main Entrance Gate, Internal Road Network System, Storm Water Drainage System,Waste Water Drainage System of Haldia Industrial Park, at Haldia, Purba Medinipur, West Bengal

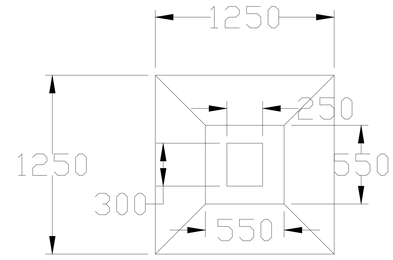
TITLE:- Detailed Drawing of Road and Protection Work

Client :

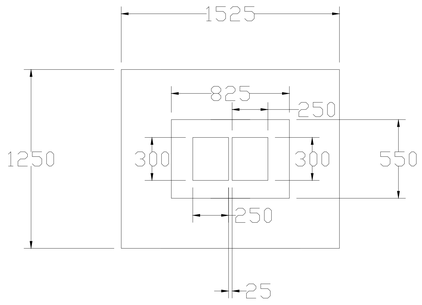
West Bengal Industrial Development Corporation

West Bengal Industrial Development Corporation

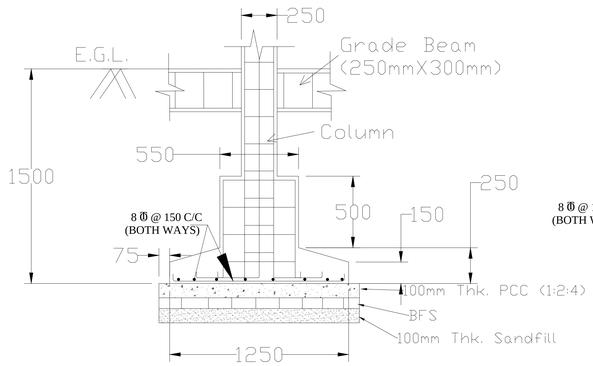




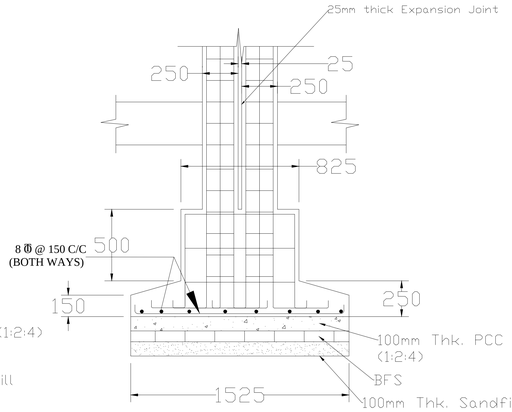
Plan of Foundation



Plan of Combined Foundation



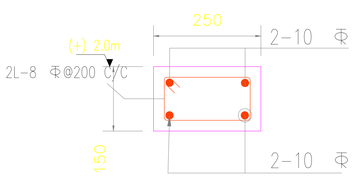
Elevation of Foundation

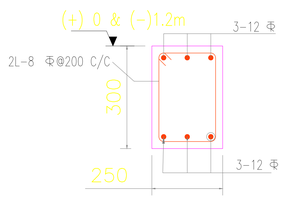


Elevation of Combined Foundation

SCHEDULE OF BEAMS

BEAM MARKED	BEAM SIZE		TOP REINFORCEMENT		BOTTOM REINFORCEMENT		STIRRUPS (AT SUPPORT)	STIRRUPS (AT SPAN)
	WIDTH	DEPTH	ALTHROUGH	EXTRA AT SUPPORT	ALTHROUGH	EXTRA AT SPAN		
B-1	250	300	3-12 Φ	-	3-12 Φ	-	2L-8 Φ@200 C/C	2L-8 Φ@200 C/C
B-2	250	150	2-10 Φ	-	2-10 Φ	-	2L-8 Φ@200 C/C	2L-8 Φ@200 C/C





SCHEDULE OF COLUMNS

COLUMN MARKED	COLUMN SIZE (mm x mm)	FOUNDATION TO +2.0 m LEVEL	LINKS
C1	250X300	250 / 300 — REINFORCEMENT: 8-12 Φ LINKS: 8 Φ@150 C/C (2 NOS. CLOSED LINK PER SET)	
Pedestral	550X550	550 / 550 — REINFORCEMENT: 12-12 Φ LINKS: 8 Φ@150 C/C (1 NOS. CLOSED LINK PER SET)	

Note:
1. In expansion joint after 45 mtr a 25 mm gap will be maintained between two column
2. All dimensionsare in m.m.
3.All drawings are in not to scale

PROJECT NAME:

Construction of Boundary Wall & Main Entrance Gate, Internal Road Network System, Storm Water Drainage System,Waste Water Drainage System of Haldia Industrial Park, at Haldia, Purba Medinipur, West Bengal

TITLE:- Detailed Drawing of Boundary Wall

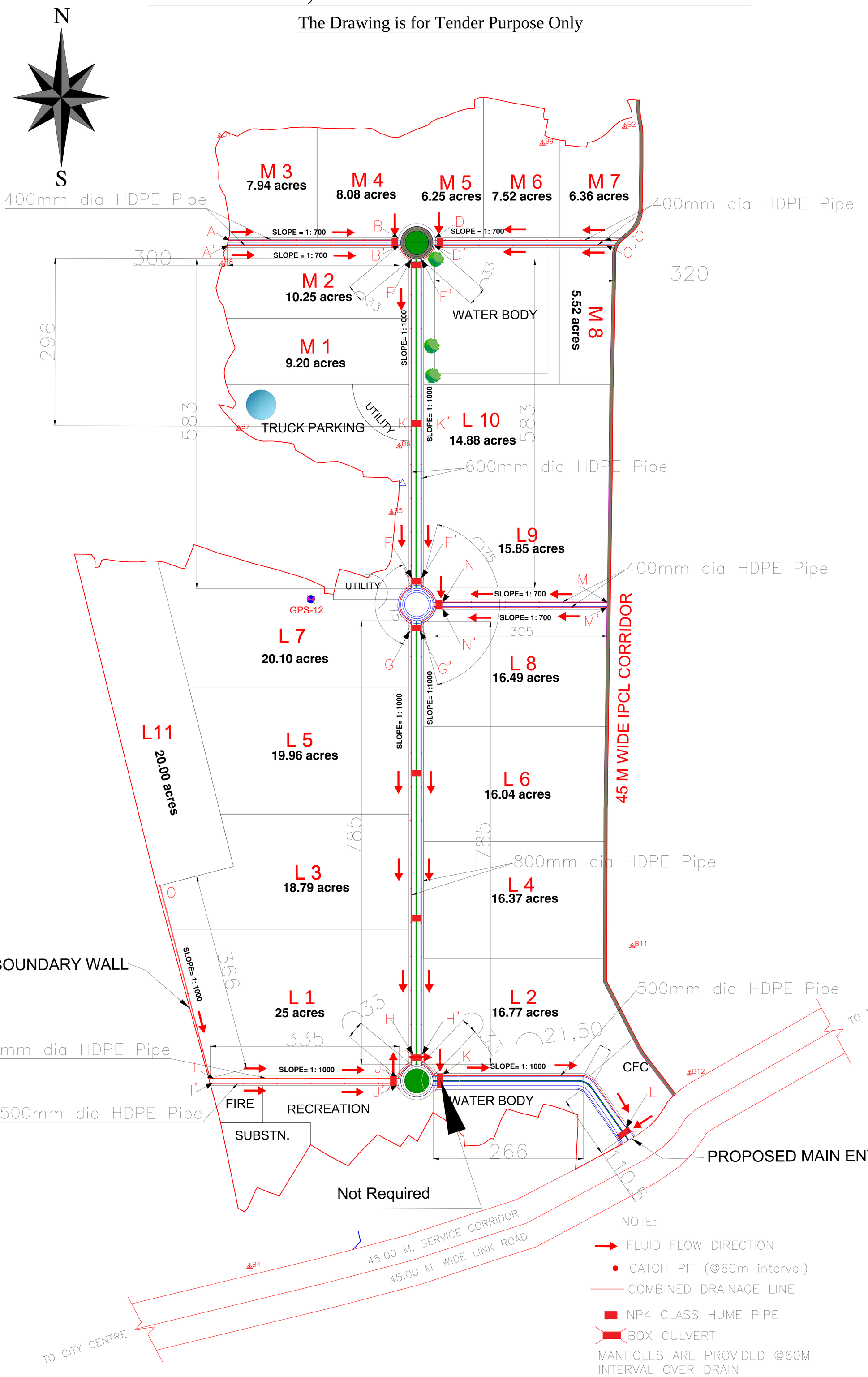
Client :

West Bengal Industrial Development Corporation

wbidc
West Bengal Industrial Development Corporation

MASTER PLAN HALDIA INDUSTRIAL PARK"
AT HALDIA, DISTRICT - PURBA MEDINIPUR.

The Drawing is for Tender Purpose Only



PROJECT NAME:

Construction of Boundary Wall & Main Entrance Gate, Internal Road Network System, Storm Water Drainage System,Waste Water Drainage System of Haldia Industrial Park, at Haldia, Purba Medinipur, West Bengal

TITLE:- Detail Drawing of Drainage Layout

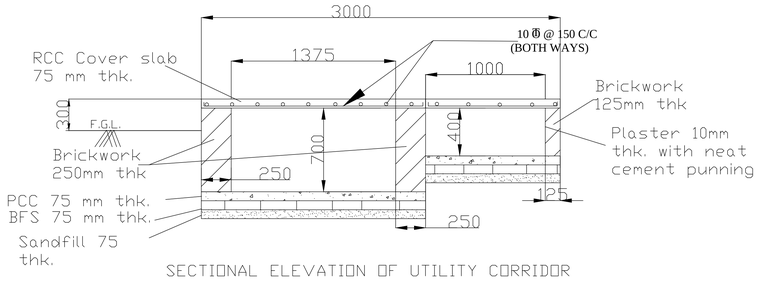
Client :

West Bengal Industrial Development Corporation

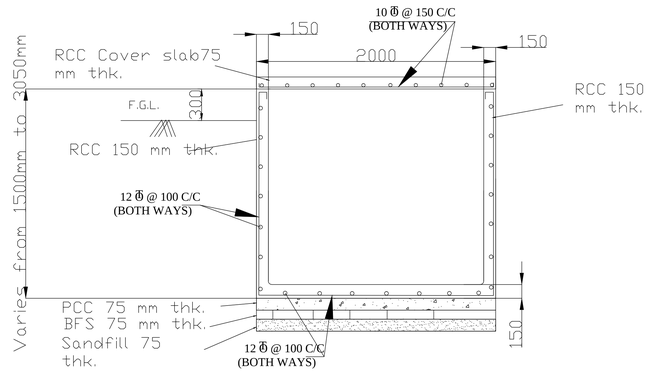
West Bengal Industrial Development Corporation

SCHEDULE OF DRAINS

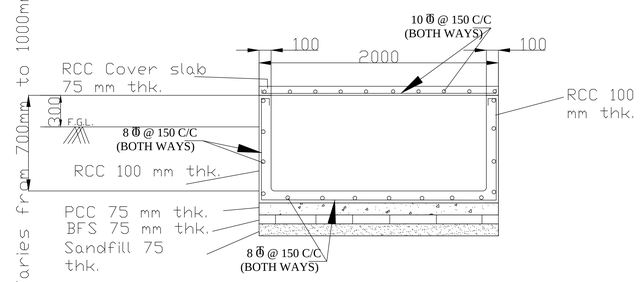
NODES	LENGTH (m)	TOTAL LENGTH (m)	SLOPE (1/X)	DRAIN SECTIONS: EXTERNAL WIDTH Ⓓ (mm)	START INVERT LEVEL OF DRAIN (m)	END INVERT LEVEL OF DRAIN (m)	START DEPTH (mm)	END DEPTH (mm)	THICKNESS OF DRAIN WALL (mm)
A–B	300	1240	700	2000	8.10	7.67	700	1130	Thickness of Drain Wall should vary as follows:– 100mm THK wall for depth upto 1000mm; 125mm THK wall for depth from 1000 mm to 1500mm; 150mm THK Wall for depth more than 1500mm
A'–B'	300		700		8.10	7.67	700	1130	
C–D	320		700		8.10	7.64	700	1160	
C'–D'	320		700		8.10	7.64	700	1160	
B'–E	33		1000	2000	7.67	7.64	1130	1163	
D'–E'	33		1000		7.64	7.61	1160	1193	
E–F	583		1000		7.64	7.06	1163	1746	
E'–F'	583		1000		7.61	7.03	1193	1776	
M–N	305		700		8.10	7.66	700	1136	
M'–N'	305		700		8.10	7.66	700	1136	
F–G	75		1000		7.06	6.985	1746	1821	
F'–G'	75		1000		7.03	6.955	1776	1851	
G–H	785		1000		6.985	6.20	1821	2606	
G'–H'	785		1000		6.955	6.17	1851	2636	
H'–K	33		1000		6.17	6.20	2636	2669	
K–L	398		1000		6.20	6.60	2669	3067	
O–I	366		1000	900	7.80	7.43	1000	1366	
I–J	335		1000	2000	7.43	7.10	1366	1701	
I'–J'	335		1000		7.43	7.10	1366	1701	
J–H	33		1000		7.10	7.07	1701	1734	
E–K	296		1000		7.64	7.34	1163	1746	
E'–K'	296		1000		7.61	7.31	1193	1776	



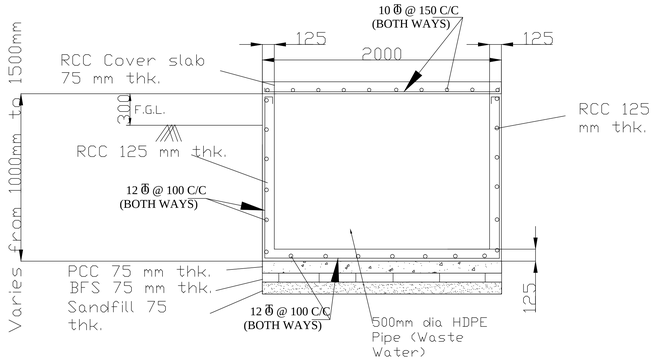
SECTIONAL ELEVATION OF UTILITY CORRIDOR



SECTIONAL ELEVATION from 1500mm to 2330mm Depth



SECTIONAL ELEVATION from 700mm to 1000mm Depth



SECTIONAL ELEVATION from 1000mm to 1500mm Depth

*All Dimensions are in m.m.

PROJECT NAME:

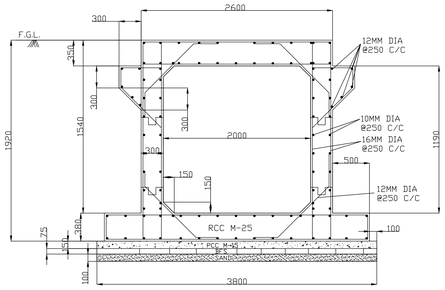
Construction of Boundary Wall & Main Entrance Gate, Internal Road Network System, Storm Water Drainage System,Waste Water Drainage System of Haldia Industrial Park, at Haldia, Purba Medinipur, West Bengal

TITLE:- Detail Drawing of Drain

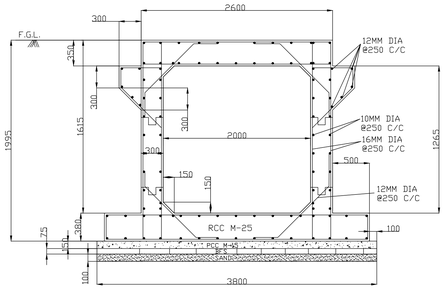
Client :

West Bengal Industrial Development Corporation

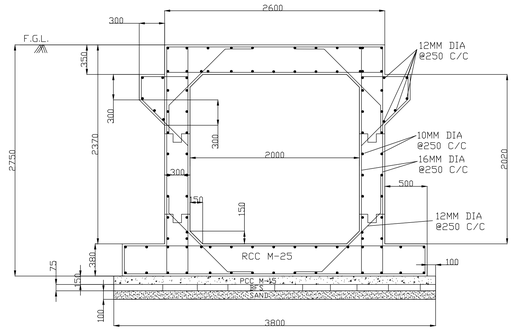
West Bengal Industrial Development Corporation



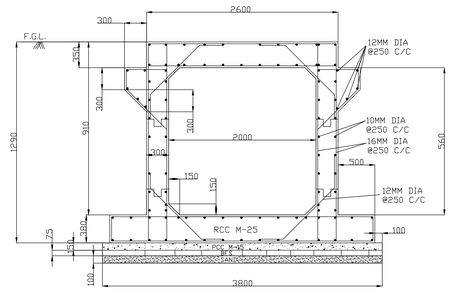
Cross Section of Box Culvert (F-F') of Depth (1190m)



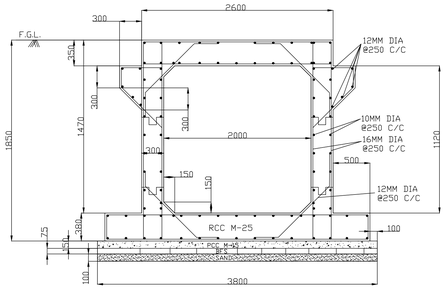
Cross Section of Box Culvert (G-G') of Depth (1265m)



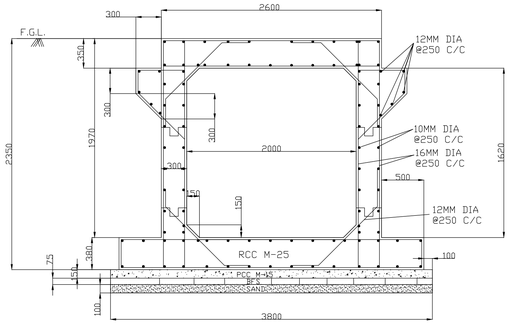
Cross Section of Box Culvert (H-H') of Depth (2020m)



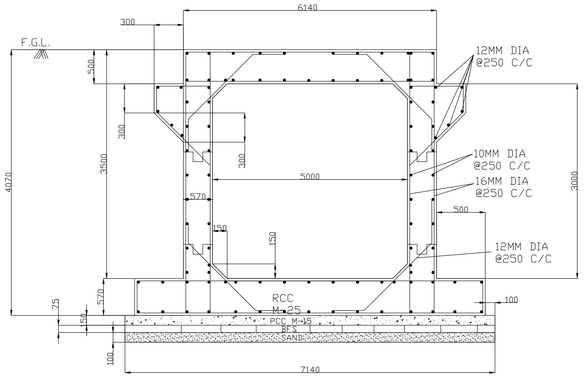
Cross Section of Box Culvert (N-N') of Depth (560m)



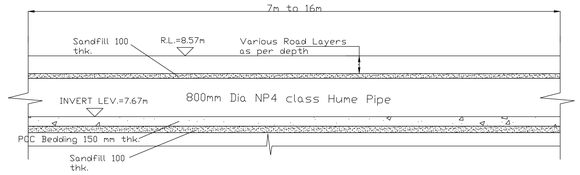
Cross Section of Box Culvert (J-J') of Depth (1120m)



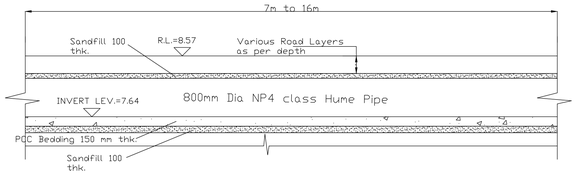
Cross Section of Box Culvert (L) of Depth 1620mm



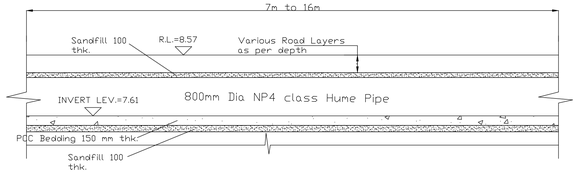
Cross Section of Box Culvert (L) of CLEAR SPAN 5000mm



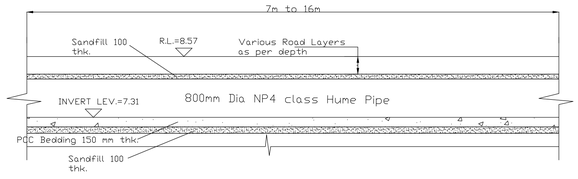
Cross Section of NP4 Class Hume Pipe at B-B'



Cross Section of NP4 Class Hume Pipe at D-D'



Cross Section of NP4 Class Hume Pipe at E-E'



Cross Section of NP4 Class Hume Pipe at K-K'

*All Dimensions are in m.m.

PROJECT NAME:

Construction of Boundary Wall & Main Entrance Gate, Internal Road Network System, Storm Water Drainage System,Waste Water Drainage System of Haldia Industrial Park, at Haldia, Purba Medinipur, West Bengal

TITLE:- Detail Drawing of Box Culvert

Client :

West Bengal Industrial Development Corporation

West Bengal Industrial Development Corporation