MINISTRY OF HIGHWAYS

Invitation for Proposals

for

PREPARTION AND SUBMISSION OF ENGINEER'S ESTIMATES IN WESTERN PROVINCE

RFP No.: RDA/LBFP/CONS/WP/01

1. The Chairman, Ministry Procurement Committee on behalf of the Ministry of highways now invites proposals from eligible and qualified Officers for Preparation and Submission of Engineer's Estimates in Western Province.

2. The Intended Service Period is 365 days.

3. To be eligible, Officer shall be a retired Engineer from the Road Development Authority (established by Act No 73 of 1981) within last 05 years and who were in Grade HM 1-1 or above at the date of retirement.

4. Interested eligible Officers may obtain further information from

   Project Director,
   Local Bank Funded Project
   No 24/A, Ashoka Circle,
   Gemunu Mawatha, Subhuthi Pura,
   Battaramulla
   Telephone Number: 011-2187172
   Fax Number: 011-2187173
   E-mail address: lbfprural@gmail.com

5. A complete set of Request for Proposals may be obtained by interested Officers at the website of Ministry of Highways (https://www.mohsl.gov.lk/en/procurements.php) from **29.01.2021** to **08.02.2021**.

6. Proposals must be delivered to **The Chairman, Ministry Procurement Committee, Procurement Division, Ministry of Highways, 7th Floor, "Maganeguma Mahamedura", Denzil Kobbekaduwa Mawatha, Koswatta, Battaramulla** on or before **1400Hrs** on **08.02.2021**. Late Proposals will be rejected. Proposals will be opened in the presence of the Officers' representatives who choose to attend in person or on-line at the **Conference Room, 8th floor, "Maganeguma Mahamedura", Denzil Kobbekaduwa Mawatha, Koswatta, Battaramulla** on **08.02.2021** at **1415Hrs**.

7. Proposals shall be valid for **119 days** from the Proposal submission date.

The Chairman,
Ministry Procurement Committee
Ministry of Highways,
8th Floor, "Maganeguma Mahamedura",
Denzil Kobekaduwa Mawatha,
Battaramulla.

MINISTRY OF HIGHWAYS

ROAD DEVELOPMENT AUTHORITY

REQUEST FOR PROPOSAL

FOR

PREPARATION AND SUBMISSION OF ENGINEER'S ESTIMATES IN WESTERN PROVINCE

RFP NO. : RDA/LBFP/CONS/WP/01

JANUARY 2021

SECTION I
INSTRUCTIONS TO OFFICERS

Section I – Instructions to Officers	
1.0 Scope of Proposal	1.1 The Client, as defined below, invites proposals for the Services, as described in the Section III- Terms of Reference to the Contract. The name and Request for Proposal number of the Contract is provided below. 1.2 (a) Name of the Client: **Secretary, Ministry of Highways, 8th Floor, "Maganeguma Mahamedura", Denzil Kobbekaduwa Mawatha, Koswatta, Battaramulla** (b) Contract Name: **Preparation and Submission of Engineer's Estimates in Western Province** (c) RFP Number: **RDA/LBFP/CONS/WP/01** 1.3 The successful Officer will be expected to complete the performance of the Services within 01(one) year from the Effective Date.
2.0 Qualification and experience of the Officer	2.1 All Officers shall provide in Section II, Letter of Proposal and Qualification and Experience Information, a preliminary description of the proposed work method and schedule, including drawings and charts, as necessary in accordance with the requirements given in Section III- Terms of Reference.
3.0 Cost of Proposal submission	3.1 The Officer shall bear all costs associated with the preparation and submission of its Proposal, and the Client will in no case be responsible or liable for those costs.
4.0 Content of Proposal Documents	4.1 The Request for Proposals (RFP) comprises the documents listed below: Section I- Instructions to Officers (ITO) Section II- Proposal Submission Forms (PSF) Section III- Terms of Reference (TOR) Section IV- Conditions of Contract (COC) Section V- Contract Data (COD) Section VI- Contract Forms (COF) Section VII- Appendices (APD)
5.0 Clarification of Proposal Documents	5.1 A prospective Officer requiring any clarification of the RFP documents may notify the Client in writing at the Client's address indicated in the invitation for proposal.
6.0 Documents comprising the Proposal	i. Letter of Proposal duly completed and signed by the Officer ii. Completed Price Schedule iii. Form1- Documents to prove Officer's qualifications as per Section III- TOR iv. Form 2- Method statements to perform services as per Appendix A
7.0 Proposal Validity	7.1 Proposals shall remain valid for 119 days from the Proposal Submission date
8.0 Proposal Submission	8.1 Proposals shall be delivered to the **The Chairman,** **Ministry Procurement Committee** **Procurement Division, Ministry of Highways,** **7th Floor, "Maganeguma Mahamedura",**

	Denzil Kobbekaduwa Mawatha, Koswatta, Battaramulla. **The deadline for Proposal submission is:** **Date: 08th February 2021** **Time: 1400 Hrs**
9.0 Proposal Opening	9.1 Proposals will be opened on **Conference Room,** **8th floor, "Maganeguma Mahamedura",** **Denzil Kobbekaduwa Mawatha,** **Koswatta,** **Battaramulla,** **Date: 08th February 2021** **Time: 1415 Hrs**
10.0 Evaluation of Qualification and Experience	10.1 The Client will evaluate and compare only the Proposals determined to be substantially responsive in accordance with the requirements given in Section III- Terms of Reference
11.0 Award Criteria	11.1 The Client may negotiate with the lowest evaluated substantially responsive Officer for the downward revision of his/her rates. 11.2 The Contact will be awarded to the Officer whom determined to be substantially responsive according to the Clause 9 and whose prices deemed to be the lowest and most beneficial in executing the Work for the Client.

SECTION II
PROPOSAL SUBMISSION FORMS

Letter of Proposal

……..

……..

……..

(Address. Date)

To: Project Director

Local Bank Funded Project

Ashoka Circle,

Subhuthi Pura,

Battaramulla

I, undersigned, offer to provide the consultancy service for carryout the **Preparation and Submission of Engineer's Estimates in Western Province** under RFP No **RDA/LBFP/CONS/WP/01** in accordance with your request for proposal dated …….

My rates and Prices are given in Section II- Proposal Submission Forms, Price Schedule.

I understand you are not bound to accept any proposal you receive.

Signature : ……

Full Name :…….

Address

:……

……

PREPARATION AND SUBMISSION OF ENGINEER'S ESTIMATES IN WESTERN PROVINCE

Price Schedule

Pay Item	Description	Pay Unit	Rate/ Rs. *(Without VAT)*
1.0	**Carrying out Initial Longitudinal section and Cross Section survey and Submission of relevant documentation**		
1.1	Establishment of Primary Control Points (GPS)	km	
1.2	Establishment of Secondary Control Points and Control Traversing & Leveling	km	
1.3	Establishment of Center Line	km	
1.4	Initial Longitudinal Section & Cross Section Survey	km	
1.5	Collection of initial R.O.W. Video Logging	km	
1.6	Submission of Documents incorporating above items	km	
2.0	**Preparation and Submission of Engineer's Estimate**		
2.1	Preparation and Submission of Client's Requirements and Engineer's Estimate	km	

Signature : ……

Full Name :…….

Address

:……

……

Form 1- Officer's Information

[The Officer shall provide his/her general information including the certificates/documents pertaining to the qualifications requested in Section III- TOR]

Form 2- Method statements

[The Officer shall provide method statements to perform the services given under Section III- TOR in accordance with the Appendix A. Such method statements shall clearly specify the personnel involved in executing the Services/Works and the qualifications of such personnel.]

SECTION III
TERMS OF REFERENCE

TERMS OF REFERENCE

1)Background

The implementation of 100,000 km alternative road system under the Government's policy statement "Vistas of Prosperity and Splendor" consists of rehabilitation of national, provincial and rural roads in order to facilitate travelling and enhancement of economic development of the country.

2)Objective

The main objective of this Service is to;

(i) carryout road surveys including establishment of GPS points, Longitudinal Section (LS), Cross Section (CS), video logging and submission of documents according to the given Specification.

(ii) Preparation of Client's Requirements and Engineer's Estimate for the assigned roads by the Client.

3)Scope of Service

The **Works** consists of carrying out longitudinal and cross section survey and preparation and submission of Engineer's Estimates on selected roads in Western Province.

The Ministry of Highways (MoH) currently involved in preparation of provincial wise road lists, which include national. provincial and rural roads proposing for rehabilitation/improvements. The list of roads to be included will be notify to the Officer at the time of award of the Contract.

Survey Work shall be carried out in accordance with the Specification given in **Appendix A.** The Officer shall prepare the Engineer's Estimate using the typical road sections with proposed pavement thicknesses given in **Appendix B**, typical sections for structures given in **Appendix C**, Client's Requirements given in **Appendix D** and format of the Engineer's Estimate given in **Appendix E.**

The Works shall be carried out before the rehabilitation/improvements on the respective roads.

The Works includes;

- Establishment of Primary Control Points (GPS Points) and Secondary Control Points.
- Initial Longitudinal Section & Cross Section survey at 20m intervals
- Initial R.O.W. video logging
- Submission of documents
- Preparation and submission of Client's Requirements and Engineer's Estimate

4)Qualifications required for the Officer

The Officer shall be a retired Engineer from Road Development Authority established by Act No 73 of 1981 and at the date retirement, the Officer shall be in Grade HM 1-1 or above. The Officer shall be retired within the last 05 years.

5)Time Schedule

The Officer shall perform the assignment as per the schedule given by the Client on appointment.

6)Payment

The rates quoted in Section 1-Proposal Submission Forms, Price Schedule shall include the cost of all works, materials, transport, instruments, stationery etc., which are required to complete the said works.

Pay Item	Description	Pay Unit
1.0	**Carrying out Initial Longitudinal section and Cross Section survey and Submission of relevant documentation**	
1.1	Establishment of Primary Control Points (GPS)	km
1.2	Establishment of Secondary Control Points and Control Traversing & Leveling	km
1.3	Establishment of Center Line	km
1.4	Initial Longitudinal Section & Cross Section Survey	km
1.5	Collection of initial R.O.W. Video Logging	km
1.6	Submission of Documents incorporating above items	km
2.0	**Preparation and Submission of Engineer's Estimate**	
2.1	Preparation and Submission of Client's Requirements and Engineer's Estimate	km

7)Services and Facilities to be provided by the client.

The Client shall provide the following Services and Facilities to the Officer;

- Office accommodation.
- Office furniture, equipment.
- Transport facilities

SECTION IV
CONDITIONS OF CONTRACT

GENERAL CONDITIONS OF CONTRACT

1) **Definitions**

Unless the context otherwise requires, the following terms whenever used in this Contract have the following meanings:

a. "**Applicable Law**" means the laws and any other instruments having the force of law in the Government of Democratic Socialist Republic of Sri Lanka

b. "**Client**" means the agency with which the selected Officer signs the Contract for the Services.(The details of the Client specified under Particular Conditions of Contract)

c. "**Client's Representative**" means the representative of the Client to administer the Contract.

d. "**Contract**" means the Contract signed by the Parties and all the attachments listed in the Agreement

e. "**Day**" means calendar day.

f. "**Year**" means 365 days

g. "**Effective Date**" means the date on which this Contract comes into force and effect pursuant to Clause 22.

h. **"Officer"** means the person who will provide the service under this contract.

i. "**Officer's Place of Residence"** is the address where the Officer holds permanent residence as specified under "g" above.

j. "**In writing**" means communicated in written form with proof of receipt.

k. "**Party**" means the Client or the Officer, as the case may be, and "**Parties**" means both of them.

l. **"Place of reporting"** is the address where the Officer holds place of work as decided by the Client from time to time.

m. "**Reimbursable expenses**" means all assignment-related costs other than Officer's remuneration.

n. "**Services"** means the work to be performed pursuant to this Contract, as described in " **Terms of Reference" (TOR)**

o. **"Period of Engagement"** means the period during which the Contract is effective.

p. "**Third Party**" means any person or entity other than the Client or the Officer.

q. **"Scheduled Monthly Working Days"** means the Client's normal monthly working days

2) **Performance of the Officer**

During the Period of Engagement, the Officer shall work full time basis and shall diligently and effectively complete the services in accordance with generally accepted professional standards, management practices and methodologies. The Officer shall cooperate with the Client who reserves its right to evaluate the Officer's performance and to maintain a record of the performance evaluation, if the Officer is considered for continuation or re-engagement.

The Officer shall always act, in respect of any matter relating to this Contract, as faithful adviser to the Client, and shall at all times support and safeguard the Client's legitimate interests in any dealings with third parties.

3) **Contractual Ethics**

The Client requires Officer to observe the laws of the Democratic Republic of Sri Lanka against fraud and corruption and the highest standard of ethics during in execution of such contracts. In pursuance of this Clause, in the context of the Agreement, the Client

(a) defines, for the purposes of this provision, the terms set forth below as follows:

i. "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, anything of value to influence improperly the actions of another party;

ii. "fraudulent practice" means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;

iii. "coercive practice" means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;

iv. "collusive practice" means an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party.

(b) will terminate the Contract if it determines that the Officer has directly, or through an agent, engaged in corrupt, fraudulent, collusive, or coercive practices in execution the contract.

4) **Period of Engagement**

The Period of Engagement shall be as stated in the Particular Conditions of Contract.

5) **Place of Reporting, Working Hours, Overtime, Leave and maintenance of Registries**

The Officer shall operate from the Place of Reporting which will be decided by the Client from time to time.

6) **Payment**

a. As soon as practicable, after the end of each calendar month, the Officer shall submit to the Client, in duplicate, itemized statements and other appropriate supporting materials of the amounts payable pursuant to the Contract.

b. The Client shall make the payment to the Officer within sixty (30) days after the receipt by the Client of such statements with supporting documents. Any statement that is not satisfactorily supported may be withheld from payment. Should any discrepancy be found to exist between actual payment and costs authorized to be incurred by the Officer, the Client may add or subtract the difference from any subsequent payments.

c. All payments under this Contract shall be made to the Account of the Officer specified in the Particular Conditions of Contract.

d. The Officer shall submit the final invoice within 30 days after the completion of the Period of Engagement or termination of the Contract. If no such final invoice is received by the Client, the final payment is made based on the assessment by the Client after the settlement of any pending matters, such as Contract variations or handover of equipment by the Officer to the Client (if any). The Client will then close the Contract account after the final payment.

7) **Language**

All reports, unless otherwise specified in the TOR, and all communication related to the execution of this Contract shall be in the languages used in Sri Lanka and as specified by the Client from time to time.

8) **Reports**

The Officer shall submit to the Client the reports and/or other written and electronic documents as required in the TOR. The documents and data compiled or made by the Officer while performing the Services shall be the sole and exclusive property of the Client. The Officer may retain copies of such documents and data but shall not use the same for purposes unrelated to the Service without the prior approval of the Client. After concluding the Period of Engagement, the Officer shall continue to cooperate with the Client to clarify or explain any contents in the reports the Officer submits.

9) **Intellectual Property**

The Officer, shall ensure that the Service and all goods and other services (including but without limiting to all computer hardware, software, and systems) procured by the Officer from the Client's funds or used by the Officer in the carrying out of the Service do not violate or infringe on any industrial property or intellectual property right or any third party claim. The Officer shall indemnify the Client from and against any and all claims, liabilities, obligations, losses, damages, penalties, actions, suits, proceedings, demands, costs, expenses, and disbursements that may be imposed on, incurred by, or asserted against the Client for actions related to performing the Services. These include the Officer's infringing or allegedly infringing copyright, trademark, patent, or other protected right.

10) **Public Statement and Commitment**

The Officer shall act discretely and refrain from making public statements about the Services or any Client's projects without Client's prior written approval.

11) **Equipment**

It is agreed that the Officer, unless otherwise approved by the Client, may use, when necessary, his/her own equipment other than those stated under the Facilities to be provided by the Client in the TOR for the purpose of completing the assignment.

12) **Subcontracting**

The Officer shall not assign or sub-let the Contract or any part of it without Client's prior written consent.

13) **Disability or Incompetence of the Officer**

The Client's engagement of the Officer is conditional upon the Officer's confirmation that the Officer is healthy and without physical or mental disability that may interfere with performing the Services. The Officer shall, if called upon to do so, give the Client any medical or other evidences as Client may reasonably require. Such evidences shall be obtained from an institution approved by the Client.

14) **Reporting Unusual Incidence**

The Officer shall report immediately to the Client any accident involving personal injury or property damage during the Period of Engagement. The Officer shall also report to the Client immediately any circumstances which might hinder or prejudice performance of the Services.

15) **Suspension & Termination of Contract**

a. The Client may suspend performance of the whole or part of the Contract, or the payment of Officer's fees hereunder, for a period as the Client deems necessary if the Client determines that a condition has arisen which, in the reasonable opinion of the Client, interferes, or threatens to interfere, with the effective carrying out of the assignment or accomplishing the Services for a specified period of time not to exceed thirty (30) working days.

b. Notwithstanding the above, this Contract may be terminated by the Client:

   i. upon giving 28 days notice to the Officer of intention to terminate for Client's convenience or

   ii. upon giving 14 days notice to the Officer, if the Client determines that the Officer has engaged in unethical behavior, or corrupt, fraudulent, collusive, or coercive practices as defined under Clause 3 in executing this Contract or

   iii. upon giving 14 days notice to the Officer, if the Client determines that the Officer fails to perform any of its obligations under this Contract or the Services to date are so deficient or poorly performed as to demonstrate that the Service cannot be performed satisfactorily. or

   iv. upon giving 14 days notice to the Officer, if the Client determines to terminate the project wholly or partly or

   v. upon giving 14 days notice to the Officer, if the Client finds reasonable evidence that the Officer is unable to perform or to complete the Services due to ill health of the Officer.

   vi. upon giving 7 days notice to the Officer, if the Officer has failed to commence the Service on the Effective Date.

c. The Officer may terminate the Contract by not less than thirty (30) days' written notice to the Client, in case of the occurrence of any of the following events;

i. if there are circumstances beyond the Officer s reasonable control which make it impossible to carry out the Services. Officer must substantiate such reasons in writing and the Client must accept the justification in order that such a termination can occur. Upon the Client's confirmation in writing, or the failure of the Client to respond to such submission of justification within fifteen (15) days from receipt, the Officer shall be relieved from performing the Services and this Contract shall be terminated.

ii. if the Client fails make payments to the Officer pursuant to this Contract and not subject to dispute pursuant to Clause 19 hereof within forty-five (45) days after receiving written notice from the Officer that such payment is overdue.

iii. if, as the result of Force Majeure, the Officer is unable to perform a material portion of the Services for a period of not less than sixty (60) days.

iv. if the Client fails to comply with any final decision reached as a result of arbitration pursuant to Clause 19 hereof.

16) **Termination Procedure**

Upon termination of the Contract or the Client giving such notice, the Officer, shall immediately bring the Services to an orderly closure and reduce expenditures to a minimum.

Unless the Officer's default causes termination, the Officer, is entitled to full reimbursement for costs duly and reasonably incurred prior to the termination date. Reasonable costs incurred for the orderly closure of Services are reimbursable.

If termination is occasioned by the Officer's default, the Client shall recover from the Officer for any losses and damages incurred by the Client and any extra costs which may incur in completing the balance Service. After recovering such losses, damages and extra costs, the Client shall pay any balance to the Officer.

17) **Notices and Requests**

Any notice or request required or permitted under this Contract shall be in writing. Such notice or request shall be deemed to be fully given or made when it is delivered by hand, mail, or fax to the intended party.

18) **Inspection and Audit**

The Officer agrees to allow the Client or a representative authorized by the Client to inspect and audit any accounts, documents, and records relating to this Contract.

19) **Settlement of Disputes**

a. Each party should settle amicably all disputes arising out of or connected with this Contract or its interpretation through the following procedure: each party's authorized representative will examine the matter(s) in dispute and consider available options to resolve such dispute. The parties will seek agreement on the most reasonable option to resolve the dispute and act appropriately to that end.

Any dispute or difference arising out of this Contract or in connection with it which cannot be amicably settled between the parties under (a) above shall be Administered by Institute for the Development of Commercial Law and Practice, ICLP, No 61, Carmel Road, Colombo 03, Sri Lanka to be settled as per Arbitration Act No 11 of 1995. The arbitration shall take place Colombo The resulting award shall be the final and binding on the parties and shall replace other remedies. The language of arbitration shall be English and each party shall bear its own costs.

20) **Law Governing Contract**

This Contract, its meaning and interpretation, and the relation between the Parties shall be governed by the Applicable Law.

21) **Taxes and Duties**

Unless otherwise specified in the Contract, the Officer, shall pay such taxes, duties, levies, fees and other impositions as may be levied under the Applicable Law except Value Added Tax.

22) **Effectiveness & Commencement of Contract**

This Contract shall come into force and effect on the Effective Date on which the Contract is signed.

The Officer shall begin carrying out the Services on the date of signing the Contract.

23) **Modifications or Variations**

a. Any modification or variation of the terms and conditions of this Contract, including any modification or variation of the scope of the Services, may only be made by written agreement between the Parties. However, each Party shall give due consideration to any proposals for modification or variation made by the other Party.

24) **Force Majeure**

Definition

a. For the purposes of this Contract, "Force Majeure" means an event which is beyond the reasonable control of a Party, is not foreseeable, is unavoidable, and which makes a Party's performance of its obligations hereunder impossible or so impractical as reasonably to be considered impossible in the circumstances, and includes, but is not limited to, war, riots, civil disorder, earthquake, fire, explosion, storm, flood or other adverse weather conditions, strikes, lockouts or other industrial action (except where such strikes, lockouts or other industrial action are within the power of the Party invoking Force Majeure to prevent), confiscation or any other action by Government agencies.

b. Force Majeure shall not include

(i) Any event which is caused by the negligence or intentional action of a Party nor

(ii) Any event which a diligent Party could reasonably have been expected both to take into account at the time of the conclusion of this Contract, and avoid or overcome in the carrying out of its obligations hereunder nor

(iii) Insufficiency of funds or failure to make any payment required hereunder.

25) **No Breach of Contract**

The failure of a Party to fulfill any of its obligations hereunder shall not be considered to be a breach of this Contract insofar as such inability arises from an event of Force Majeure, provided that the Party affected by such an event has taken all reasonable precautions, due care and reasonable alternative measures, all with the objective of carrying out the terms and conditions of this Contract

26) **Measures to be Taken**

(a) A Party affected by an event of Force Majeure shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall take all reasonable measures to minimize the consequences of any event of Force Majeure.

(b) A Party affected by an event of Force Majeure shall notify the other Party of such event as soon as possible, and in any case not later than fourteen (14) days following the occurrence of such event, providing evidence of the nature and cause of such event, and shall similarly give written notice of the restoration of normal conditions as soon as possible.

(c) Any period within which a Party shall, pursuant to this Contract, complete any action or task, shall be extended for a period equal to the time during which such Party was unable to perform such action as a result of Force Majeure.

(d) During the period of their inability to perform the Services as a result of an event of Force Majeure, the Officer, upon instructions by the Client, shall either:

(i) demobilize, in which case the Officer shall be reimbursed for costs he/she reasonably and necessarily incurred, and, if required by the Client, in reactivating the Services; or

(ii) continue with the Services to the extent possible, in which case the Officer shall continue to be paid under the terms of this Contract and be reimbursed for additional costs reasonably and necessarily incurred.

(e) In the case of disagreement between the Parties as to the existence or extent of Force Majeure, the matter shall be settled according to Clause 19.

SECTION V
CONTRACT DATA

CONTRACT DATA

Number of GC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
1.(b)	**Details of the Client.** Secretary, Ministry of Highways 8th Floor, "Maganeguma Mahamedura" Denzil Kobbekaduwa Mawatha, Koswatta, Battaramulla
1.(c)	**Details of the Client's Representative** Project Director, Local Bank Funded Project No 24/A, Ashoka Circle, Gemunu Mawatha ,Subhuthi Pura, Battaramulla Telephone Number: 011-2187172 Fax Number: 011-2187173 E-mail address: lbfprural@gmail.com
4	**Period of engagement** Shall be 01 (one) year from the Effective Date

SECTION VI
CONTRACT FORMS

FORM OF AREEMENT

MINISTRY OF HIGHWAYS

CONTRACT
FOR
PREPARATION AND SUBMISSION OF ENGINEER'S ESTIMATE IN WESTERN PROVINCE

AGREEMENT NO : ……..

This CONTRACT (hereinafter called the "Contract") is made on the ……, between, on the one hand, Local Bank Funded Project (hereinafter called the "Client") and, on the other hand, **……** (hereinafter called the "Officer").

WHEREAS

(a) the Client has requested the Officer to provide certain services as defined in this Contract (hereinafter called the "Services");

(b) the Officer, having represented to the Client that it has the required qualifications, capacity and ability, has agreed to provide the Services on the terms and conditions set forth in this Contract;

NOW THEREFORE the parties hereto hereby agree as follows:

1. The following documents (in the precedence order given below) attached hereto shall be deemed to form an integral part of this Contract:

   (a) The Conditions of Contract
   (b) The Contract Data
   (c) Terms of Reference (TOR)

2. The mutual rights and obligations of the Client and the Officer shall be as set forth in the Contract, in particular:

   (a) the Officer shall carry out the Services in accordance with the provisions of the Contract;
   (b) the Client shall make payments to the Officer in accordance with the provisions of the Contract;
   (c) the Remuneration has been fixed on the understanding that the Client will make available, free of charge to the Officer, the Services, Facilities and Equipment to be provided by the Client under the Contract (Appendix A). If any such Services, Facilities and Equipment are not supplied, the parties shall consult regarding what additional allowance (if any) should be made to the Officer as a result there of to cover necessary additional expenditures

IN WITNESS WHEREOF, the Parties hereto have caused this Contract to be signed in their respective names as of the day and year above written.

……
Client
For and on behalf of Ministry of Highways
Designation: Project Director
Name:-

Address:-……

.....
Officer

Name:-……..
Address:-……

In Presence of

Witness:- 1. Signature:-……

Name:-……..

Witness:- 2. Signature:-……

Name:-……..

SECTION VII

APPENDICES

APPENDIX A

Client's Requirements

1. ESTABLISHMENT OF CONTROL POINTS

1.1. Establishment of Control Points

1.1.1. Establishment of Primary Control Points (GPS Points)

Primary Control Points shall be established at maximum 5 km intervals including the Start Point and the End Point of the section. For road sections less than 5km of total length, Primary Control Point shall be established only at the Start Point and the End Point of the section.

Near each control point another one points inter-visible to each other shall also be established and to be used as a back-sight and as a check point.

The Horizontal Coordinates (N, E) of the control point shall be determined by static GNSS receiver with reference to the National Grid. The Zenith (Z) value of the control point with reference to the Mean Sea Level shall be transferred from a Bench Mark (BM) as the first preference. In case of any difficulties in providing such, the GNSS Instrument's Zenith value at the Primary Control Point with minimum errors recorded, shall be considered as the reference point.

The horizontal accuracy 50mm and vertical accuracy 50mmshall be maintained for each control point. GNSS instrument records shall be submitted for accuracy verification by soft and hard copy formats.

The permanent monuments shall be constructed for each control point at a suitable location which shall not be disturbed by road improvements or any other constructions, at least 300mm below from the existing surface with adequate concrete surrounding having thickness not less than six (6) inch, in order to minimize the disturbances. The monument size of a Primary Control Point shall be 200mm X 200mm in bottom, 150mm X 150mm in top and 300mm height. All monuments shall be numbered in ascending order.

All the details of Primary Control Points together with dead measurements shall be handed over to the Employer.

1.1.2. Establishment of Secondary Control Points

Secondary Control Points shall be established at maximum of 250m intervals and shall be inter-visible with its adjacent stations.

The Horizontal Coordinates (N, E) of Secondary Control Points shall be determined by transferring from Primary Control Points. In determination of Zenith (Z) value with respect to MSL shall be carried out in same procedures as for Primary Control Point.

The permanent monuments shall be constructed for each control point at a suitable location which shall not be disturbed by road improvements or any other constructions as the first preference. The monument size of a Secondary Control Point shall be 150mm X 150mm in top and bottom, and 250mm height. With the unavailability of ground space for monuments, the secondary control points shall be established on permanent objects and they shall be adequately painted. All monuments shall be numbered in ascending order.

All the details of control points together with dead measurements shall be handed over to the Employer as a separate volume.

1.2. Control Traversing and Leveling by Total Station

The surveyor shall run the control traverse just outside the construction area of the road pavement to minimize the disturbance to control points and pegs from road rehabilitation activities.

The surveyor should submit the "Certificate of Accuracy of Instrument" authorized by Authorized Agents.

The traverse shall be made by series of closed polygons in 5km stretches to encompass the whole area to be surveyed. All established Control Points as per 2.1 above shall also be traversed over the corridor.

Each traverse station shall firmly establish on ground by approved means to ensure that the station is permanently located and, conveniently be relocated at subsequent dates. All traverse pegs must be numbered and tied with dead measurements.

The closing error shall be determined and shall assure that it is within the prescribed limit. The adjusted horizontal (N, E) coordinates of all traverse stations shall then be determined.

Similarly, the elevations of all traverse stations shall be found out. Once the coordinates (X, Y, Z) of all traverse stations are known these points can be treated as independent.

The accuracy for traverse surveying shall be;

$\mathbf{0.200\ (K)^{1/2}}$, Where K is total distance in km.

The accuracy for leveling shall be;

$\mathbf{0.024\ (K)^{1/2}}$ in meters, Where k is the distance between the terminals in kilometers.

2. LONGITUDINAL SECTION & CROSS SECTION SURVEY OF THE CORRIDOR

2.1. Establishment of Centerline

The Centerline (CL) shall be established on existing road centerline by using surveyors' rope and the stations shall be marked at 20m intervals in straight sections, at 10m intervals in curved sections by using measuring wheel.

The Centerline establishment shall be carried out in consultation with the EE of RDA corresponding to the relevant area.

The corridor shall be defined with respect to the Centerline (CL) established asabove, until the approved boundary (up to boundary markers) established by the relevant authority of the road or within the physically available boundary (fence, boundary walls, drains, etc.) of the road.

2.2. Longitudinal Section & Cross Section Survey

The cross-section survey shall be carried out using Total station on established center points defined as per 3.1 above at 20m intervals in straight sections, at 10m intervals in curved sections.

The cross sections shall be marked with minimum of five (05) points in each section; shall represent actual ground shape on location and shall be included following;

- Center Point (CP) - 1 point
- Edge of Pavement (EOP); here the edge of earth, macadam, asphalt, concrete pavements is considered - 2 points
- Corridor Boundary points defined as per 3.1 (CB) - 2 points
- Points to indicate special features of the location (lamp posts, trees, drains, steep slopes, retaining walls, utility lines, etc.)

The coordinates of all points shall be taken. The Coordinates (X,Y,Z) shall be determined with reference to the Primary or Secondary Control Points.

2.3. Preparation of Drawings

The plan & profile of existing road shall be drawn using all CL and EOP points surveyed in 3.2 above.

The drawings shall be prepared on A3 sheets. The Plan & Profile shall be plotted with horizontal scale of 1:1000 and vertical scale of 1:200. The coordinates and elevations of all CL and EOP points shall be tabulated on respective drawings. All primary and Secondary Control Points shall be shown on the plan, and the coordinates and elevations shall be tabulated on respective drawings.

All the cross sections shall be plotted on A3 sheets with horizontal scale of 1:100 and vertical scale of 1:200.

3. R.O.W. VIDEO LOGGING

R.O.W. video logging shall be collected along roads before and after the rehabilitation/improvements.

The visible right-of-way (R.O.W.) shall be recorded and stored as digital images at 5/10 m intervals using an intermittent/frame-based system. The pictures shall have information superimposed which facilitates location identification (chainage and GPS coordinates) and

shall have a playback system which facilitates locating specific road sections. The specifications of the cameras to be used in works shall be certified by the Engineer before commencement of Works.

The images shall be superimposed in real-time with the vehicle's location in terms of displacement and GPS coordinates. Each frame shall be referenced in terms of the displacement from Longitudinal Road Profile (LRP) and the GPS coordinates in the database.

The data shall be provided to the Employer in two copies with appropriate (ideally printed) labels, indicating relevant district and road number(s). Only one road/ road section shall be included per one video file. The file name shall be the road ID number and the file shall be accompanied by a data catalog.

4. PREPARATION OF ENGINEER'S ESTIMATE

Following guideline shall be used to prepare the Engineer's Estimate

I. Select province
II. Select district
III. Enter the road name
IV. Enter the road improvement type
V. Enter the material transport distances
VI. Fill the cumulative length of the roads according to existing road sections.
VII. Enter the proposed road width for each road section
VIII. Enter average existing width of each road section.
IX. Enter the cumulative Clearing and grubbing area for each of the road section
X. Enter the LHS and RHS cumulative cut slope volumes for each road section
XI. Enter the cumulative edge widening section lengths, average widths and depths for each road section
XII. Enter the cumulative Shoulder excavation section lengths, average widths and depths for each road section
XIII. No need to enter any values for item no 3.2 trimming and levelling
XIV. Enter the cumulative Embankment filling volume for each road section
XV. Enter the cumulative Rock fill 6"x9" volume for each road section

XVI. Enter the Rock blasting volumes and Chemical blasting volume

XVII. Enter the cumulative Sub base length if available.

XVIII. Enter the cumulative scarifying without length of concrete paved sections

XIX. Enter overlaying cumulative length, thickness and select camber correction thickness for relevant sections without the length of concrete paved sections

XX. Enter the cumulative ABC volume for base failures

XXI. Enter cumulative area of major pot hole patching (depth>50mm)

XXII. Enter the shoulder thickness and cumulative length for interlock repair section if needed

XXIII. No need to enter quantities for Prime coat, Tack coat and Asphalt wearing course using paver

XXIV. Enter the camber correction for paving of Asphalt wearing course

XXV. Enter the cumulative length for manual paving of Asphalt wearing course and camber correction

XXVI. Enter the cumulative area of minor pot holes

XXVII. Enter the cumulative length and thickness of GR. 30 concrete layer

XXVIII. Enter the cumulative edge widening lengths for good concrete existing base (type C6)

XXIX. Enter the cumulative length of 150mm thick Gr 30 concrete which gradient is more than 15% and inundation locations

XXX. Enter cumulative length and average width of Geo composite in concrete road sections.

XXXI. Enter the cumulative area of interlock rectification.

XXXII. Enter cumulative length of new interlock paving sections in gravel

XXXIII. Enter cumulative length of drains and number of slabs as relevant

XXXIV. Enter the cumulative length of Mass concrete retaining walls according to the clear heights

XXXV. Enter the cumulative lengths of road markings

XXXVI. Enter the number of sign boards

XXXVII. Enter curb length for foot walk

XXXVIII. Enter Interlock area for foot walk

XXXIX. To derive PS amounts and LS amounts follow steps in the estimate

5. SUBMISSION OF DOCUMENTS

5.1. Submission

I. All original recording of survey such as field sheets, field notes, coordinate sheets, Survey Plots and the Compact Disks (CD’s) required as per the specification shall be submitted to the Employer within 30 days from the award.

II. All the Primary Control Point, Secondary Control Point layouts with GPS coordinates with GNSS instrument records, Plan & Profile and cross sections shall be plotted in A3 size drawings and the hard copies shall be submitted to the Employer same as the above date in (I).

III. The softcopy of the Point file shall be submitted in a Compacted Disk (CD).

IV. Soft copies of all stated in (II) shall be written in Compacted Disks (CD) and they shall be numbered, labeled properly and tested for its quality at the Employer's Office before handing over.

V. Soft copies of initial R.O.W. video logging files shall be written in Compacted Disks (CD), shall be submitted as per the specifications mentioned in Chapter 4 above and tested for its quality at the Employer's Office before handing over.

VI. Client's Requirements a Engineer's Estimate shall be submitted in both soft version and hard copies as requested by the Client.

VII. All the documents to be submitted in hard copies shall be certified by the Authorized Signatory of the Contractor.

VIII. The CDs and the documents submitted to the Employer will become the property of the Employer.

6. MEASUREMENT

The works carried out by the contractor shall be measured at the end of each stage of works as described in specification, upon submission of documents in each stage.

The contractor shall submit a statement showing the value of the work executed at the completion of each stage of work to the Employer.

The Engineer shall check the Contractor's and certify the amount to be paid to the Contractor.

7. PAYMENT

The rates quoted by the Officer shall include the cost of all works, materials, transport, instruments, stationery etc., which are required to complete the said works.

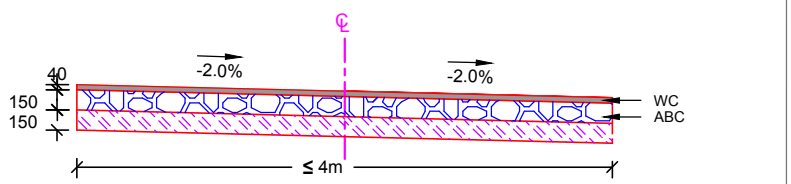
Pay Item	Description	Pay Unit
1	**Carrying out Initial Longitudinal section and Cross Section survey and Submission of relevant documentation**	
1.1	Establishment of Primary Control Points (GPS)	km
1.2	Establishment of Secondary Control Points and Control Traversing & Leveling	km
1.3	Establishment of Center Line	km
1.4	Initial Longitudinal Section & Cross Section Survey	km
1.5	Collection of initial R.O.W. Video Logging	km
1.6	Submission of Documents incorporating above items	km
2.0	**Preparation and Submission of Engineer's Estimate**	
2.1	Preparation and Submission of Client's Requirements and Engineer's Estimate	km

APPENDIX B

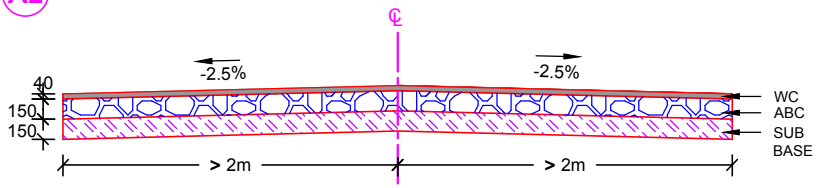
ANNEX 4: TYPICAL CROSS SECTIONS OF FINISHED ROADS

ASPHALT CONCRETE FINISH SURFACING FOR EXISTING GRAVEL ROADS

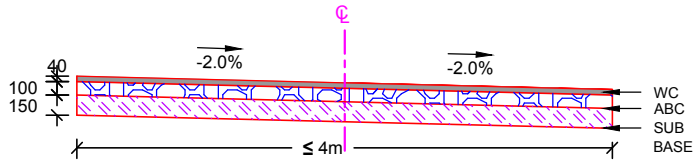
A1 . SOIL / GRAVEL ROAD WIDTH ≤ 4m



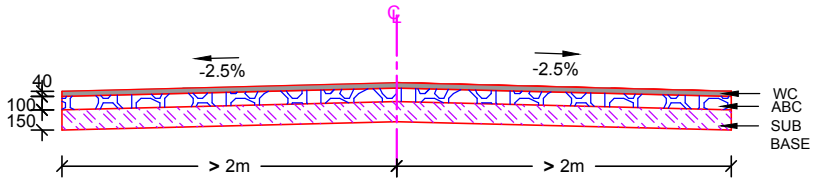
A2 . SOIL / GRAVEL ROAD WIDTH > 4m



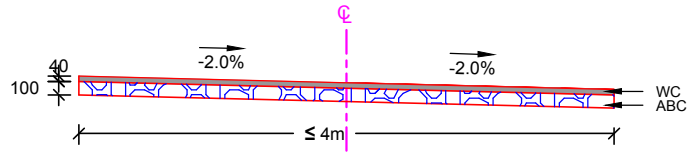
A3 (I). SOIL ROAD WIDTH ≤ 4m
IF LENGTH ≤ 1Km FOR LOCAL ROADS



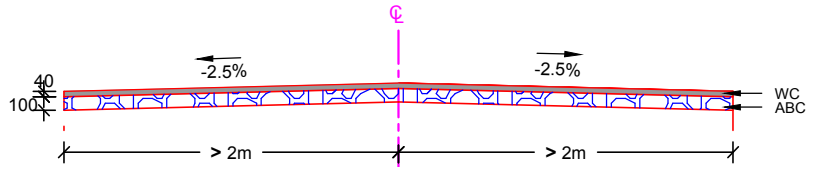
(II). SOIL ROAD WIDTH > 4m
IF LENGTH ≤ 1Km FOR LOCAL ROADS



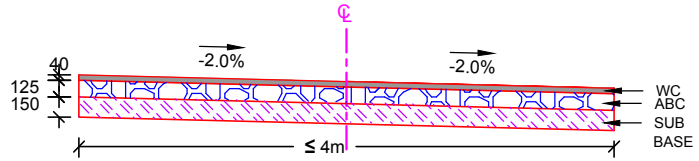
A4 (I). GRAVEL ROAD WIDTH ≤ 4m
IF LENGTH ≤ 1Km FOR LOCAL ROADS



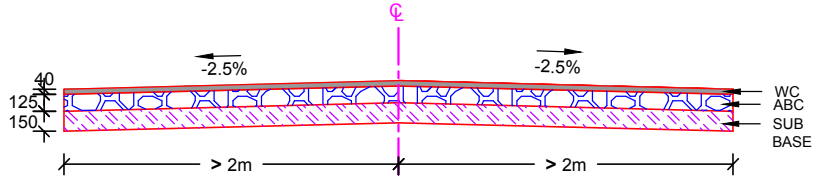
(II). GRAVEL ROAD WIDTH > 4m
IF LENGTH ≤ 1Km FOR LOCAL ROADS



A5 (I). GRAVEL ROAD WIDTH ≤ 4m
IF LENGTH > 1Km FOR LOCAL ROADS



(II). GRAVEL ROAD WIDTH > 4m
IF LENGTH > 1Km FOR LOCAL ROADS



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DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF ROADS AND HIGHWAYS

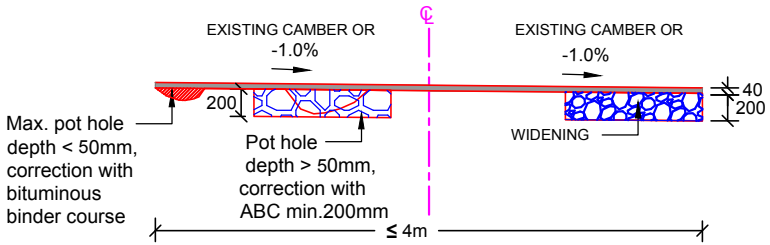
Engineer
ROAD DEVELOPMENT AUTHORITY
PROJECT DIRECTOR
Local Bank Funded Project (LBFP)
Wing A ,8th floor, Sethsiripaya stage (II), Baththaramulla.

Project Title
Implementation of 100,000 km Alternative Road System as per the Government's Policy Statement
"Vistas of Prosperity and Splendour"

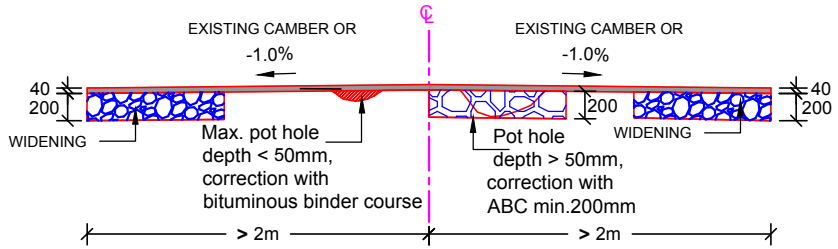
ANNEX 4: TYPICAL CROSS SECTIONS OF FINISHED ROADS

ASPHALT CONCRETE FINISH SURFACING FOR EXISTING MACADAM/ SBST/ DBST ROAD

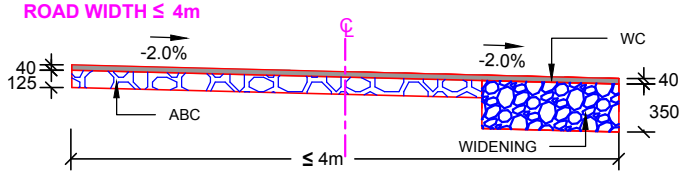
A6 . FOR FAIRLY GOOD /LESS POTHOLES / MINOR POTHOLES
ROAD WIDTH ≤ 4m



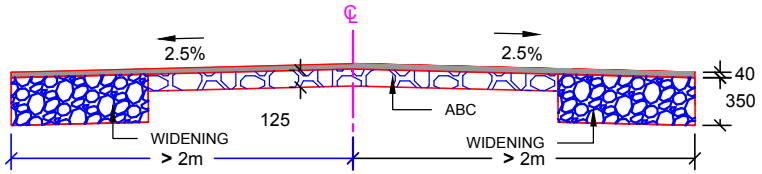
A7 . FOR FAIRLY GOOD /LESS POTHOLES / MINOR POTHOLES
ROAD WIDTH > 4m



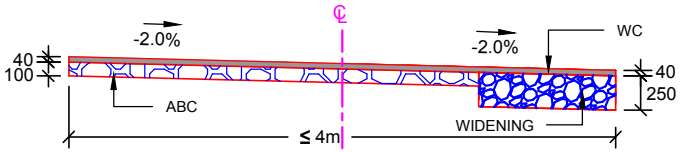
A8 . FOR WEAK SURFACE / POTHOLES / LARGE POTHOLES
ROAD WIDTH ≤ 4m



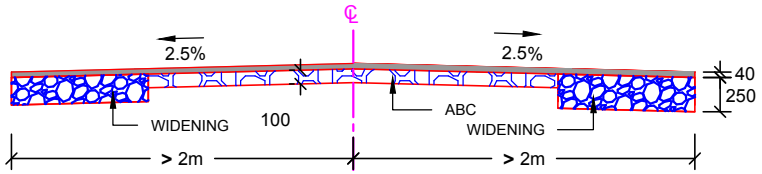
A9 . FOR WEAK SURFACE / POTHOLES / LARGE POTHOLES
ROAD WIDTH > 4m



A10 (I). FOR WEAK SURFACE / POTHOLES / LARGE POTHOLES FOR LOCAL ROADS
ROAD WIDTH ≤ 4m



(II). FOR WEAK SURFACE / POTHOLES / LARGE POTHOLES FOR LOCAL ROADS
ROAD WIDTH > 4m



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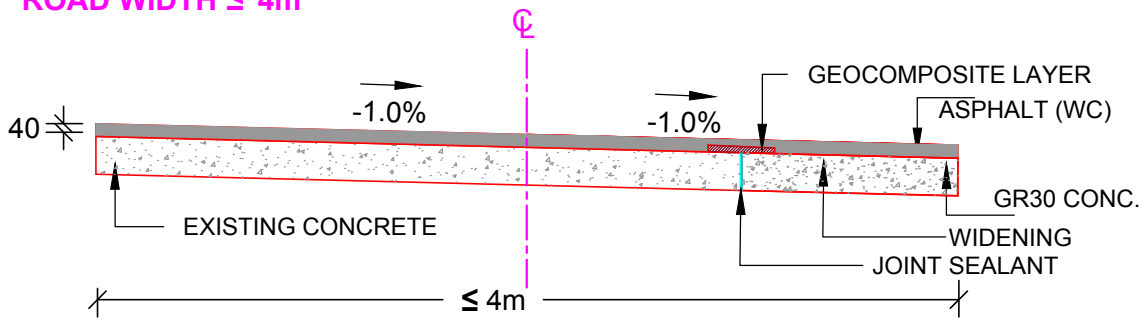
ANNEX 4: CROSS SECTIONS OF FINISHED ROADS

ASPHALT CONCRETE FINISH SURFACING FOR EXISTING FAIRLY GOOD CONCRETE ROADS

C6 **. ASPHALT CONCERT FOR FAIRLY GOOD CONCRETE ROADS WHICH REQUIRE WIDENING OR RESURFACING**
ROAD WIDTH ≤ 4m



NOTES :-

1. TYPICAL C6 CROSS SECTION SHALL BE USED FOR EXISTING CONCRETE ROADS OF FAIRLY GOOD CONDITION. ROAD SHALL BE FINISHED WITH 40mm ASPHALT CONCRETE LAYER.
2. THE APPROVAL FOR GEOCOMPOSITE MATERIAL AND JOINT SEALANT AGENT SHALL BE OBTAINED FROM THE ENGINEER PRIOR COMMENCEMENT OF WORK.

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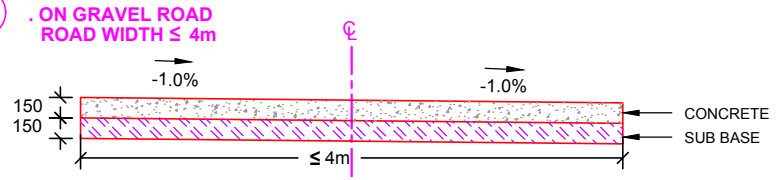
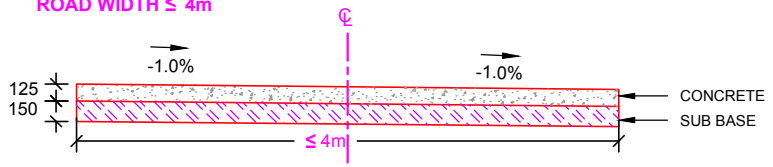
ANNEX 4: CROSS SECTIONS OF FINISHED ROADS

CONCRETE FINISH SURFACING FOR EXISTING GRAVEL ROADS.

C1 . ON GRAVEL ROAD
ROAD WIDTH ≤ 4m

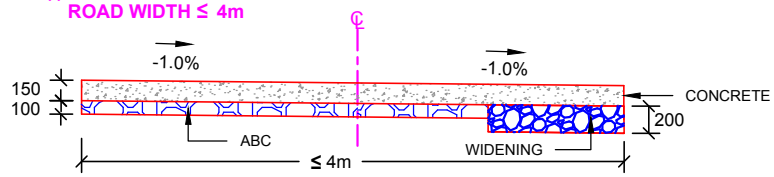


C2 . ON GRAVEL ROAD LOCAL ROADS
ROAD WIDTH ≤ 4m

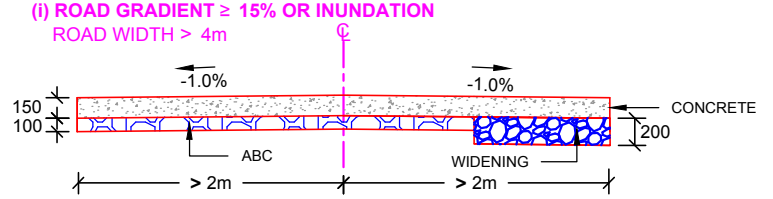


CONCRETE FINISH SURFACING FOR EXISTING MACADAM/ SBST ROADS

C3 . ON MACCADAM/ DBST /SBST ROAD
(i) ROAD GRADIENT ≥ 15% OR INUNDATION
ROAD WIDTH ≤ 4m

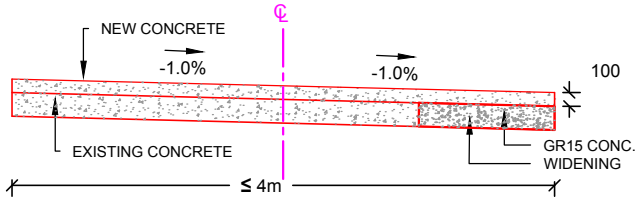


C4 . ON MACCADAM/ DBST /SBST ROAD
(i) ROAD GRADIENT ≥ 15% OR INUNDATION
ROAD WIDTH > 4m



CONCRETE FINISH SURFACING FOR EXISTING CONCRETE ROADS WITH POOR CONDITION

C5 . ON POOR CONCRETE BASE
ROAD WIDTH ≤ 4m



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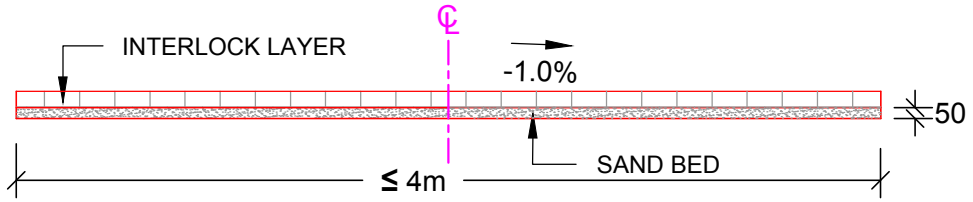
Project Title
Implementation of 100,000 km Alternative Road System as per the Government's Policy Statement "Vistas of Prosperity and Splendour"

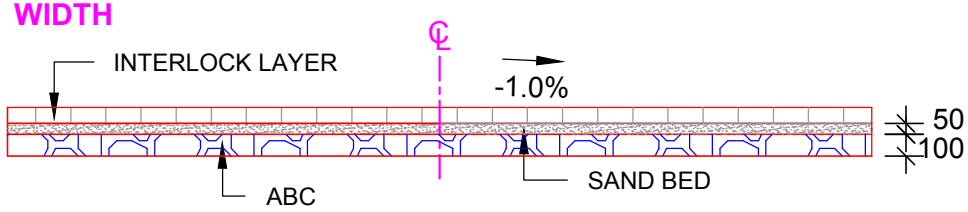
ANNEX 4: CROSS SECTIONS OF FINISHED ROADS

INTERLOCKING SURFACING FOR EXSISTING GRAVEL OR INTERLOCKING BLOCK PAVED ROADS.

I1 . ON GRAVEL ROAD
ROAD WIDTH ≤ 4m



I2 . ON BASE FAILED INTERLOCK
ANY WIDTH



NOTE:
(i) SUB GRADE CONDITION NEEDED TO BE CHECKED IF IT IS NOT IN REQUIRED LEVEL
(II) FAILURES OF THE EXISTING SURFACES TO BE RECTIFIED WITH THE SUB GRADE IMPROVEMENT.

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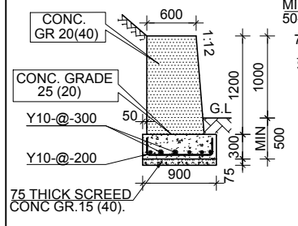
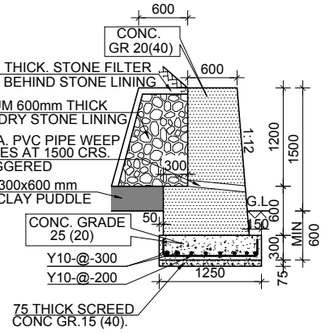
Implementation of 100,000 km Alternative Road System as per the Government's Policy Statement "Vistas of Prosperity and Splendour"

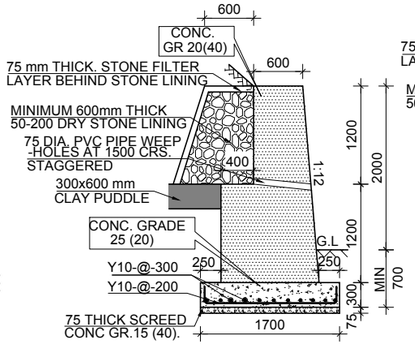
APPENDIX C



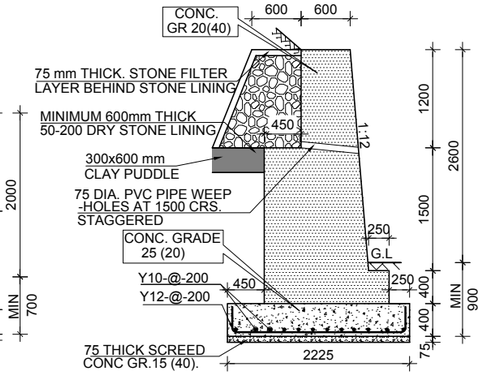
TYPE M.C.T - 1



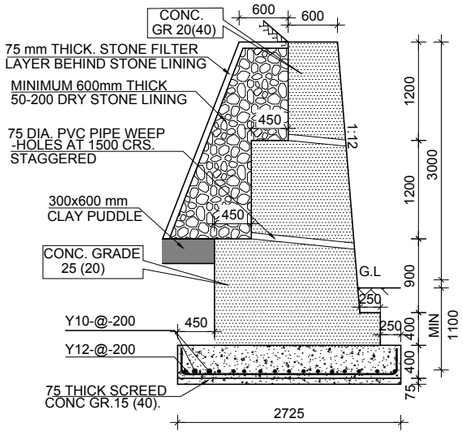
TYPE M.C.T - 2



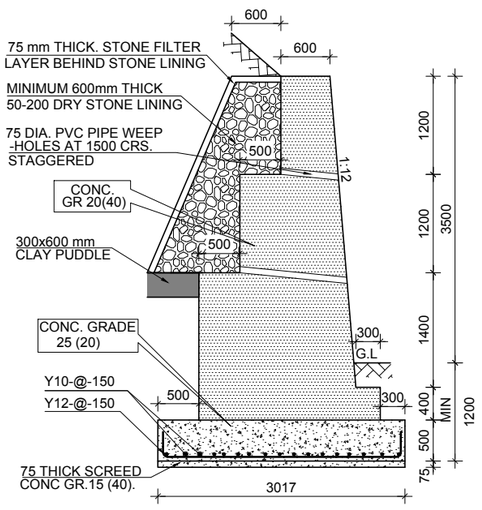
TYPE M.C.T - 3



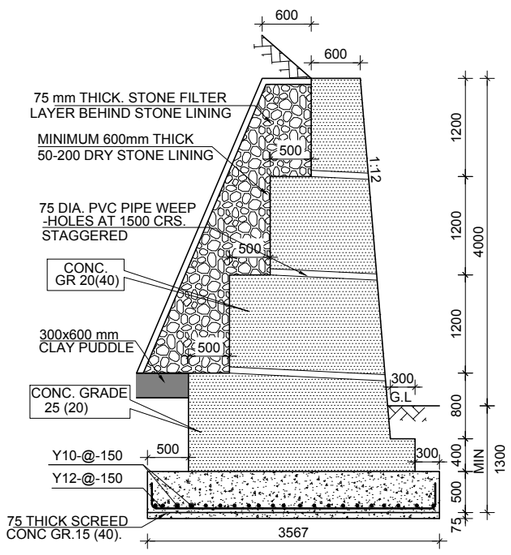
TYPE M.C.T - 4



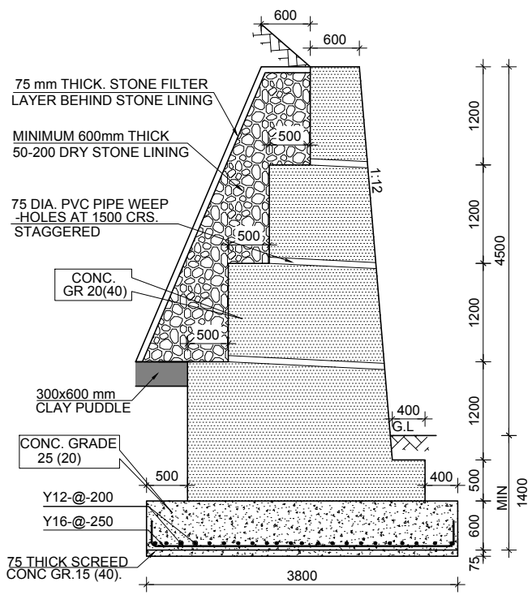
TYPE M.C.T - 5



TYPE M.C.T - 6



TYPE M.C.T - 7



TYPE M.C.T - 8

GENERAL NOTES

(a) ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED
(b) ALL MATERIALS AND WORKMANSHIP ARE TO BE IN ACCORDANCE WITH REQUIREMENT OF THE SPECIFICATION
(c) POROUS BACKFILL TO BE PROVIDED ALONG THE ENTIRE LENGTH OF THE WALL AS INDICATED
(d) WEEP HOLES TO BE PROVIDED AT 1500m C/C STRAGGERED USING 75mm DIA. PVC PIPES
(e) EXPANSION JOINT TO BE PROVIDED AT EVERY 5m INTERVAL USING THERMOFORM

CONCRETE

USE FOLLOWING CONCRETE GRADES FOR STRUCTURE OR PART OF A STRUCTURE MENTIONED BELOW WITH REQUIREMENT OF THE STANDARD SPECIFICATION

(a) SCREED	-	GR. 15/40
(b) FOUNDATION BASE	-	GR. 20/20
(c) SUB STRUCTURE	-	GR. 20/40

REINFORCEMENT

(a) ALL BARS MARKED "Y" SHALL BE HIGH YIELD DEFORMED BARS OF YIELD STRENGTH NOT LESS THAN 460N/mm2
(b) BARS OF CUT LENGTH LARGER THAN THE SUPPLIED LENGTH TO BE LAPPED WITH LENGTH OF 50Ø, WHERE Ø IS THE DIAMETER AND LAPPING SHOULD BE STRAGGERED
(c) REINFORCEMENT BARS SHALL BE BENT ACCORDANCE WITH STANDARD SPECIFICATIONS
(d) CLEAR CONCRETE COVER FOR ALL REINFORCEMENT TO BE 50mm

FORM WORK

(a) TYPE OF FORM WORK FOR FOUNDATION SLAB TO BE ROUGH FINISH.
(b) TYPE OF FORM WORK FOR SUB STRUCTURE TO BE SMOOTH FINISH.

SPECIAL NOTES

1. (a) ALLOWABLE BEARING CAPACITY OF THE GROUND AND THE PASSIVE EARTH HEIGHT SHALL BE CHECKED BY THE ENGINEER.
(b) M.C.T = MASS CONCRETE TOE WALL.

RETAINNG WALL TYPE	HEIGHT OF THE WALL ABOVE THE GROUND LEVEL (m)	ALLOWABLE BEARING STRENGTH OF SOIL SHOULD NOT BE LESS THAN (KN/m^2)	PASSIVE EARTH HEIGHT
M.C.T-1	1.0	60.00	0.5
M.C.T-2	1.5	85.00	0.6
M.C.T-3	2.0	95.00	0.7
M.C.T-4	2.6	110.00	0.9
M.C.T-5	3.0	125.00	1.1
M.C.T-6	3.5	150.00	1.2
M.C.T-7	4.0	160.00	1.3
M.C.T-8	4.5	180.00	1.4

TYPICAL SECTION OF MASS CONCRETE TOE WALLS

Employer

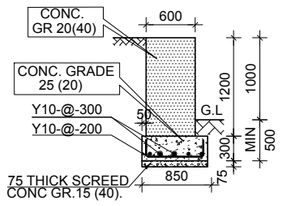
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF ROADS AND HIGHWAYS

Engineer

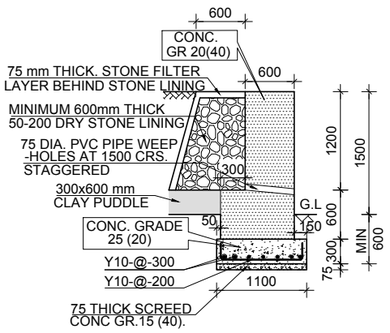
ROAD DEVELOPMENT AUTHORITY
PROJECT DIRECTOR
Local Bank Funded Project (LBFP)
Wing A ,8th floor, Sethsiripaya stage (II), Baththaramulla.

Project Title

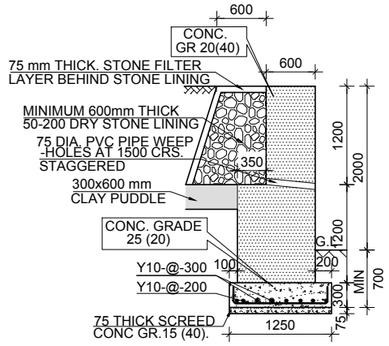
Implementation of 100,000 km Alternative Road System as per the Government's Policy Statement "Vistas of Prosperity and Splendour"



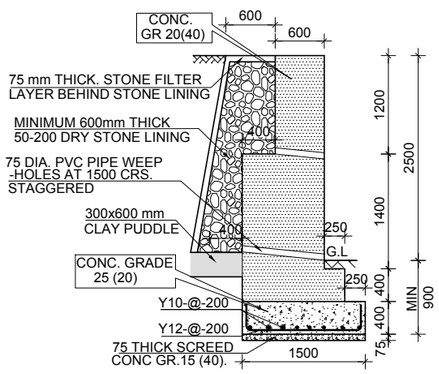
TYPE M.C.R - 1



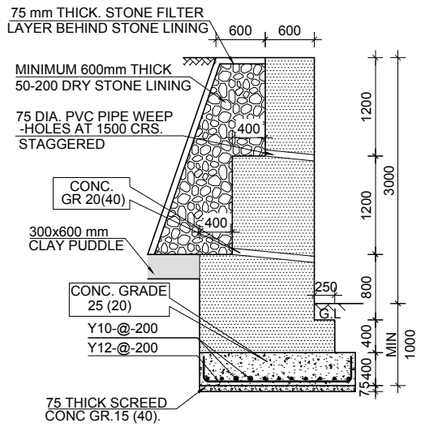
TYPE M.C.R - 2



TYPE M.C.R - 3



TYPE M.C.R - 4



TYPE M.C.R - 5

GENERAL NOTES

(a) ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED
(b) ALL MATERIALS AND WORKMANSHIP ARE TO BE IN ACCORDANCE WITH REQUIREMENT OF THE SPECIFICATION
(c) POROUS BACKFILL TO BE PROVIDED ALONG THE ENTIRE LENGTH OF THE WALL AS INDICATED
(d) WEEP HOLES TO BE PROVIDED AT 1500m C/C STRAGGERED USING 75mm DIA. PVC PIPES
(e) EXPANSION JOINT TO BE PROVIDED AT EVERY 5m INTERVAL USING THERMOFORM

CONCRETE

USE FOLLOWING CONCRETE GRADES FOR STRUCTURE OR PART OF A STRUCTURE MENTIONED BELOW WITH REQUIREMENT OF THE STANDARD SPECIFICATION

(a) SCREED - GR. 15/40
(b) FOUNDATION BASE - GR. 25/20
(c) SUB STRUCTURE - GR. 20/40

REINFORCEMENT

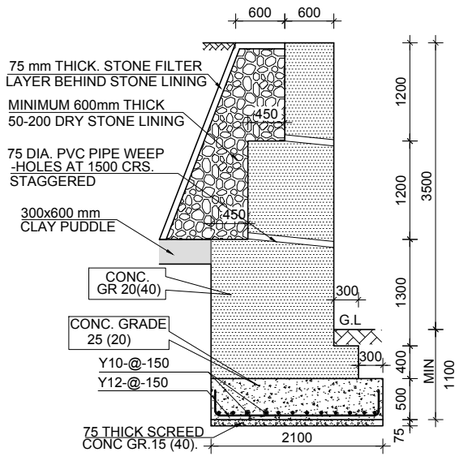
(a) ALL BARS MARKED "Y" SHALL BE HIGH YIELD DEFORMED BARS OF YIELD STRENGTH NOT LESS THAN 460N/mm^2
(b) BARS OF CUT LENGTH LARGER THAN THE SUPPLIED LENGTH TO BE LAPPED WITH LENGTH OF 50Ø, WHERE Ø IS THE DIAMETER AND LAPPING SHOULD BE STRAGGERED
(c) REINFORCEMENT BARS SHALL BE BENT ACCORDANCE WITH STANDARD SPECIFICATIONS
(d) CLEAR CONCRETE COVER FOR ALL REINFORCEMENT TO BE 50mm

FORM WORK

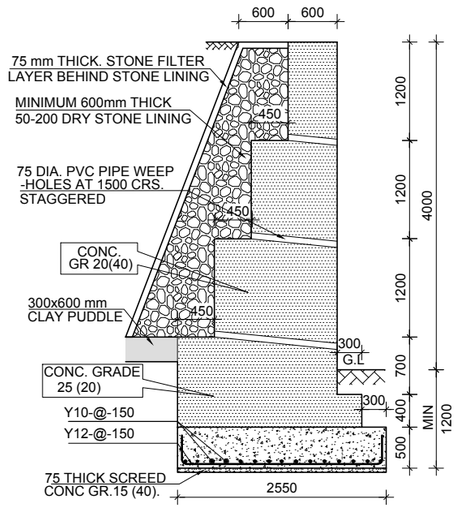
(a) TYPE OF FORM WORK FOR FOUNDATION SLAB TO BE ROUGH FINISH.
(b) TYPE OF FORM WORK FOR SUB STRUCTURE TO BE SMOOTH FINISH.

SPECIAL NOTES

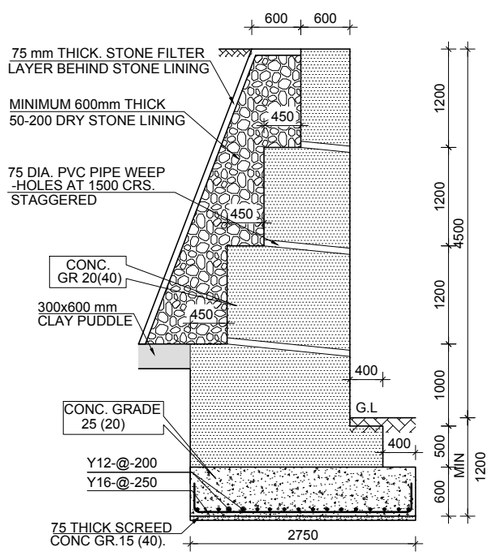
1. (a) ALLOWABLE BEARING CAPACITY OF THE GROUND AND THE PASSIVE EARTH HEIGHT SHALL BE CHECKED BY THE ENGINEER.
(b) M.C.R = MASS CONCRETE RETAINING WALL.



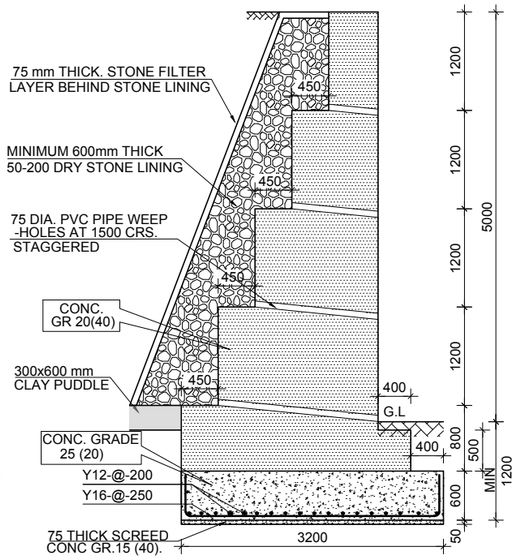
TYPE M.C.R - 6



TYPE M.C.R - 7



TYPE M.C.R - 8



TYPE M.C.R - 9

RETAINNG WALL TYPE	HEIGHT OF THE WALL ABOVE THE GROUND LEVEL (m)	ALLOWABLE BEARING STRENGTH OF SOIL SHOULD NOT BE LESS THAN (KN/m^2)	PASSIVE EARTH HEIGHT
M.C.R-1	1.0	75.00	0.5
M.C.R-2	1.5	100.00	0.6
M.C.R-3	2.0	140.00	0.7
M.C.R-4	2.5	145.00	0.9
M.C.R-5	3.0	155.00	1.0
M.C.R-6	3.5	175.00	1.1
M.C.R-7	4.0	185.00	1.2
M.C.R-8	4.5	190.00	1.2
M.C.R-9	5.0	200.00	1.2

TYPICAL SECTION OF MASS CONCRETE RETAINING WALLS

Employer

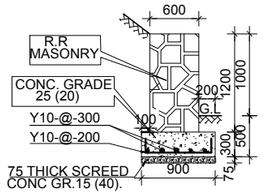
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF ROADS AND HIGHWAYS

Engineer

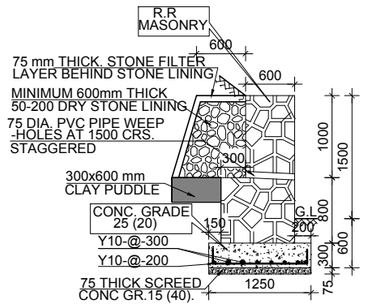
ROAD DEVELOPMENT AUTHORITY
PROJECT DIRECTOR
Local Bank Funded Project (LBFP)
Wing A ,8th floor, Sethsiripaya stage (II), Baththaramulla.

Project Title

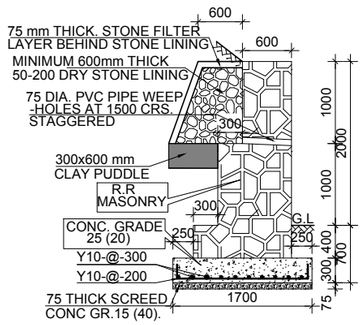
Implementation of 100,000 km Alternative Road System as per the Government's Policy Statement "Vistas of Prosperity and Splendour"



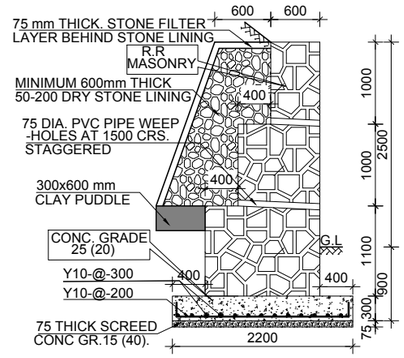
R.R.T- 1



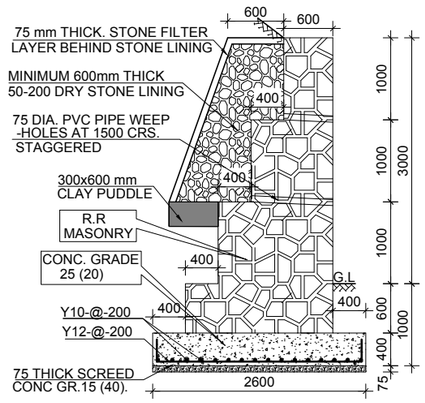
R.R.T- 2



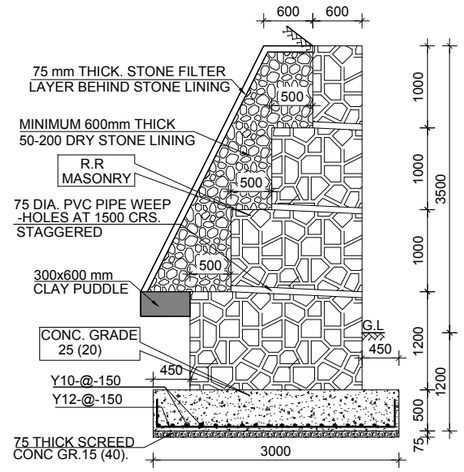
R.R.T- 3



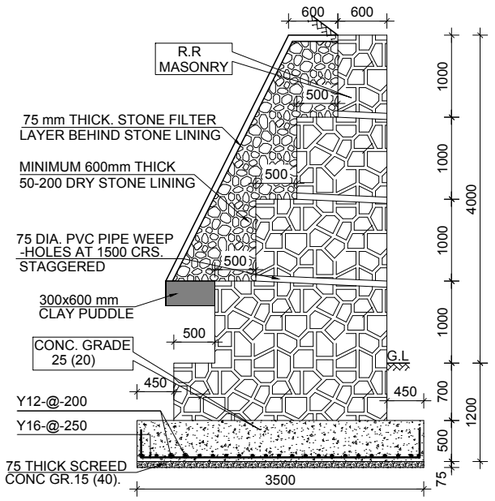
R.R.T- 4



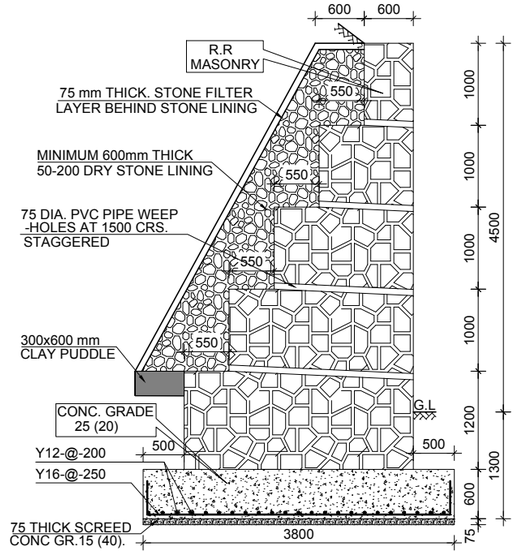
R.R.T- 5



R.R.T- 6



R.R.T- 7



R.R.T- 8

GENERAL NOTES

(a) ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED
(b) ALL MATERIALS AND WORKMANSHIP ARE TO BE IN ACCORDANCE WITH REQUIREMENT OF THE SPECIFICATION
(c) POROUS BACKFILL TO BE PROVIDED ALONG THE ENTIRE LENGTH OF THE WALL AS INDICATED
(d) WEEP HOLES TO BE PROVIDED AT 1500m C/C STRAGGERED USING 75mm DIA. PVC PIPES
(e) EXPANSION JOINT TO BE PROVIDED AT EVERY 5m INTERVAL USING THERMOFORM

CONCRETE

USE FOLLOWING CONCRETE GRADES FOR STRUCTURE OR PART OF A STRUCTURE MENTIONED BELOW WITH REQUIREMENT OF THE STANDARD SPECIFICATION

(a) SCREED - GR. 15/40
(b) FOUNDATION BASE - GR. 20/20

R.R MASONRY

(a) RANDOM RUBBLE MASONRY USING 150-225mm
(b) RUBBLE IN CEMENT SAND MORTAR 1.6 MIX

RAINFORCEMENT

(a) ALL BARS MARKED "Y" SHALL BE HIGH YIELD DEFORMED BARS OF YIELD STRENGTH NOT LESS THAN 460N/mm$_2$
(b) BARS OF CUT LENGTH LARGER THAN THE SUPPLIED LENGTH TO BE LAPPED WITH LENGTH OF 50Ø, WHERE Ø IS THE DIAMETER AND LAPPING SHOULD BE STRAGGERED
(c) REINFORCEMENT BARS SHALL BE BENT ACCORDANCE WITH STANDARD SPECIFICATIONS
(d) CLEAR CONCRETE COVER FOR ALL REINFORCEMENT TO BE 50mm

FORM WORK

(a) TYPE OF FORM WORK FOR FOUNDATION SLAB TO BE ROUGH FINISH.
(b) TYPE OF FORM WORK FOR SUB STRUCTURE TO BE SMOOTH FINISH.

SPECIAL NOTES

(a)ALLOWABLE BEARING CAPACITY OF THE GROUND AND THE PASSIVE EARTH HEIGHT SHALL BE CHECKED BY THE ENGINEER.
(b) R.R.T = RANDOM RUBBLE MASONARY TOE WALL.

RETAINNG WALL TYPE	HEIGHT OF THE WALL ABOVE THE GROUND LEVEL (m)	ALLOWABLE BEARING STRENGTH OF SOIL SHOULD NOT BE LESS THAN (KN/m^2)	PASSIVE EARTH HEIGHT
R.R.T-1	1.0	55.00	0.5
R.R.T-2	1.5	80.00	0.6
R.R.T-3	2.0	90.00	0.7
R.R.T-4	2.5	110.00	0.9
R.R.T-5	3.0	135.00	1.0
R.R.T-6	3.5	150.00	1.2
R.R.T-7	4.0	170.00	1.2
R.R.T-8	4.5	200.00	1.3

TYPICAL SECTION OF R.R MASONRY TOE WALLS

Sheet No: 03 of 14

Employer

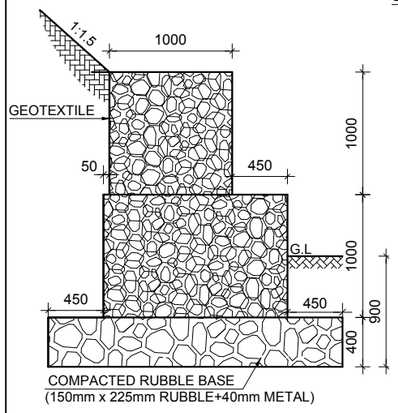
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF ROADS AND HIGHWAYS

Engineer

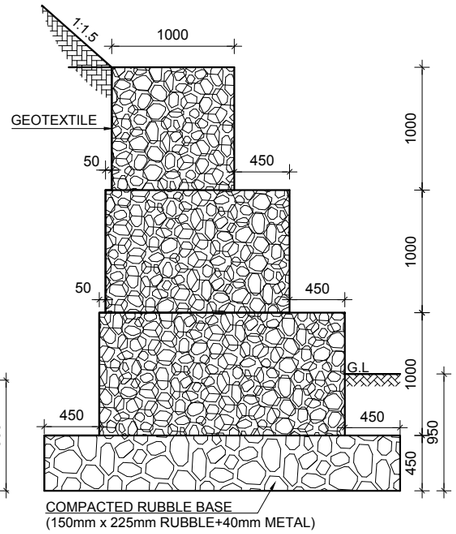
ROAD DEVELOPMENT AUTHORITY
PROJECT DIRECTOR
Local Bank Funded Project (LBFP)
Wing A ,8th floor, Sethsiripaya stage (II), Baththaramulla.

Project Title

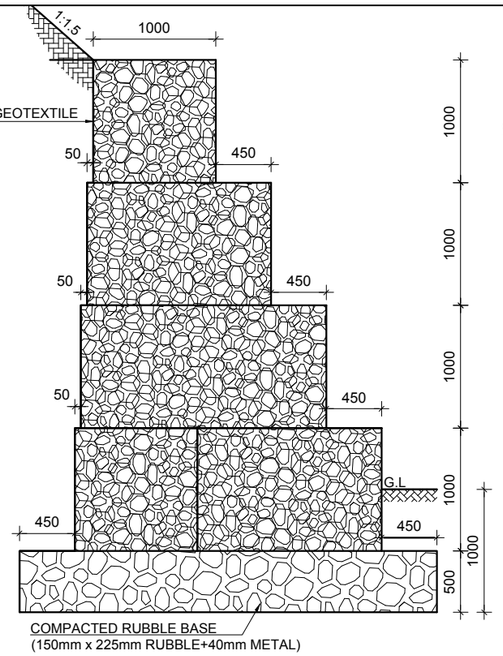
Implementation of 100,000 km Alternative Road System as per the Government's Policy Statement "Vistas of Prosperity and Splendour"



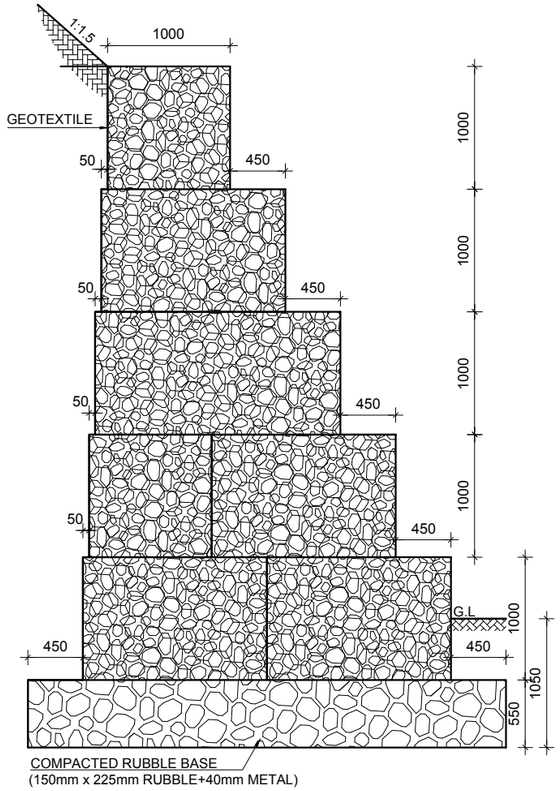
TYPE R.B.G - 1



TYPE R.B.G - 2



TYPE R.B.G - 3



TYPE R.B.G - 4

TYPICAL GABION WALL SECTION WITH SOFT (ROCK) BASE

GENERAL NOTES

(a) ALL DIMENSIONS ARE MILLIMETERS UNLESS OTHERWISE

(b) ALL MATERIALS AND WORKMANSHIP ARE TO BE IN IN ACCORDANCE WITH REQUIREMENT OF THE SPECIFICATION.

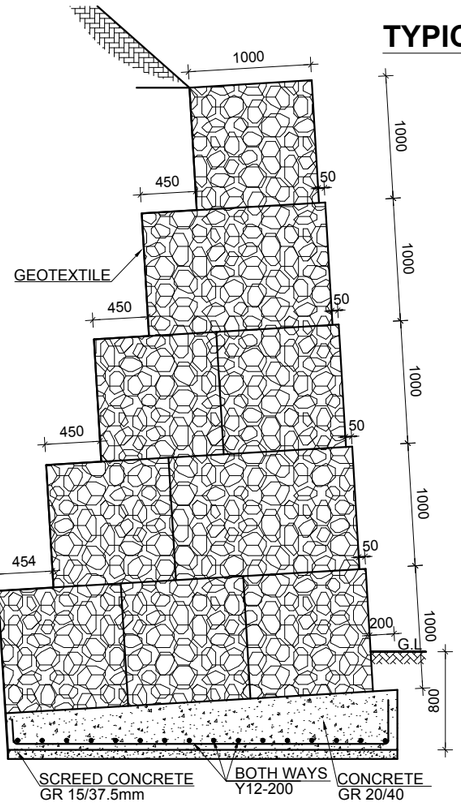
(c) RUBBLE BASE TO BE CONSTRUCTED USING 150mm × 225mm RUBBLE WITH 40mm AGGREGATES BY COMPACTING USING 2.5T ROLLER OR PLATE VIBRATOR.

(d) NON WOVEN GEOTEXTILE TO BE USED AS FILTER MEDIA FOR BACKSIDE OF THE WALL AS SHOWN IN THE DRAWINGS.

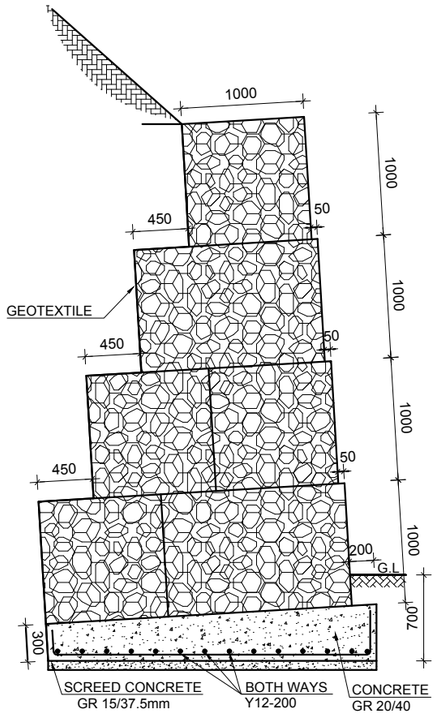
(e) R.B.G - RUBBLE BASE GABION WALL.
C.B.G - CONCRETE BASE GABION WALL.

(f) THESE DESIGN DRAWING INTENDER TO BE USED ONLY FOR RDA ROADS.

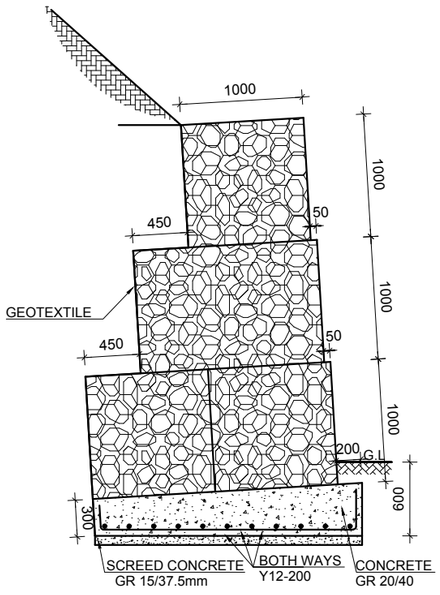
GABION WALL TYPE	HEIGHT OF THE WALL ABOVE THE GROUND LEVEL (m)	PASSIVE EARTH HEIGHT
R.B.G - 1	1.90	0.5
R.B.G - 2	2.85	0.6
R.B.G - 3	3.80	0.7
R.B.G - 4	4.75	0.8



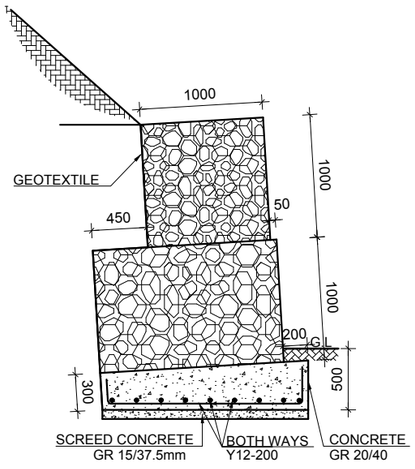
TYPE C.B.G-4



TYPE C.B.G-3



TYPE C.B.G-2



TYPE C.B.G-1

GABION WALL TYPE	HEIGHT OF THE WALL ABOVE THE GROUND LEVEL (m)	PASSIVE EARTH HEIGHT
C.B.G - 1	1.90	0.5
C.B.G - 2	2.85	0.6
C.B.G - 3	3.80	0.7
C.B.G - 4	4.75	0.8

TYPICAL GABION WALL SECTION WITH HARD (ROCK) BASE

Sheet No: 04 of 14

Employer

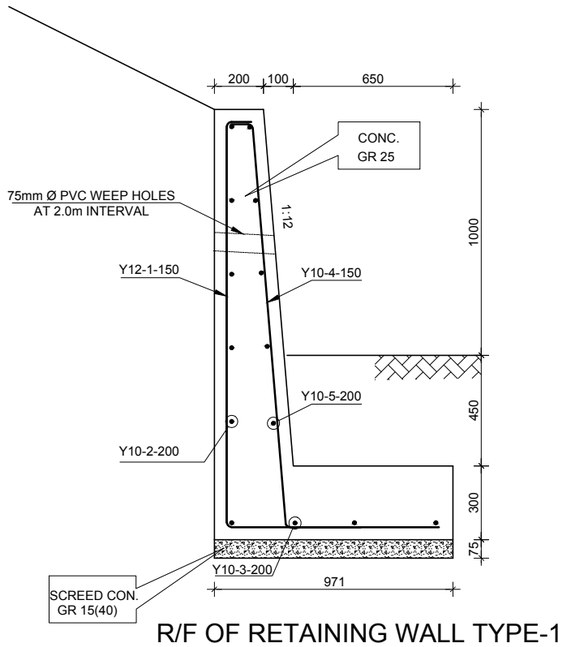
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF ROADS AND HIGHWAYS

Engineer

ROAD DEVELOPMENT AUTHORITY
PROJECT DIRECTOR
Local Bank Funded Project (LBFP)
Wing A ,8th floor, Sethsiripaya stage (II), Baththaramulla.

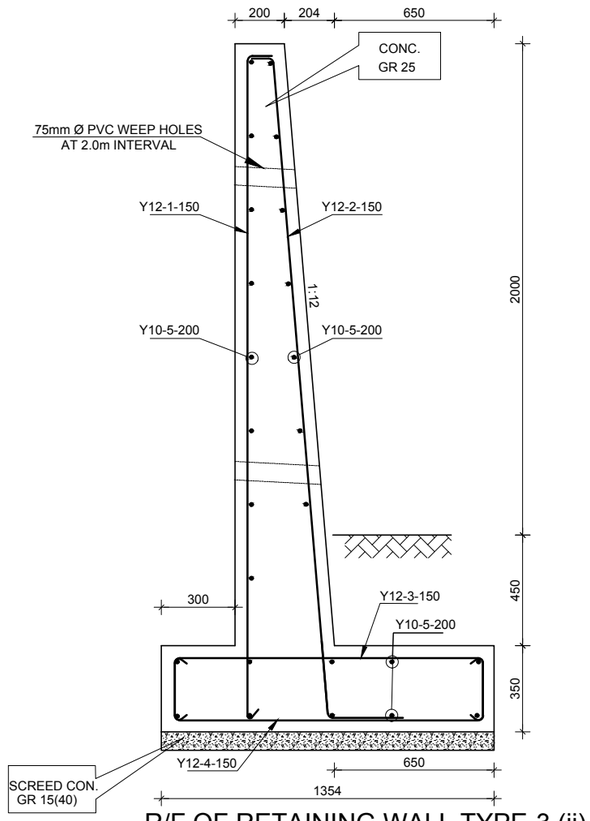
Project Title

Implementation of 100,000 km Alternative Road System as per the Government's Policy Statement "Vistas of Prosperity and Splendour"



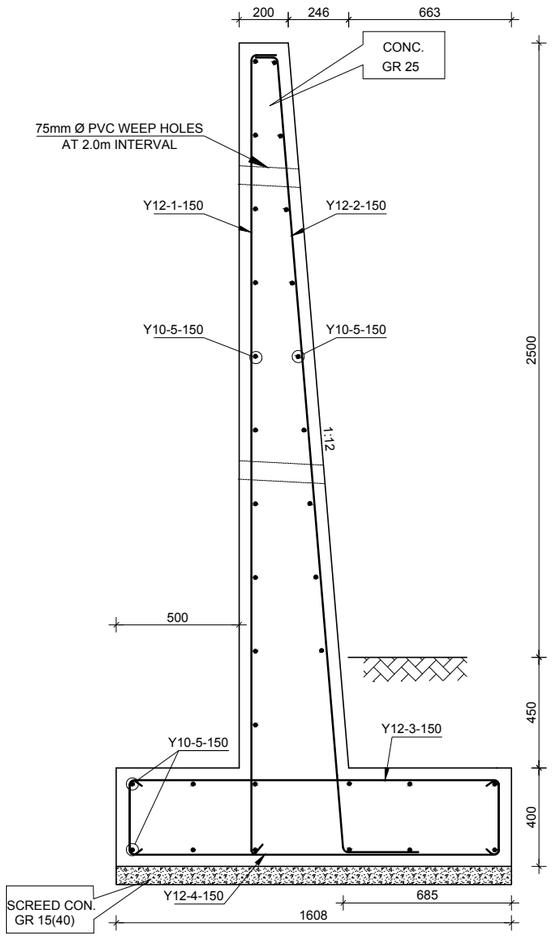
R/F OF RETAINING WALL TYPE-1

SCALE:- 1:25



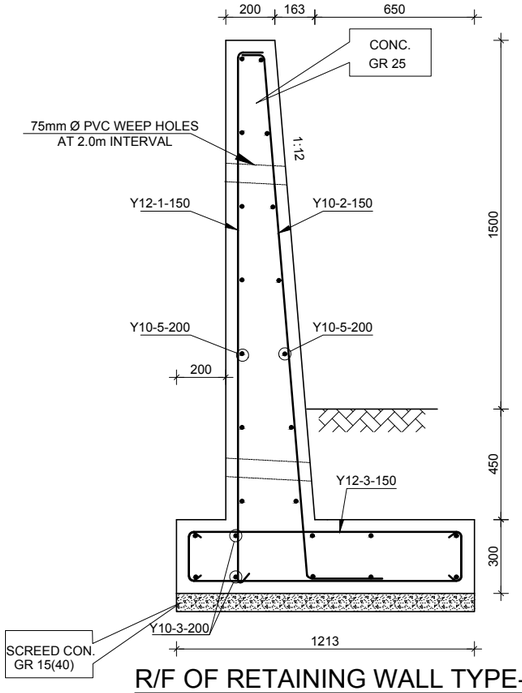
R/F OF RETAINING WALL TYPE-3 (ii)

SCALE:- 1:25



R/F OF RETAINING WALL TYPE-4 (ii)

SCALE:- 1:25

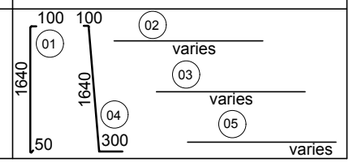


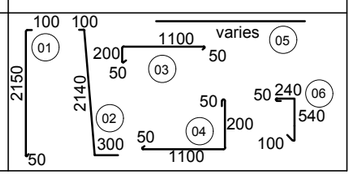
R/F OF RETAINING WALL TYPE-2 (ii)

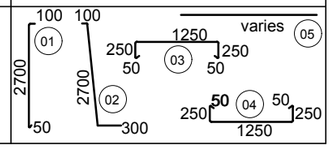
SCALE:- 1:25

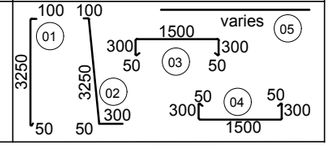
TYPICAL SECTIONS OF R/C WALL HEIGHT 2.0m ABOVE GROUND LEVEL

TYPICAL SECTIONS OF R/C WALL HEIGHT 1.0m & 1.5m ABOVE GROUND LEVEL

LOCATION	MARK	DIA. (mm)	TYPE	CUT LENGTH (mm)	SHAPE
RETAINING WALL TYPE - 1	01	12	Y	1780	
	02	10	Y	varies	
	03	10	Y	varies	
	04	10	Y	2000	
	05	10	Y	varies	

LOCATION	MARK	DIA. (mm)	TYPE	CUT LENGTH (mm)	SHAPE
RETAINING WALL TYPE -2(II)	01	12	Y	2300	
	02	10	Y	2540	
	03	12	Y	1400	
	04	12	Y	1400	
	05	10	Y	varies	
	06	10	Y	930	

LOCATION	MARK	DIA. (mm)	TYPE	CUT LENGTH (mm)	SHAPE
RETAINING WALL TYPE - 3(II)	01	12	Y	2850	
	02	12	Y	3100	
	03	12	Y	1850	
	04	12	Y	1850	
	05	10	Y	varies	

LOCATION	MARK	DIA. (mm)	TYPE	CUT LENGTH (mm)	SHAPE
RETAINING WALL TYPE - 4(II)	01	12	Y	3400	
	02	12	Y	3650	
	03	12	Y	2200	
	04	12	Y	2200	
	05	10	Y	varies	

TYPICAL SECTIONS OF R/C WALL HEIGHT 2.5m ABOVE GROUND LEVEL

GENERAL NOTES

(a) ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED

(b) ALL MATERIALS AND WORKMANSHIP ARE TO BE IN ACCORDANCE WITH REQUIREMENT OF THE SPECIFICATION

(c) POROUS BACKFILL TO BE PROVIDED ALONG THE ENTIRE LENGTH OF THE WALL AS INDICATED

(d) WEEP HOLES TO BE PROVIDED AT 1500m C/C STRAGGERED USING 75mm DIA. PVC PIPES

(e) EXPANSION JOINT TO BE PROVIDED AT EVERY 5m INTERVAL USING THERMOFORM

CONCRETE

USE FOLLOWING CONCRETE GRADES FOR STRUCTURE OR PART OF A STRUCTURE MENTIONED BELOW WITH REQUIREMENT OF THE STANDARD SPECIFICATION

(a) SCREED - GR. 15/40

(b) FOUNDATION & WALL - GR. 25

REINFORCEMENT

(a) ALL BARS MARKED "Y" SHALL BE HIGH YIELD DEFORMED BARS OF YIELD STRENGTH NOT LESS THAN 460N/mm^2

(b) BARS OF CUT LENGTH LARGER THAN THE SUPPLIED LENGTH TO BE LAPPED WITH LENGTH OF 50Ø, WHERE Ø IS THE DIAMETER AND LAPPING SHOULD BE STRAGGERED

(c) REINFORCEMENT BARS SHALL BE BENT ACCORDANCE WITH STANDARD SPECIFICATIONS

(d) CLEAR CONCRETE COVER FOR ALL REINFORCEMENT TO BE 50mm

FORM WORK

(a) TYPE OF FORM WORK FOR FOUNDATION SLAB TO BE ROUGH FINISH.

(b) TYPE OF FORM WORK FOR SUB STRUCTURE TO BE SMOOTH FINISH.

SPECIAL NOTES

(a) ALLOWABLE BEARING CAPACITY OF THE GROUND AND THE PASSIVE EARTH HEIGHT SHALL BE CHECKED BY THE ENGINEER.

Sheet No: 05 of 14

Employer

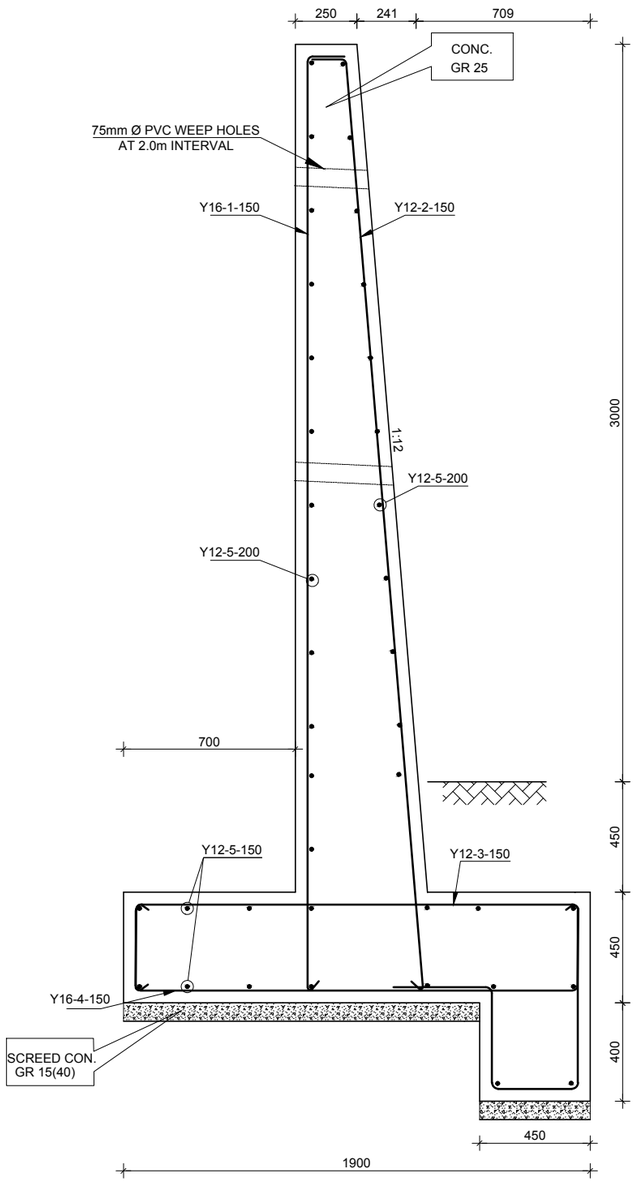
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF ROADS AND HIGHWAYS

Engineer

ROAD DEVELOPMENT AUTHORITY
PROJECT DIRECTOR
Local Bank Funded Project (LBFP)
Wing A ,8th floor, Sethsiripaya stage (II), Baththaramulla.

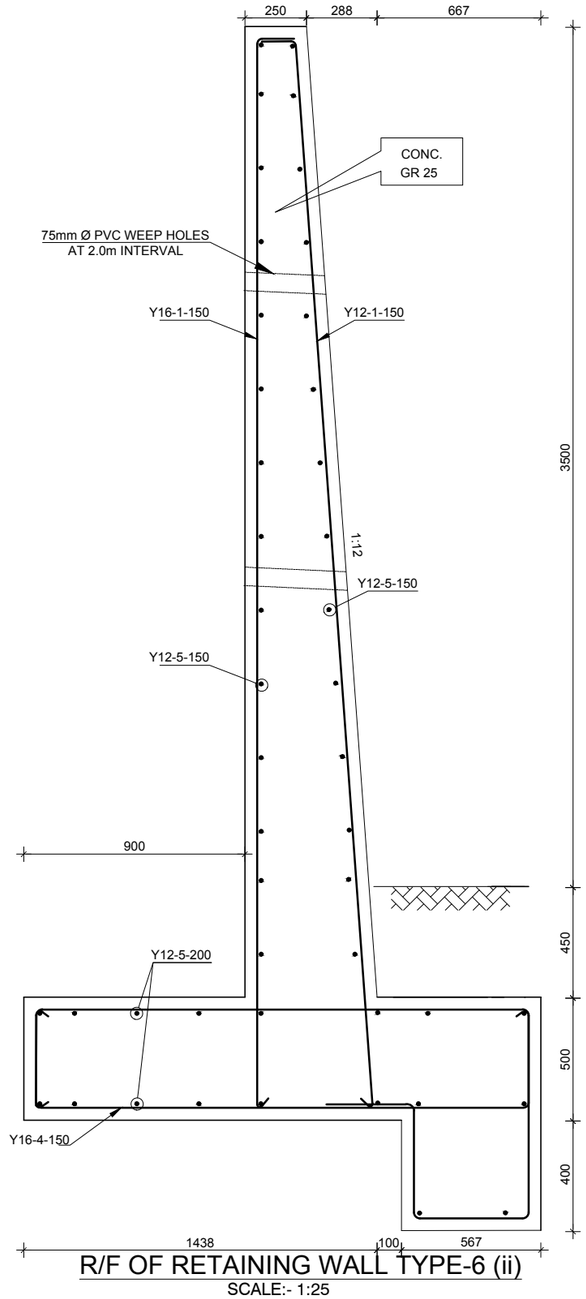
Project Title

Implementation of 100,000 km Alternative Road System as per the Government's Policy Statement "Vistas of Prosperity and Splendour"



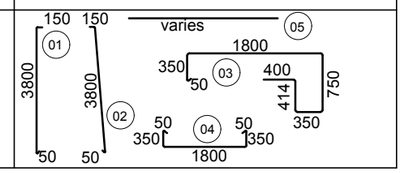
R/F OF RETAINING WALL TYPE-5 (ii)

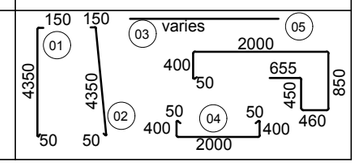
SCALE:- 1:25



R/F OF RETAINING WALL TYPE-6 (ii)

SCALE:- 1:25

LOCATION	MARK	DIA. (mm)	TYPE	CUT LENGTH (mm)	SHAPE
RETAINING WALL TYPE - 5(II)	01	16	Y	4000	
	02	12	Y	4000	
	03	12	Y	4114	
	04	16	Y	2600	
	05	12	Y	varies	

LOCATION	MARK	DIA. (mm)	TYPE	CUT LENGTH (mm)	SHAPE
RETAINING WALL TYPE - 6(II)	01	16	Y	4550	
	02	12	Y	4550	
	03	12	Y	4865	
	04	16	Y	2900	
	05	12	Y	varies	

TYPICAL SECTIONS OF R/C WALL HEIGHT 3.0m ABOVE GROUND LEVEL

TYPICAL SECTIONS OF R/C WALL HEIGHT 3.5m ABOVE GROUND LEVEL

Sheet No: 06 of 14

Employer

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF ROADS AND HIGHWAYS

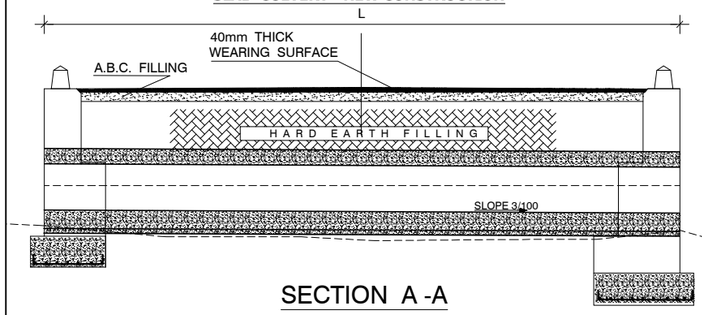
Engineer

ROAD DEVELOPMENT AUTHORITY
PROJECT DIRECTOR
Local Bank Funded Project (LBFP)
Wing A ,8th floor, Sethsiripaya stage (II), Baththaramulla.

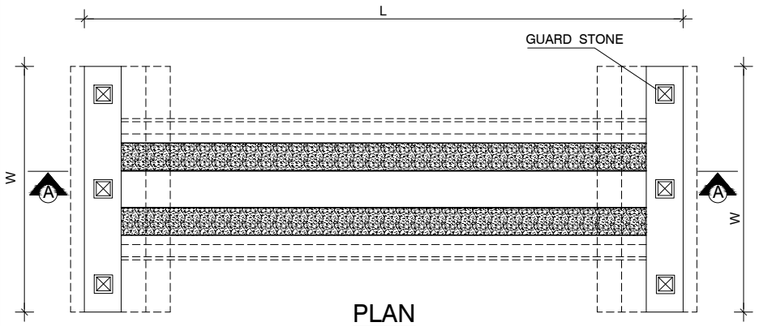
Project Title

Implementation of 100,000 km Alternative Road System as per the Government's Policy Statement "Vistas of Prosperity and Splendour"

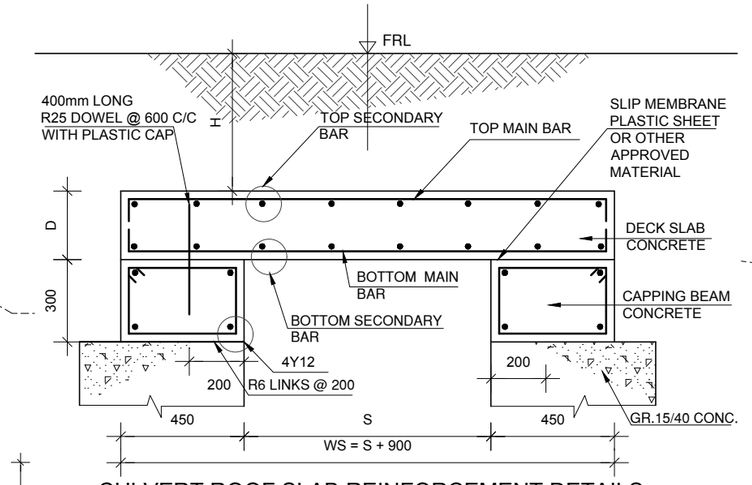
SLAB CULVERT - NEW CONSTRUCTION



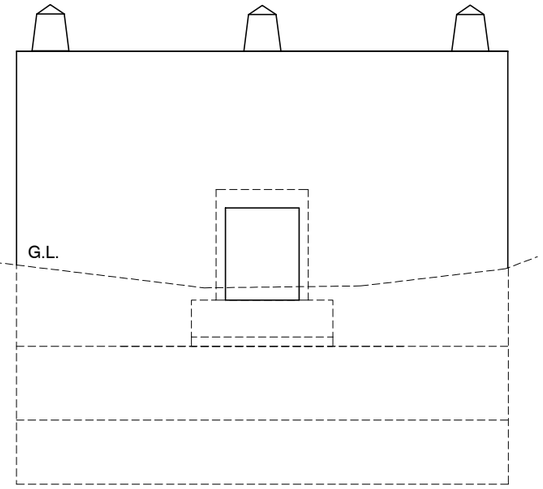
SECTION A -A



PLAN



CULVERT ROOF SLAB REINFORCEMENT DETAILS

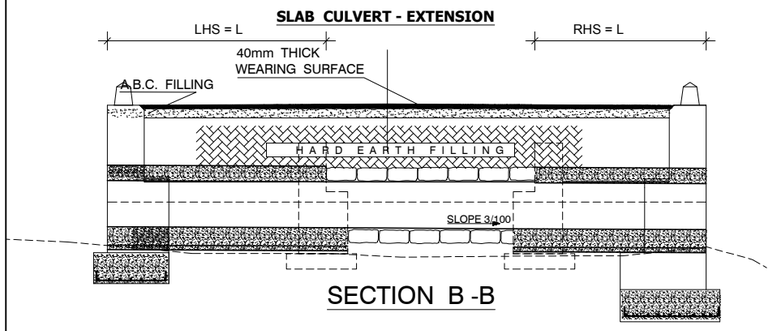


ELEVATION

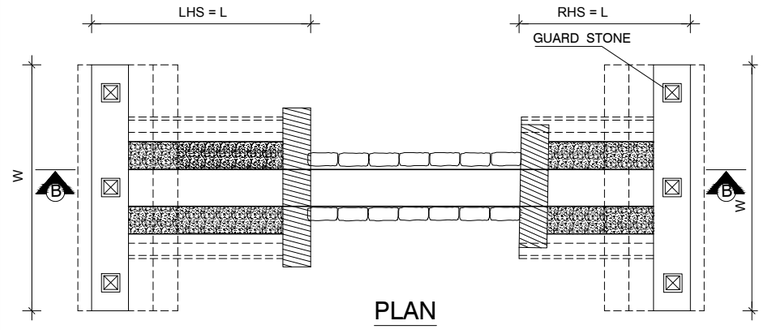
TABLE 1

DECK SLAB TYPE	REINFORCEMENT SCHEDULE FOR CULVERT ROOF SLAB						
	COVER TO SLAB BELOW FRL. (m)	SPAN WIDTH (m)	THICKNESS OF SLAB (mm)	BOTTOM		TOP	
	H	S	D	MAIN BAR	SECONDARY BAR	MAIN BAR	SECONDARY BAR
1	0~0.5	⩽ 0.9	250	Y16 @ 150	Y10 @ 225	Y10 @ 225	Y10 @ 225
2	0	1.2	250	Y16 @ 100	Y10 @ 175	Y10 @ 175	Y10 @ 175
3		1.5	250	Y16 @ 100	Y10 @ 175	Y10 @ 175	Y10 @ 175
4		2	300	Y20 @ 150	Y10 @ 150	Y10 @ 150	Y10 @ 150
5	0.5~1.0	⩽ 0.9	250	Y12 @ 200	Y10 @ 225	Y10 @ 225	Y10 @ 225
6	0.5	1.2	250	Y16 @ 175	Y10 @ 200	Y10 @ 200	Y10 @ 200
7		1.5	250	Y16 @ 175	Y10 @ 200	Y10 @ 200	Y10 @ 200
8		2	300	Y16 @ 150	Y10 @ 200	Y10 @ 200	Y10 @ 200

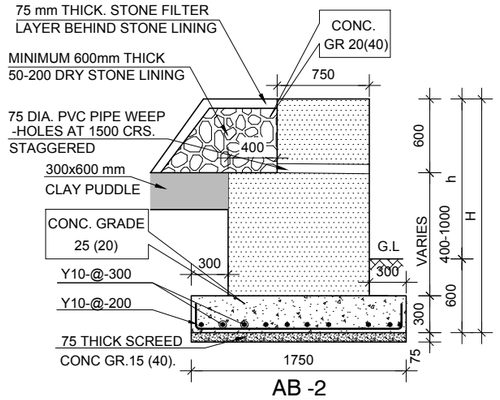
SLAB CULVERT - EXTENSION



SECTION B -B



PLAN



AB -2

1200<H<1900

ABUTMENT WALL TYPE	HEIGHT OF THE WALL ABOVE THE GROUND LEVEL (m)	TOTAL HIGHT	PASSIVE EARTH HEIGHT
AB-2	0.700-1.300	0.1200 -1.900	0.6

GENERAL NOTES

(1) ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED
(2) ALL BARS MARKED "Y" SHALL BE HIGH YIELD DEFORMED BARS (TYPE 1) OF YIELD STRENGTH NOT LESS THAN 460 N/mm² AND "R" SHALL BE HOT ROLLED MILD STEEL OF YIELD STRENGTH NOT LESS THAN 250 N/mm²
(3) REINFORCEMENT BARS SHALL BE BENT ACCORDANCE WITH STANDARD SPECIFICATIONS.
(4) LAP LENGTH = 50 Ø mm (WHERE Ø IS THE BAR SIZE IN mm)
(5) CONCRETE COVER TO REINFORCEMENT
FOR ROOF SLAB = 30 mm
FOR CAPPING BEAM = 30 mm

CONCRETE GRADE

ROOF SLAB & CAPPING BEAM = GRADE 25/20

SPECIAL NOTES

1. TYPE OF ABUTMENT TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER. (USEING DRG. NO. PD/CP/RSAP II/TP/ABT/5(5)
2. TYPE OF END/HEAD WALL TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER.
3. LENGTH OF END/HEAD WALL "W" AND LENGTH OF CULVERT "L" TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER. AND "t" IS THE THICKNESS OF NP2 HUME PIPE
4. PRECAST CONCRETE GUARD STONES SHALL BE FIXED AT 1500mm C/C OR AS DIRECTED BY THE ENGINEER.
5. TYPE OF CATCH PIT / CASCADE TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER.
6. TYPE OF EMBANKMENT CONSTRUCTION TO BE DONE AS DIRECTED BY THE ENGINEER.
7. SECTION A-A NEW CONSTURCTION. SECTION B-B EXTENSION.

NOTES

(a) ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED
(b) ALL MATERIALS AND WORKMANSHIP ARE TO BE IN ACCORDANCE WITH REQUIREMENT OF THE SPECIFICATION
(c) POROUS BACKFILL TO BE PROVIDED ALONG THE ENTIRE LENGTH OF THE WALL AS INDICATED
(d) WEEP HOLES TO BE PROVIDED AT 200m C/C STRAGGERED USING 75mm DIA. PVC PIPES

CONCRETE

USE FOLLOWING CONCRETE GRADES FOR STRUCTURE OR PART OF A STRUCTURE MENTIONED BELOW WITH REQUIREMENT OF THE STANDARD SPECIFICATION

(a) SCREED - GR. 15/40
(b) FOUNDATION BASE - GR. 20/20
(c) SUB STRUCTURE - GR. 20/40

REINFORCEMENT

(a) ALL BARS MARKED "Y" SHALL BE HIGH YIELD DEFORMED BARS OF YIELD STRENGTH NOT LESS THAN 460N/mm2
(b) BARS OF CUT LENGTH LARGER THAN THE SUPPLIED LENGTH TO BE LAPPED WITH LENGTH OF 50Ø, WHERE Ø IS THE DIAMETER AND LAPPING SHOULD BE STRAGGERED
(c) REINFORCEMENT BARS SHALL BE BENT ACCORDANCE WITH STANDARD SPECIFICATIONS
(d) CLEAR CONCRETE COVER FOR ALL REINFORCEMENT TO BE 50mm

FORM WORK

(a) TYPE OF FORM WORK FOR FOUNDATION SLAB TO BE ROUGH FINISH.
(b) TYPE OF FORM WORK FOR SUB STRUCTURE TO BE SMOOTH FINISH.

SPECIAL NOTE

(a) ALLOWABLE BEARING CAPACITY OF THE GROUND AND THE PASSIVE EARTH HEIGHT SHALL BE CHECKED BY THE ENGINEER.
(b) AB = ABUTMENT

TYPICAL SECTION OF SLAB CULVERT FOR NEW CONSTRUCTION AND EXTENSION

Employer

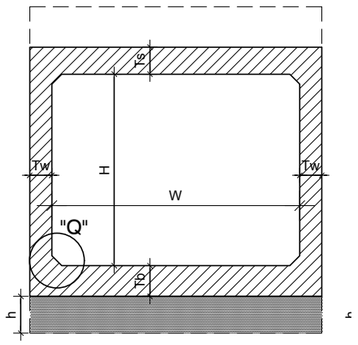
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF ROADS AND HIGHWAYS

Engineer

ROAD DEVELOPMENT AUTHORITY
PROJECT DIRECTOR
Local Bank Funded Project (LBFP)
Wing A ,8th floor, Sethsiripaya stage (II), Baththaramulla.

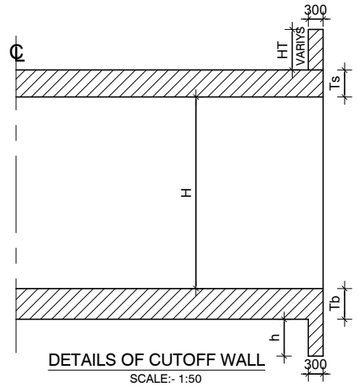
Project Title

Implementation of 100,000 km Alternative Road System as per the Government's Policy Statement "Vistas of Prosperity and Splendour"



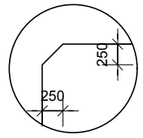
SINGLE BOX TYPE

SCALE:- 1:50



DETAILS OF CUTOFF WALL

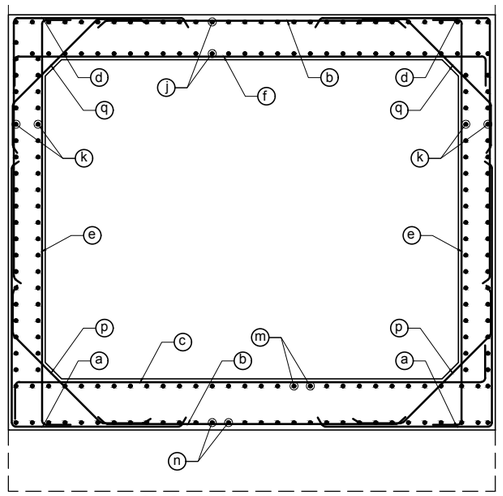
SCALE:- 1:50



DETAIL AT Q

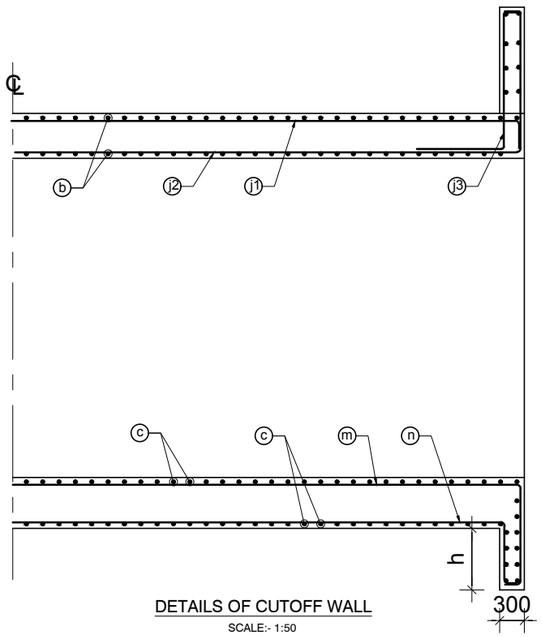
GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. THIS DRAWINGS TO SUIT SITE CONDITIONS SHALL BE DECIDED BY THE ENGINEER AT CONSTRUCTION STAGE.
3. CONCRETE GRADE SHALL BE GR. 30
4. REINFORCEMENT SHALL BE HOT ROLLED HIGH YIELD STEEL TO BS 4469WITH MIN fy = 460 N/SQMM
5. CLEAR COVER TO REINFORCEMENT SHALL BE 50 MIN.
6. MINIMUM RADIUS FOR SCHEDULING 3Ø
7. LAP LENGTH 50Ø
8. ANCHORAGE LENGTH 50Ø



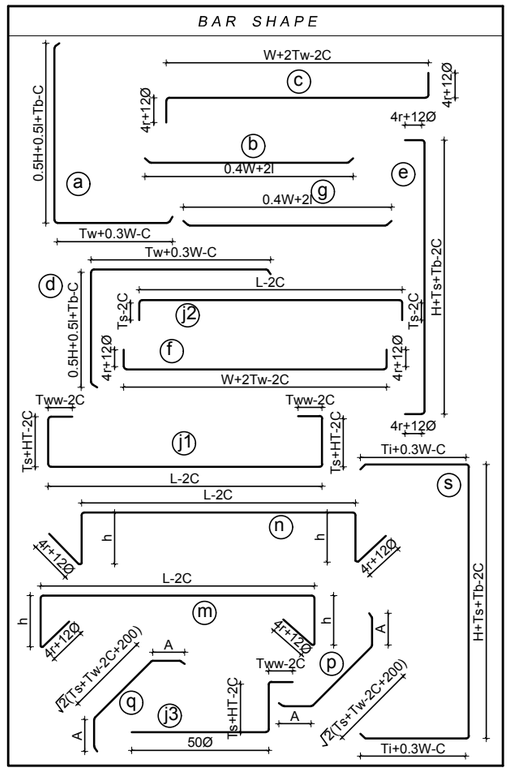
SINGLE BOX TYPE

SCALE:- 1:50



DETAILS OF CUTOFF WALL

SCALE:- 1:50



SPECIAL NOTES

1. h - DROP WALL HEIGHT.
2. W - WIDTH OF OPENING
3. H - HEIGHT OF OPENING
4. Ts - TOP SLAB THICKNESS
5. Tb - BOTTOM SLAB THICKNESS
6. Tw - SIDE WALL THICKNESS
7. TI - MID WALL THICKNESS
8. Tww - WING WALL THICKNESS TO REDUCE THE CONGESTION OF R/F BARS
9. TWO NOS OF BOTTOM CHAMFER BARS (p) CAN BE COMBINED TOGETHER WHERE EVER NEEDED,THE SAME CAN BE ADAPTED FOR TOP CHAMFER BARS(k)
10. BOTTOM BAR NOS (a) AND (b) CAN BE REPLACED WITH A NEW BAR HAVING THE DIAMETER OF BAR NO (a) ALSO THE SAME CAN BE ADOPTED FOR TOP BARS (d) AND(g)

CULVERT TYPE	INTERNAL DIMENSION		CULVERT I.D NO	EARTH COVER (m)	SLAB THICKNESS (TS)	BASE THICKNESS (TB)	WALL THICKNESS EXT(TW)	WALL THICKNESS INT(TI)	REINFORCEMENT DETAILS											
	W(m)	H(m)							a	b	c	d	e	f	g	j1-j2-j3	m	n	p	q	s
SINGLE CELL	1.0	1.0	SC - 1	-	200	200	200	-	T12-200	T12-200	T16-200	T16-200	T12-200	T16-200	T12-200	T12-250	T12-250	T12-250	T12-200	T12-200	T16-200
	2.0	1.0	SC - 3	-	250	250	200	-	T16-175	T12-175	T20-175	T16-175	T12-175	T20-175	T12-175	T12-250	T12-250	T12-250	T12-175	T12-175	T16-175
	2.5	1.0	SC - 4	-	225	225	200	-	T16-150	T12-150	T20-150	T16-150	T12-150	T20-150	T12-150	T12-250	T12-250	T12-250	T12-150	T12-150	T16-150
	1.5	1.5	SC - 6	-	200	200	200	-	T12-150	T12-150	T16-150	T16-150	T12-150	T16-150	T12-150	T12-250	T12-250	T12-250	T12-150	T12-150	T16-150
	2.0	1.5	SC - 7	-	225	225	225	-	T16-175	T12-175	T20-175	T16-175	T12-175	T20-175	T12-175	T12-250	T12-250	T12-250	T12-175	T12-175	T16-175
	1.0	2.0	SC - 9	-	200	200	200	-	T12-200	T20-200	T16-200	T16-200	T20-200	T16-200	T20-200	T12-250	T12-250	T12-250	T12-200	T12-200	T16-200
	1.5	2.0	SC - 10	-	200	200	200	-	T12-150	T12-150	T16-150	T16-150	T12-150	T16-150	T12-150	T12-250	T12-250	T12-250	T12-150	T12-150	T16-150
	1.0	2.5	SC - 13	-	200	200	200	-	T12-200	T20-200	T16-200	T16-200	T20-200	T16-200	T20-200	T12-250	T12-250	T12-250	T12-200	T12-200	T16-200

TYPICAL BOX CULVERT DETAILS

Sheet No: 08 of 14

Employer

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF ROADS AND HIGHWAYS

Engineer

ROAD DEVELOPMENT AUTHORITY
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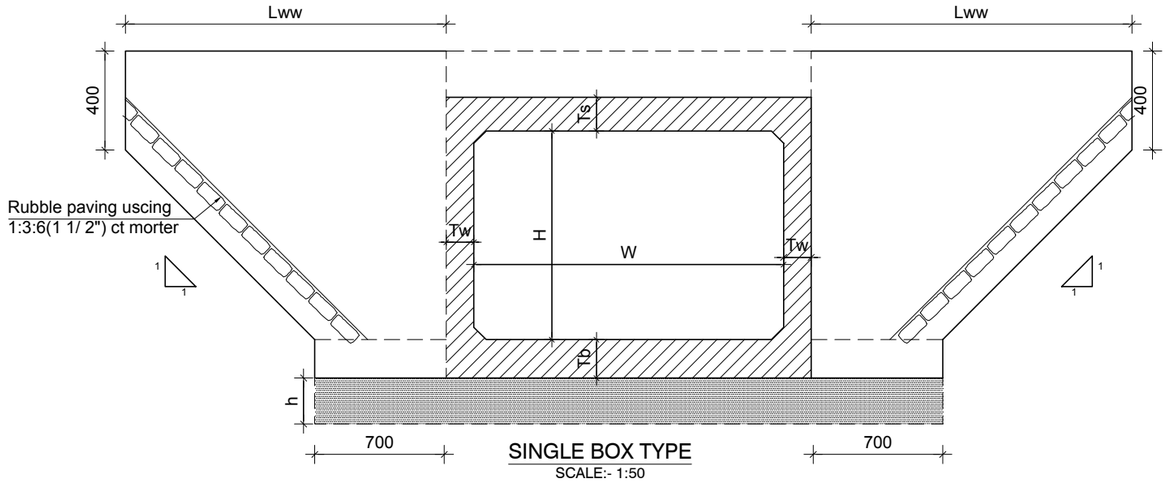
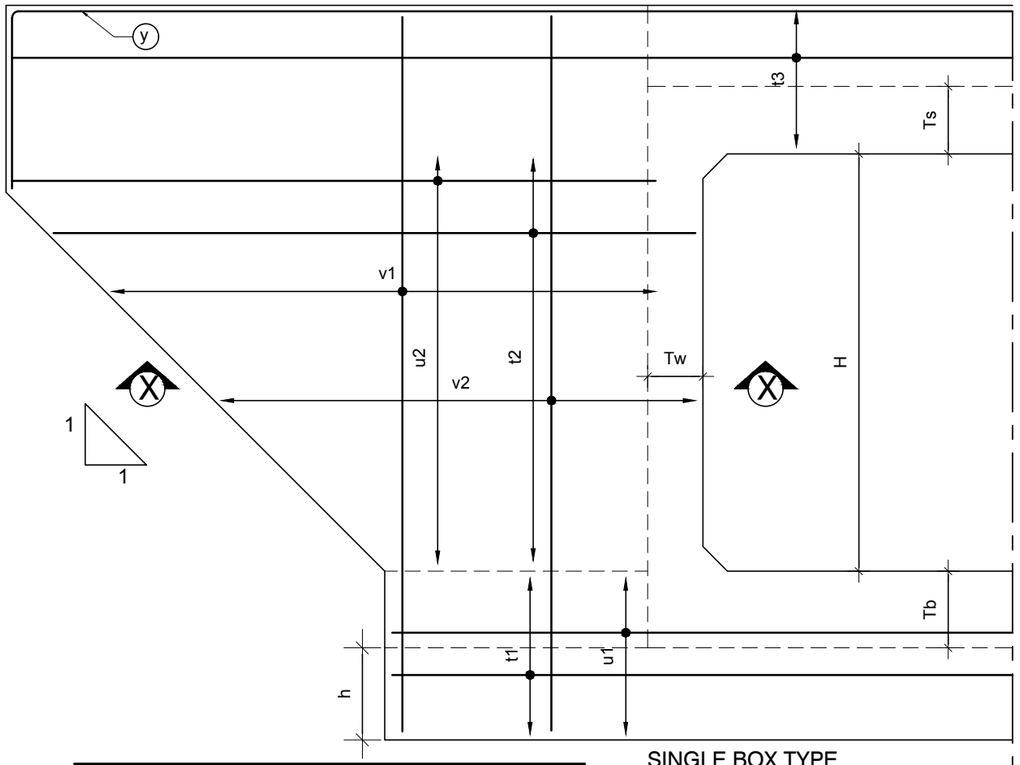
Local Bank Funded Project (LBFP)
Wing A ,8th floor, Sethsiripaya stage (II), Baththaramulla.

Project Title

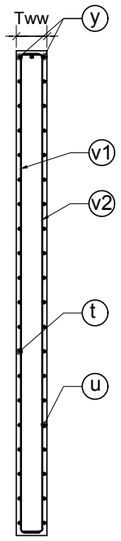
Implementation of 100,000 km Alternative Road System as per the Government's Policy Statement TP/BOX/1(2)
"Vistas of Prosperity and Splendour"



SINGLE BOX TYPE
SCALE:- 1:50



SINGLE BOX TYPE
SCALE:- 1:50



SECTION Y-Y
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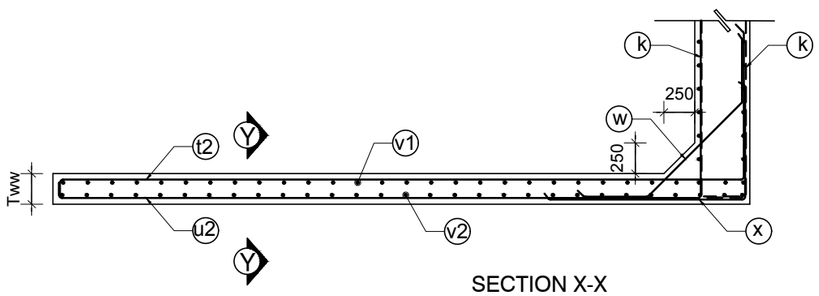

SECTION X-X
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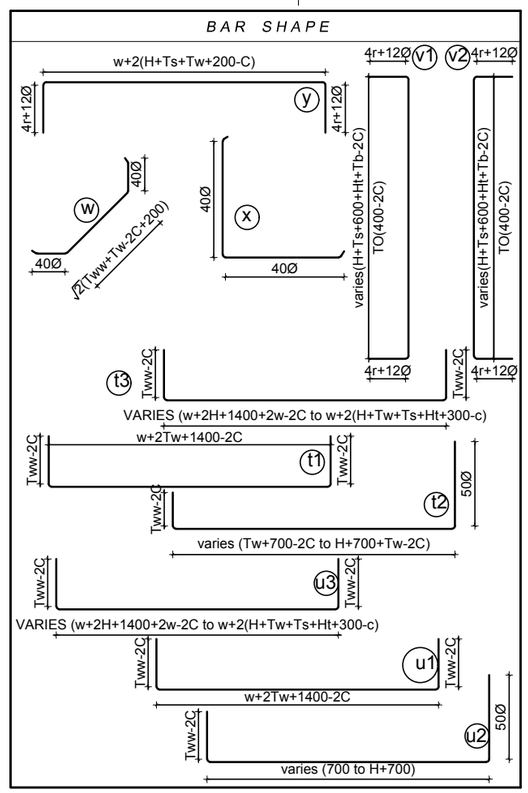


CULVERT TYPE	INTERNAL DIMENSION		WING WALL THICKNESS	REINFORCEMENT DETAILS						
	W(m)	H(m)		t1-t2-t3	v1	u1-u2-u3	v2	y	w	x
SINGLE CELL	1.0	1.0	250	T12-250	T10-250	T10-300	T10-300	2 T 25	T12-250	T12-250
	2.0	1.0	250	T12-250	T10-250	T10-300	T10-300	2 T 25	T12-250	T12-250
	2.5	1.0	250	T12-250	T10-250	T10-300	T10-300	2 T 25	T12-250	T12-250
	1.5	1.5	250	T20-250	T10-250	T10-300	T10-300	2 T 25	T12-250	T12-250
	2.0	1.5	250	T20-250	T10-250	T10-300	T10-300	2 T 25	T12-250	T12-250
	1.0	2.0	300	T16-125	T12-250	T10-250	T10-250	3 T 25	T12-250	T12-250
	1.5	2.0	300	T16-125	T12-250	T10-250	T10-250	3 T 25	T12-250	T12-250
	1.0	2.5	300	T25-125	T12-250	T10-250	T10-250	3 T 25	T12-250	T12-250

GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. THIS DRAWINGS TO SUIT SITE CONDITIONS SHALL BE DECIDED BY THE ENGINEER AT CONSTRUCTION STAGE.
3. CONCRETE GRADE SHALL BE GR. 30
4. REINFORCEMENT SHALL BE HOT ROLLED HIGH YIELD STEEL TO BS 4469WITH MIN fy = 460 N/SQMM
5. CLEAR COVER TO REINFORCEMENT SHALL BE 50 MIN.
6. MINIMUM RADIUS FOR SCHEDULING 3Ø
7. LAP LENGTH 50Ø
8. ANCHORAGE LENGTH 50Ø

SPECIAL NOTES

1. h - DROP WALL HEIGHT.
2. W - WIDTH OF OPENING
3. H - HEIGHT OF OPENING
4. Ts - TOP SLAB THICKNESS
5. Tb - BOTTOM SLAB THICKNESS
6. Tw - SIDE WALL THICKNESS
7. TI - MID WALL THICKNESS
8. Tww - WING WALL THICKNESS

TO REDUCE THE CONGESTION OF R/F BARS

9. TWO NOS OF BOTTOM CHAMFER BARS (p) CAN BE COMBINED TOGETHER WHERE EVER NEEDED,THE SAME CAN BE ADAPTED FOR TOP CHAMFER BARS(k)
10. BOTTOM BAR NOS (a) AND (b) CAN BE REPLACED WITH A NEW BAR HAVING THE DIAMETER OF BAR NO (a) ALSO THE SAME CAN BE ADOPTED FOR TOP BARS (d) AND(g)

TYPICAL BOX CULVERT WING WALL DETAILS

Employer

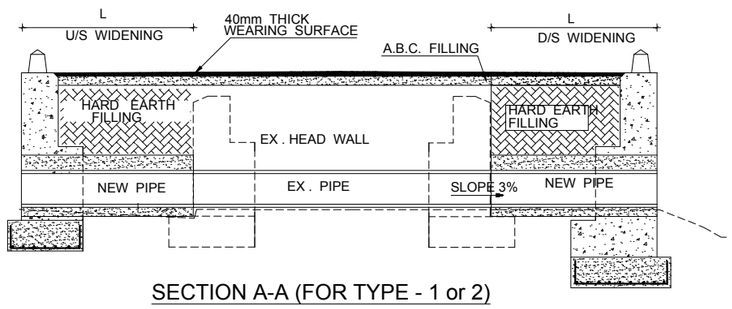
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF ROADS AND HIGHWAYS

Engineer

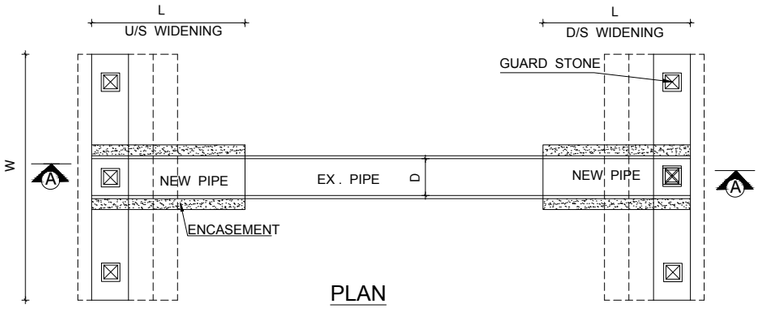
ROAD DEVELOPMENT AUTHORITY
PROJECT DIRECTOR
Local Bank Funded Project (LBFP)
Wing A ,8th floor, Sethsiripaya stage (II), Baththaramulla.

Project Title

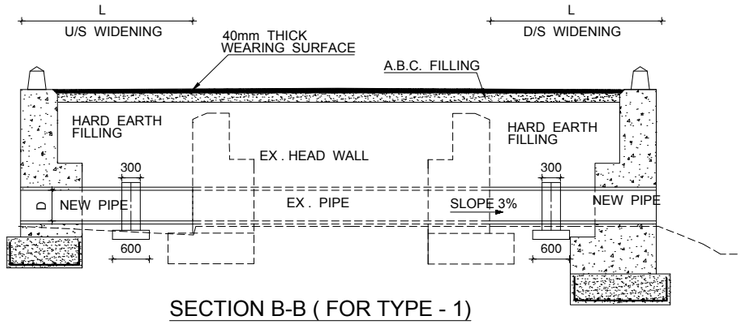
Implementation of 100,000 km Alternative Road System as per the Government's Policy Statement TP/BOX/2(2)
"Vistas of Prosperity and Splendour"



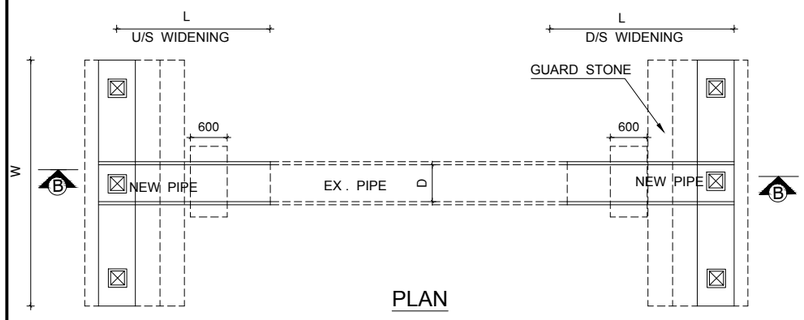
SECTION A-A (FOR TYPE - 1 or 2)



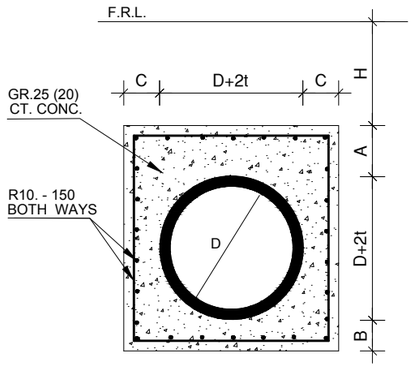
PLAN



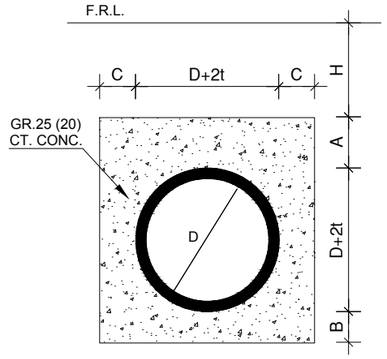
SECTION B-B (FOR TYPE - 1)



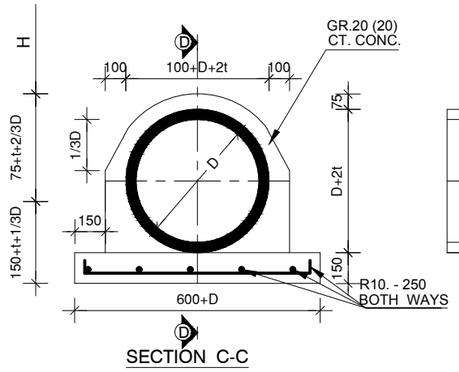
PLAN



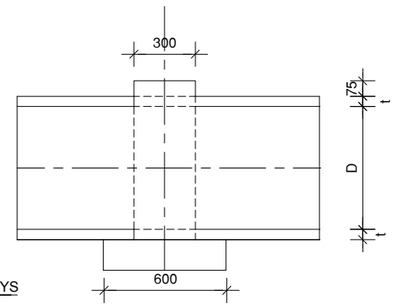
TYPE 1 - R.C ENCASEMENT



TYPE 2 - M.C ENCASEMENT

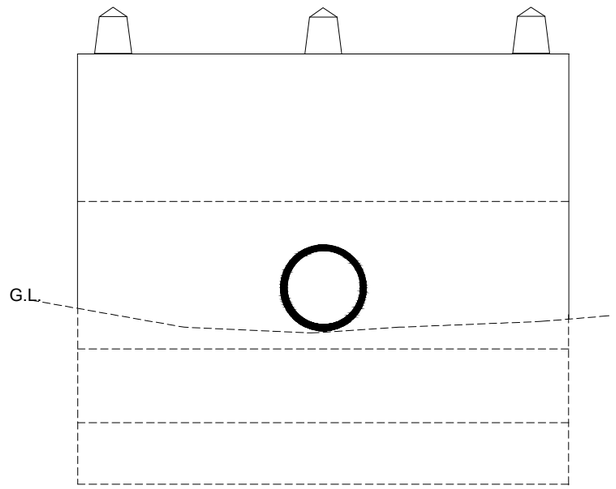


SECTION C-C



SECTION D-D

TYPE 3 - WITHOUT ENCASEMENT



ELEVATION

GENERAL NOTES

1 ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.

2. ALL BARS MARKED "R" SHALL BE HOT ROLLED MILD STEEL PLAIN BARS OF YIELD STRENGTH NOT LESS THAN 250 N/mm2.

3. REINFORCEMENT BARS SHALL BE BENT ACCORDANCE WITH STANDARD SPECIFICATIONS.

4. CONCRETE USE FOLLOWING CONCRETE GRADES FOR STRUCTURES
PIPE ENCASEMENT - C25 (20)
HEAD WALL - G20 (40) OR RR MASONRY

5. CLEAR CONCRETE COVER FOR REINFORCEMENT
ENCASEMENT - 50mm
FOUNDATION - 50mm

SPECIAL NOTES

1. TYPE OF CULVERT (TYPE-1,2 OR 3) TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER.

2. FOR NP-2 HUME PIPES, SLS 452 CERTIFICATE TO BE SUBMITTED TO ENGINEER INCLUDING THREE EDGE BEARING TEST AND SAND SAND BEARING TEST.(SPECALLY FOR TYPE 3)

3. TYPE OF END/HEAD WALL TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER.

4. LENGTH OF END/HEAD WALL "W" AND LENGTH OF EXTENSION "L" TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER. AND "t" IS THE THICKNESS OF NP2 HUME PIPE

5. PIPES SHALL BE LAID TO GRADIENT OF 1 IN 200 OR 1 IN 100.

6. PRECAST CONCRETE GUARD STONES SHALL BE FIXED AT 1500mm C/C OR AS DIRECTED BY THE ENGINEER.

7. TYPE OF CATCH PIT / CASCADE TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER.

8. TYPE OF EMBANKMENT CONSTRUCTION TO BE DONE AS DIRECTED BY BY THE ENGINEER.

SURROUND TYPE (SINGLE ROW PIPE CULVERT)

PIPE DIA.	'H' DEPTH OF PIPE BELOW F.R.L. (m)				
Ø	(0.0 - 0.5 m.)	(0.5 - 1.0 m)	(1.0 - 4.0 m.)	(4.0 - 5.0 m.)	(5.0 - 6.0 m.)
600	1	3	3	2	2
900	1	2	3	2	1
1200	1	2	3	1	1

DIMENSIONS FOR REINFORCED AND UNREINFORCED CONC.

PIPE DIA.	SURROUND CONCRETE		
D	A (mm)	B (mm)	C (mm)
600	250	150	175
900	275	175	200
1200	300	200	225

TYPICAL SECTION OF SINGLE ROW HUME PIPE CULVERTS FOR EXTENSION CONSTRUCTION

Sheet No: 10 of 14

Employer

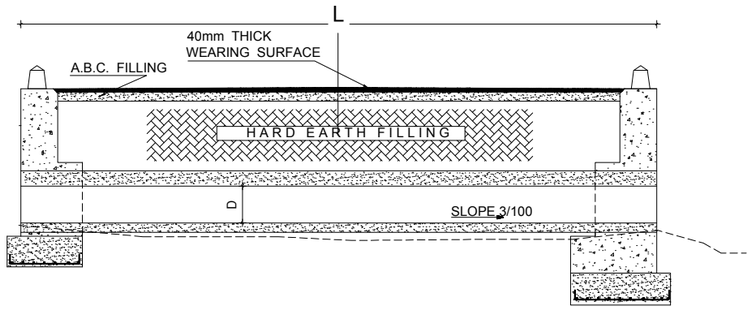
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF ROADS AND HIGHWAYS

Engineer

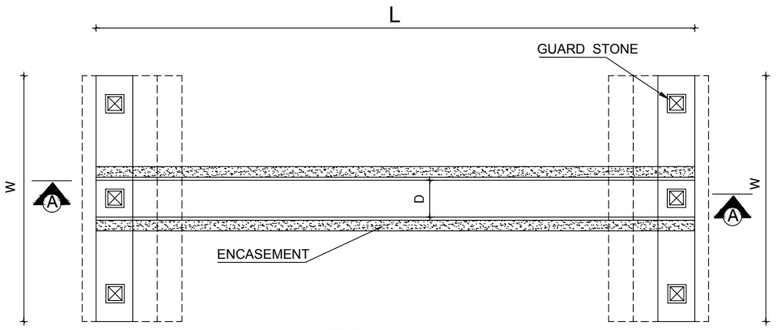
ROAD DEVELOPMENT AUTHORITY
PROJECT DIRECTOR
Local Bank Funded Project (LBFP)
Wing A ,8th floor, Sethsiripaya stage (II), Baththaramulla.

Project Title

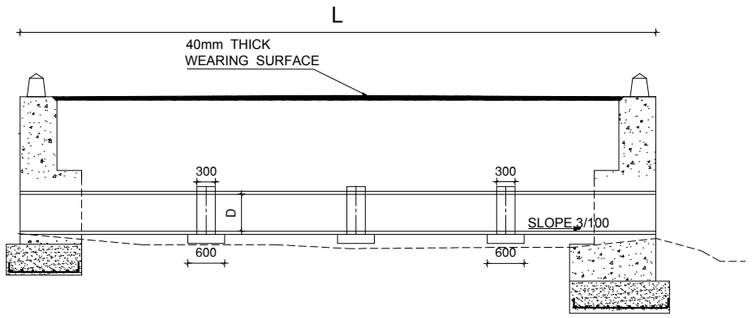
Implementation of 100,000 km Alternative Road System as per the Government's Policy Statement "Vistas of Prosperity and Splendour"



SECTION A-A (FOR TYPE - 1 or 2)



PLAN



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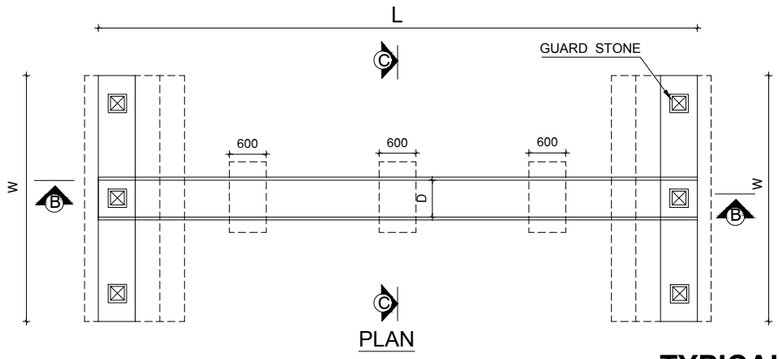
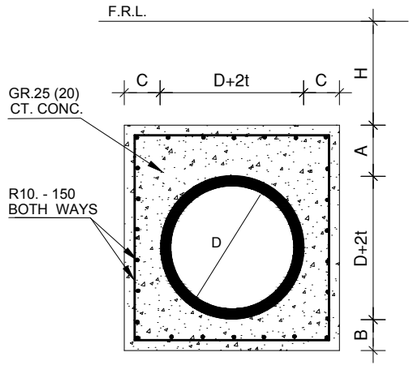
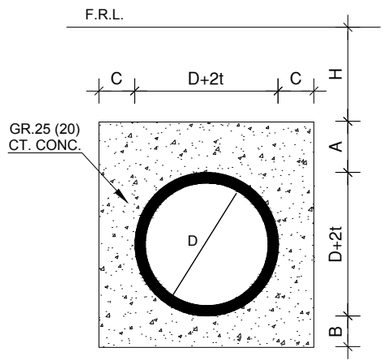


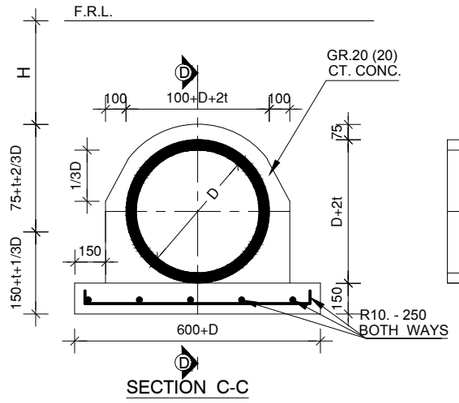
PLAN



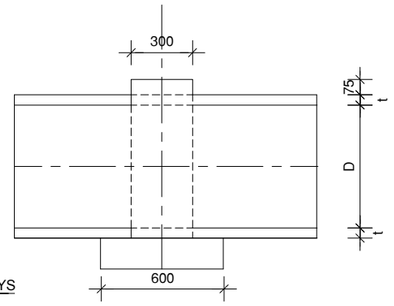
TYPE 1 - R.C ENCASEMENT



TYPE 2 - M.C ENCASEMENT

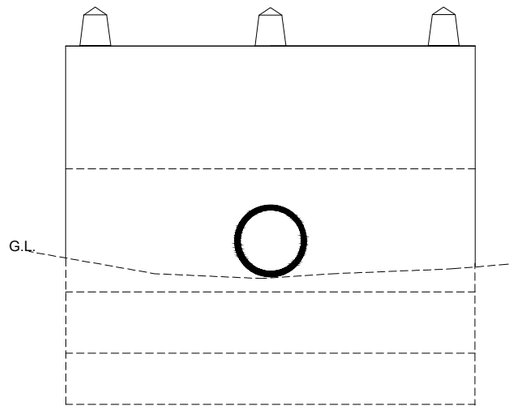


SECTION C-C



SECTION D-D

TYPE 3 - WITHOUT ENCASEMENT



ELEVATION

GENERAL NOTES

1 ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.

2. ALL BARS MARKED "R" SHALL BE HOT ROLLED MILD STEEL PLAIN BARS OF YIELD STRENGTH NOT LESS THAN 250 N/mm2.

3. REINFORCEMENT BARS SHALL BE BENT ACCORDANCE WITH STANDARD SPECIFICATIONS.

4. CONCRETE USE FOLLOWING CONCRETE GRADES FOR STRUCTURES
PIPE ENCASEMENT - C25 (20)
HEAD WALL - G20 (40) OR RR MASONRY

5. CLEAR CONCRETE COVER FOR REINFORCEMENT
ENCASEMENT - 50mm
FOUNDATION - 50mm

SPECIAL NOTES

1. TYPE OF CULVERT (TYPE-1,2 OR 3) TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER.

2. FOR NP-2 HUME PIPES, SLS 452 CERTIFICATE TO BE SUBMITTED TO ENGINEER INCLUDING THREE EDGE BEARING TEST AND SAND SAND BEARING TEST.(SPECALLY FOR TYPE 3)

3. TYPE OF END/HEAD WALL TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER.

4. LENGTH OF END/HEAD WALL "W" AND LENGTH OF CULVERT "L" TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER. AND "t" IS THE THICKNESS OF NP2 HUME PIPE

5. PIPES SHALL BE LAID TO GRADIENT OF 1 IN 200 OR 1 IN 100.

6. PRECAST CONCRETE GUARD STONES SHALL BE FIXED AT 1500mm C/C OR AS DIRECTED BY THE ENGINEER.

7. TYPE OF CATCH PIT / CASCADE TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER.

8. TYPE OF EMBANKMENT CONSTRUCTION TO BE DONE AS DIRECTED BY BY THE ENGINEER.

SURROUND TYPE (SINGLE ROW PIPE CULVERT)

PIPE DIA.	'H' DEPTH OF PIPE BELOW F.R.L. (m)				
Ø	(0.0 - 0.5 m.)	(0.5 - 1.0 m)	(1.0 - 4.0 m.)	(4.0 - 5.0 m.)	(5.0 - 6.0 m.)
600	1	3	3	2	2
900	1	2	3	2	1
1200	1	2	3	1	1

DIMENSIONS FOR REINFORCED AND UNREINFORCED CONC.

PIPE DIA.	SURROUND CONCRETE		
D	A (mm)	B (mm)	C (mm)
600	250	150	175
900	275	175	200
1200	300	200	225

TYPICAL SECTION OF SINGLE HUME PIPE CULVERTS FOR NEW CONSTRUCTION

Employer

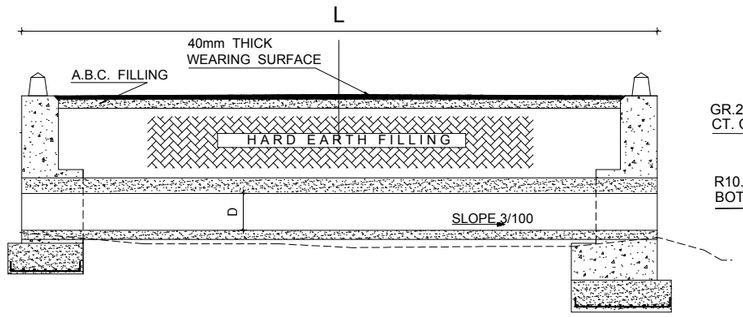
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF ROADS AND HIGHWAYS

Engineer

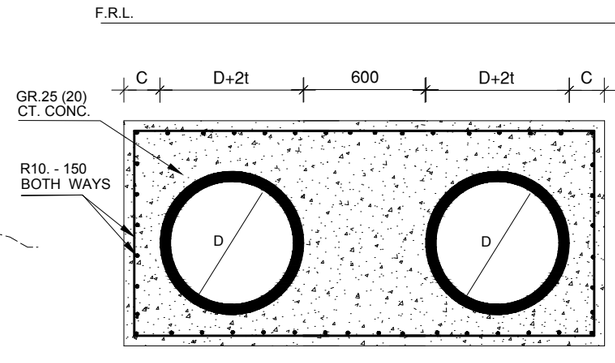
ROAD DEVELOPMENT AUTHORITY
PROJECT DIRECTOR
Local Bank Funded Project (LBFP)
Wing A ,8th floor, Sethsiripaya stage (II), Baththaramulla.

Project Title

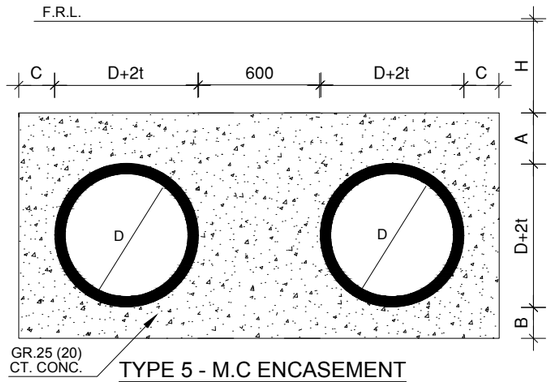
Implementation of 100,000 km Alternative Road System as per the Government's Policy Statement "Vistas of Prosperity and Splendour"



SECTION A-A (FOR TYPE - 4 or 5)



TYPE 4 - R.C ENCASEMENT



TYPE 5 - M.C ENCASEMENT

GENERAL NOTES

1 ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.

2. ALL BARS MARKED "R" SHALL BE HOT ROLLED MILD STEEL PLAIN BARS OF YIELD STRENGTH NOT LESS THAN 250 N/mm2.

3. REINFORCEMENT BARS SHALL BE BENT ACCORDANCE WITH STANDARD SPECIFICATIONS.

4. CONCRETE USE FOLLOWING CONCRETE GRADES FOR STRUCTURES
PIPE ENCASEMENT - C25 (20)
HEAD WALL - G20 (40) OR RR MASONRY

5. CLEAR CONCRETE COVER FOR REINFORCEMENT
ENCASEMENT - 50mm
FOUNDATION - 50mm

SPECIAL NOTES

1. TYPE OF CULVERT (TYPE-1,2 OR 3) TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER.

2. FOR NP-2 HUME PIPES, SLS 452 CERTIFICATE TO BE SUBMITTED TO ENGINEER INCLUDING THREE EDGE BEARING TEST AND SAND SAND BEARING TEST.(SPECALLY FOR TYPE 3)

3. TYPE OF END/HEAD WALL TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER.

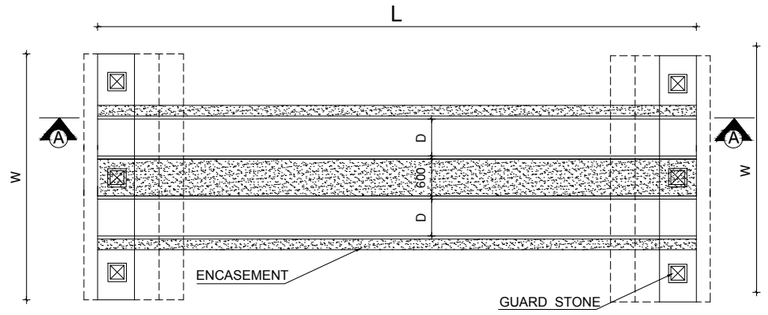
4. LENGTH OF END/HEAD WALL "W" AND LENGTH OF CULVERT "L" TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER. AND "t" IS THE THICKNESS OF NP2 HUME PIPE

5. PIPES SHALL BE LAID TO GRADIENT OF 1 IN 200 OR 1 IN 100.

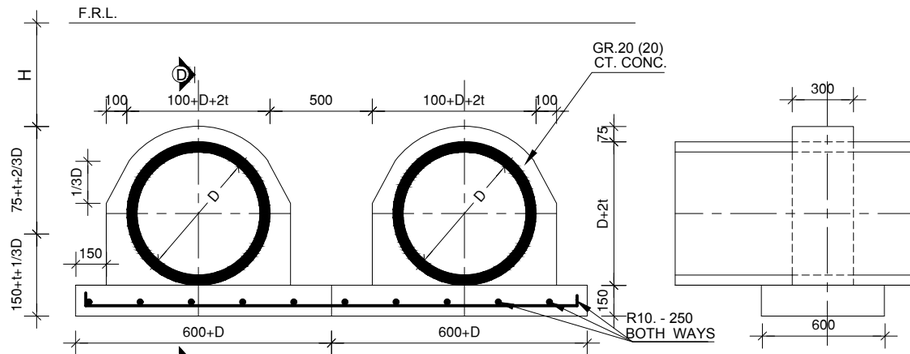
6. PRECAST CONCRETE GUARD STONES SHALL BE FIXED AT 1500mm C/C OR AS DIRECTED BY THE ENGINEER.

7. TYPE OF CATCH PIT / CASCADE TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER.

8. TYPE OF EMBANKMENT CONSTRUCTION TO BE DONE AS DIRECTED BY BY THE ENGINEER.



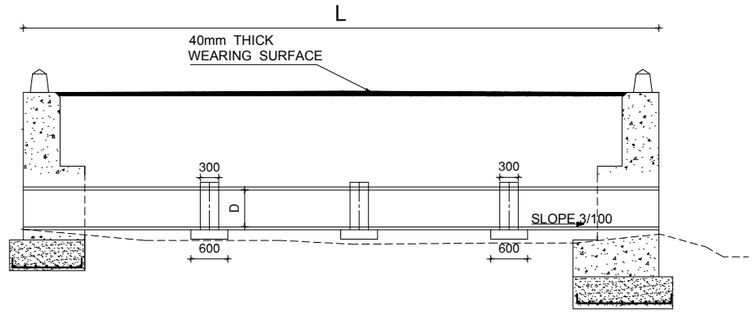
PLAN



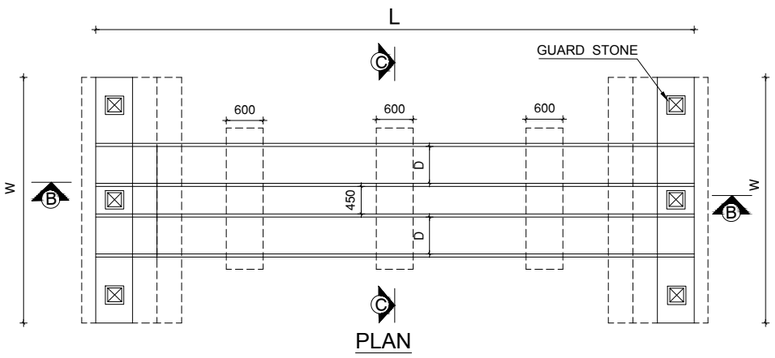
SECTION C-C

TYPE 6 - WITHOUT ENCASEMENT

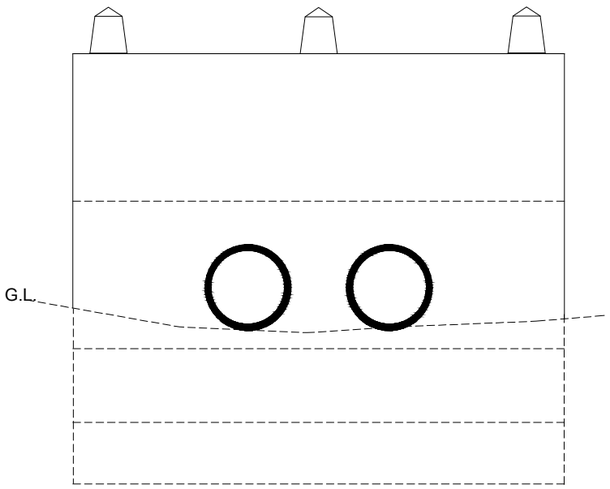
SECTION D-D



SECTION B-B (FOR TYPE - 6)



PLAN



ELEVATION

SURROUND TYPE (DOUBLE ROW PIPE CULVERT)

PIPE DIA.	'H' DEPTH OF PIPE BELOW F.R.L. (m)				
Ø	(0.0 - 0.5 m.)	(0.5 - 1.0 m)	(1.0 - 4.0 m.)	(4.0 - 5.0 m.)	(5.0 - 6.0 m.)
600	4	6	6	5	5
900	4	5	6	5	4
1200	4	5	6	4	4

DIMENSIONS FOR REINFORCED AND UNREINFORCED CONC.

PIPE DIA.	SURROUND CONCRETE		
D	A (mm)	B (mm)	C (mm)
600	250	150	175
900	275	175	200
1200	300	200	225

TYPICAL SECTION OF DOUBLE HUME PIPE CULVERTS FOR NEW CONSTRUCTION

Sheet No: 12 of 14

Employer

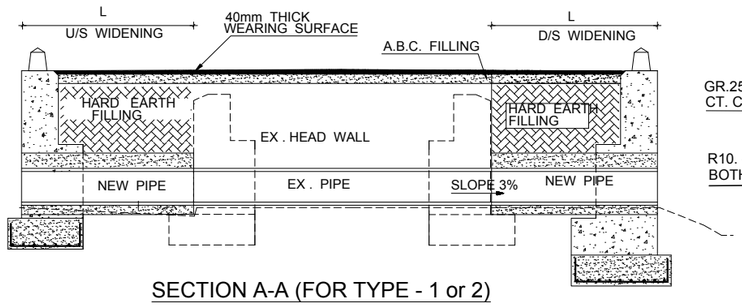
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF ROADS AND HIGHWAYS

Engineer

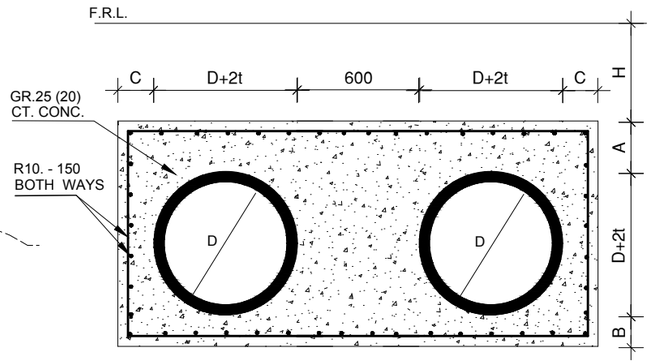
ROAD DEVELOPMENT AUTHORITY
PROJECT DIRECTOR
Local Bank Funded Project (LBFP)
Wing A ,8th floor, Sethsiripaya stage (II), Baththaramulla.

Project Title

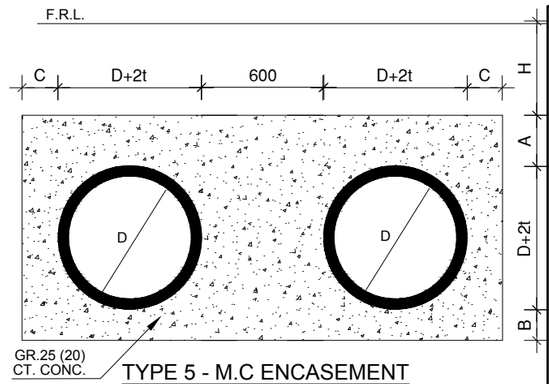
Implementation of 100,000 km Alternative Road System as per the Government's Policy Statement "Vistas of Prosperity and Splendour"



SECTION A-A (FOR TYPE - 1 or 2)



TYPE 4 - R.C ENCASEMENT



TYPE 5 - M.C ENCASEMENT

GENERAL NOTES

1 ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.

2. ALL BARS MARKED "R" SHALL BE HOT ROLLED MILD STEEL PLAIN BARS OF YIELD STRENGTH NOT LESS THAN 250 N/mm2.

3. REINFORCEMENT BARS SHALL BE BENT ACCORDANCE WITH STANDARD SPECIFICATIONS.

4. CONCRETE USE FOLLOWING CONCRETE GRADES FOR STRUCTURES
PIPE ENCASEMENT - C25 (20)
HEAD WALL - G20 (40) OR RR MASONRY

5. CLEAR CONCRETE COVER FOR REINFORCEMENT
ENCASEMENT - 50mm
FOUNDATION - 50mm

SPECIAL NOTES

1. TYPE OF CULVERT (TYPE-1,2 OR 3) TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER.

2. FOR NP-2 HUME PIPES, SLS 452 CERTIFICATE TO BE SUBMITTED TO ENGINEER INCLUDING THREE EDGE BEARING TEST AND SAND SAND BEARING TEST.(SPECALLY FOR TYPE 3)

3. TYPE OF END/HEAD WALL TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER.

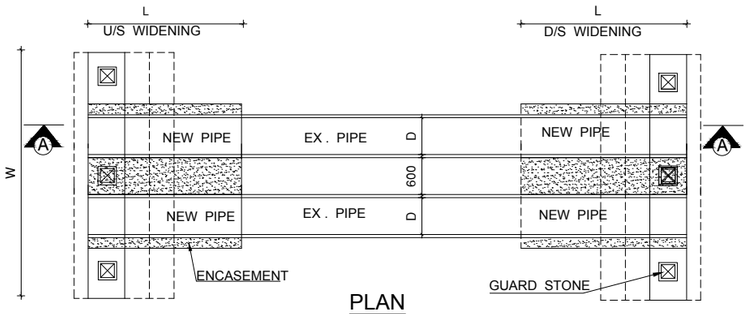
4. LENGTH OF END/HEAD WALL "W" AND LENGTH OF EXTENSION "L" TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER. AND "t" IS THE THICKNESS OF NP2 HUME PIPE

5. PIPES SHALL BE LAID TO GRADIENT OF 1 IN 200 OR 1 IN 100.

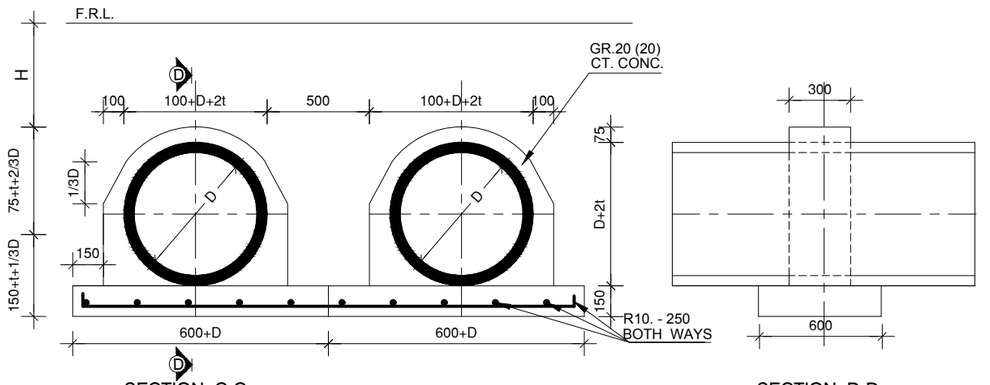
6. PRECAST CONCRETE GUARD STONES SHALL BE FIXED AT 1500mm C/C OR AS DIRECTED BY THE ENGINEER.

7. TYPE OF CATCH PIT / CASCADE TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER.

8. TYPE OF EMBANKMENT CONSTRUCTION TO BE DONE AS DIRECTED BY BY THE ENGINEER.



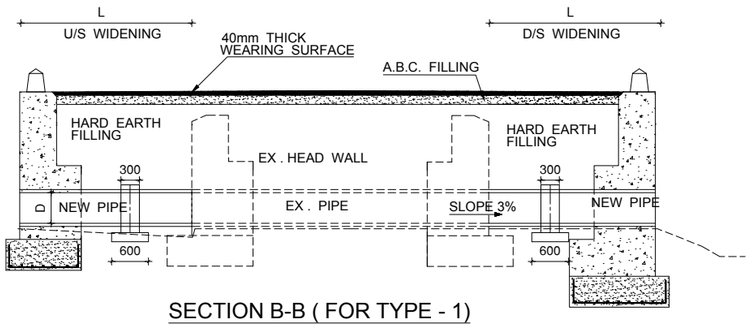
PLAN



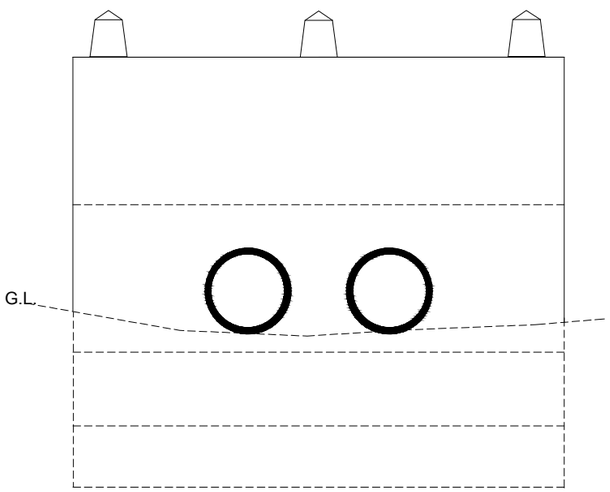
SECTION C-C

TYPE 6 - WITHOUT ENCASEMENT

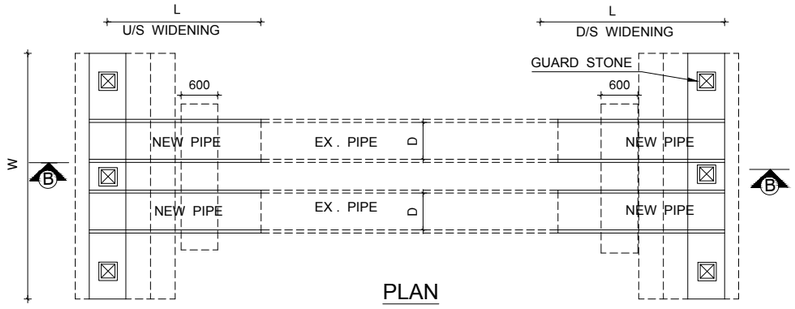
SECTION D-D



SECTION B-B (FOR TYPE - 1)



ELEVATION



PLAN

SURROUND TYPE (DOUBLE ROW PIPE CULVERT)

PIPE DIA.	'H' DEPTH OF PIPE BELOW F.R.L. (m)				
Ø	(0.0 - 0.5 m.)	(0.5 - 1.0 m)	(1.0 - 4.0 m.)	(4.0 - 5.0 m.)	(5.0 - 6.0 m.)
600	4	6	6	5	5
900	4	5	6	5	4
1200	4	5	6	4	4

DIMENSIONS FOR REINFORCED AND UNREINFORCED CONC.

PIPE DIA.	SURROUND CONCRETE		
D	A (mm)	B (mm)	C (mm)
600	250	150	175
900	275	175	200
1200	300	200	225

TYPICAL SECTION OF DOUBLE HUME PIPE CULVERTS FOR EXTENSION CONSTRUCTION

Employer

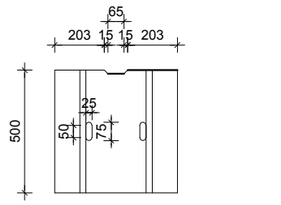
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF ROADS AND HIGHWAYS

Engineer

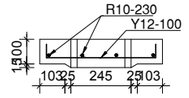
ROAD DEVELOPMENT AUTHORITY
PROJECT DIRECTOR
Local Bank Funded Project (LBFP)
Wing A ,8th floor, Sethsiripaya stage (II), Baththaramulla.

Project Title

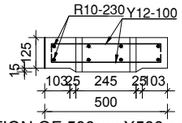
Implementation of 100,000 km Alternative Road System as per the Government's Policy Statement "Vistas of Prosperity and Splendour"



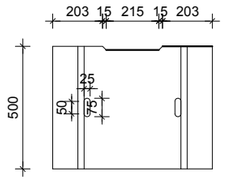
PLAN OF 500mmX500mmX100mm
COVER SLAB



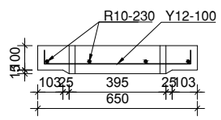
SECTION OF 500mmX500mmX100mm
LIGHT DUTY PEDESTRIAN COVER SLAB



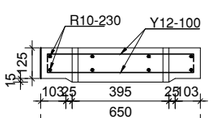
SECTION OF 500mmX500mmX100mm
HEAVY DUTY COVER SLAB



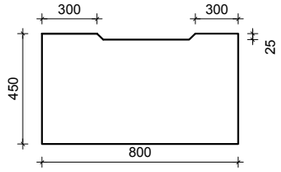
PLAN OF 650mmX500mmX100mm
COVER SLAB



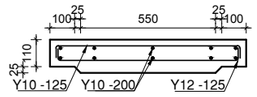
SECTION OF 650mmX500mmX100mm
LIGHT DUTY PEDESTRIAN COVER SLAB



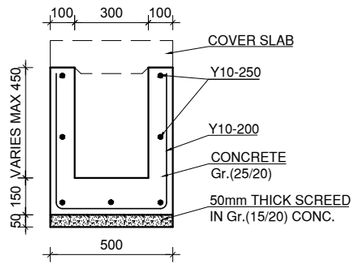
SECTION OF 650mmX500mmX100mm
HEAVY DUTY COVER SLAB



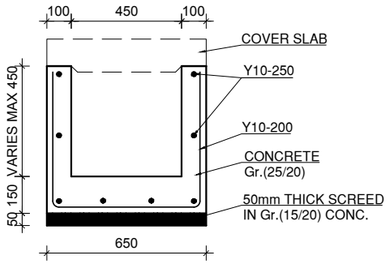
PLAN OF 800mmX450mmX110mm
COVER SLAB



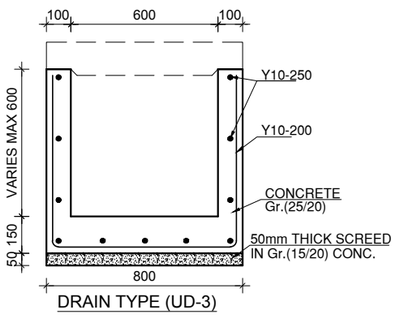
SECTION OF 800mmX450mmX110mm
HEAVY DUTY COVER SLAB



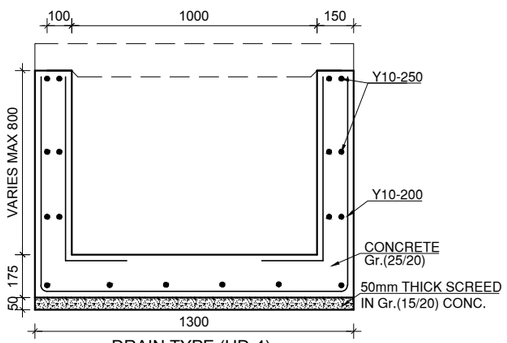
DRAIN TYPE (UD-1)



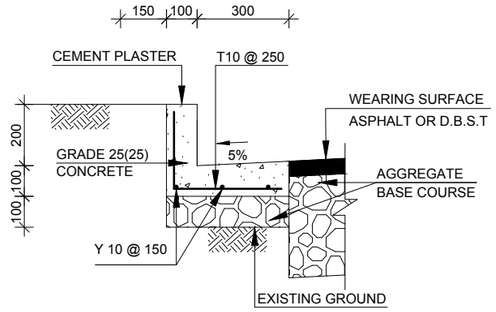
DRAIN TYPE (UD-2)



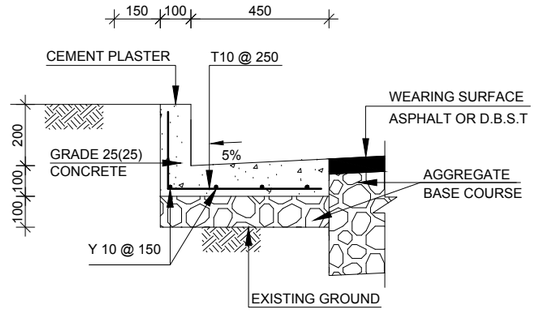
DRAIN TYPE (UD-3)



DRAIN TYPE (UD-4)

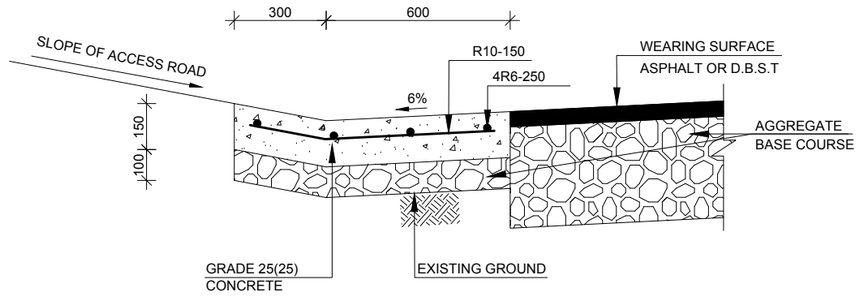


TYPE AD-1

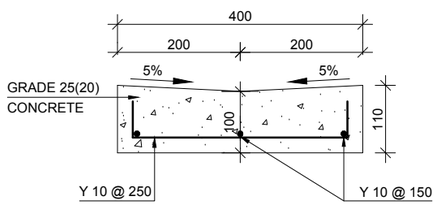


TYPE AD-2

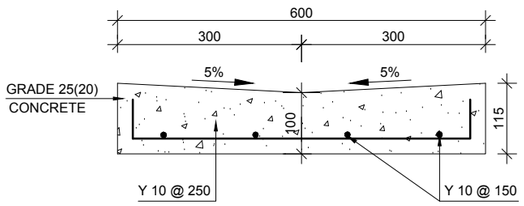
TYPICAL DETAILS OF ANGLE DRAINS



ANGLE DRAINS
(FOR PROPERTY ACCESS AREAS)



TYPE DD-2



TYPE DD-3

CONCRETE DRAINS(DISHED)

GENERAL NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. ALL MATERIALS AND WORKMANSHIP ARE TO BE IN ACCORDANCE WITH OF THE SPECIFICATION.
3. TYPE & NUMBERS OF COVER SLAB SHALL BE INSTRUCTED BY THE ENGINEER.

CONCRETE:

1. EXPOSED SHARP EDGES OF CONCRETE SHALL BE CHAMFERED.
2. APPROPRIATE PROVISIONS TO BE MADE TO FACILITATE HANDLING OF SLAB.
3. CONCRETE GRADE SHALL BE USED AS FOLLOWS:
   (a) PRECAST RCC: GRADE 25/20
   (b) DRAIN BASE: GRADE 25/20

REINFORCEMENT:

1. ALL BARS MARKED "R" SHALL BE HOT ROLLED MILD STEEL PLAIN BARS OF YIELD STRENGTH NOT LESS THAN 250 N/mm.
2. ALL BARS MARKED "Y" SHALL BE HIGH YIELD DEFORMED BARS OF YIELD STRENGTH NOT LESS THAN 460 N/mm.
3. REINFORCEMENT BARS SHALL BE BENT ACCORDANCE WITH STANDARD SPECIFICATIONS.
4. CLEAR COVER FOR ALL REINFORCEMENT SHALL BE 20 mm MINIMUM.

WEEP HOLE:

1. WEEP HOLE TO BE PROVIDED AT 2000mm C/C STRAGGERED USING 75mm DIA. PVC PIPES.
2. AT THE PAVEMENT EDGE, THE WEEP HOLES TO BE PROVIDE AT THE BOTTOM OF ABC. IF THE DEPTH OF CONCRETE DRAIN IS LESS THAN BOTTOM LEVEL OF ABC, THE WEEP HOLE AT THE PAVEMENT EDGE SHALL BE PROVIDE HIGHER THAN THE BOTTOM SLAB OF CONCRETE DRAIN 100 mm OR AS INSTRUTED BY THE ENGINEER.
3. WEEP HOLES SHALL BE PLACE 45 DEGREES HORIZONTAL ANGLE TO MATCH WATER FLOW DIRECTION OF CONCRETE "U" DRAIN.

SPECIAL NOTE

DRAIN TYPE AND THE HEIGHT OF THE DRAIN TO BE DECIDED TO SUITE SITE CONDITION AS DIRECTED BY THE ENGINEER.

TYPICAL DETAILS OF "U" DRAIN AND COVER SLAB.

Employer

DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF ROADS AND HIGHWAYS

Engineer

ROAD DEVELOPMENT AUTHORITY
PROJECT DIRECTOR
Local Bank Funded Project (LBFP)
Wing A ,8th floor, Sethsiripaya stage (II), Baththaramulla.

Project Title

Implementation of 100,000 km Alternative Road System as per the Government's Policy Statement "Vistas of Prosperity and Splendour"

APPENDIX D

EMPLOYERS REQUIREMENT

SITE INFORMATION

Province	
District	
Divisional Secretariat	
Electorate	
GN Division	
Road Name	
Total Road Length	

General Details

Chainage		Existing Road		Proposed Road		Remarks
From	To	Type	Width	Type	Width	

Details As Per The Existing Road Condition

	Gravel Section					Macadam, DBST, SBST, Tar Surface Section					Concrete Surface Section					Interlock Paved Section				
2.1	Clearing & Grubbing																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
3.1	Roadway Excavation																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
3.2	Trimming , levelling & compaction of original ground to 100% of standared density																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
3.3	Embankment construction using borrow material, Type I & Compacted in Possition																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
3.4	Supplying, Spreading & Compacting 6" x 9" Rubble																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
3.5	Supply & laying Seperation layer using Geotextile (TX65 or Equivalent)																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS

3.6	Rock Blasting																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
3.7	Rock Blasting Using Chemical																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
4.1	Approved soil supply,spreading & compacting using machinery for Sub Base Type I																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS

4.2	Scarification of existing base																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
4.3	Crusing existing damage concrete surface																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
4.4	Supplying, spreading & compaction of dense graded Aggregate Base Course (37.5mm)																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
4.5	Approved soil supply, spreading & compacting using machinery for Shoulder construction																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
5.1	Applying Prime coat using Bitumen Emulsion CSS-1at the rate of 1.0Ltr/Sqm Inclusive blinding with sand at the rate of 250m2/Cum																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS

5.2 Applying Tack coat using Bitumen Emulsion CSS-1 at the rate of 0.50 ltr/sqm.

Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS

5.3 Laying and compacting of Asphalt wearing course using pavers (40 mm Thick)

Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS

5.4 Laying and compacting of Asphalt Wearing course, manuel laying (40 mm Thick)

Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS

5.5 Laying and compacting of Asphalt Regulating course Using Binder Base

Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS

5.6 Supply, laying & compacting Grade 15 Concrete for Concrete surface rectification & Concrete Edge widening including Formwork

Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS

5.7 Supply, laying & compacting Grade 30 Concrete including formwork

Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS

5.8	Supply, laying & compacting Grade 30 Concrete 150 mm thick layer including Formwork for Gradient >=15 or Innundation locations																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
5.9	Supply & Laying Geo-Composite																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
5.10	Concrete paving Cement Block (Grade 25) size of 220mm x 100mm x80mm Cement colour approved by Engineer).																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
6.1	Cutting Earth drains & leadaway drains in unclassified soil																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
6.2	Concrete L drains 0.2 x 0.3 x 0.1																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
6.3	Concrete Dish drains Type 1 (Total width 0.4m)																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
6.4	Concrete Dish drains Type 2 (Total width 0.6m)																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
6.5	Concrete U drains 0.3 x 0.3 x 0.1																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
6.6	Concrete U drains 0.45 x 0.45 x 0.1																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS

6.6A	Concrete U drains 1.0 x 1.0 x 0.15																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
6.6B	Concrete U drains 0.6 x 0.8 x 0.15																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
6.7	Cover slabs .5 x .5 x 0.115 LD																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
6.8	Cover slabs .5 x .5 x 0.125 HD																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
6.9	Cover slabs .65 x .5 x 0.125 LD																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
6.10	Cover slabs .65 x .5 x 0.125 HD																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
6.11	Cover slabs 1.3 m x 0.5m x 0.125m LD																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
6.12	Cover slabs 1.3 m x 0.5m x 0.150m HD																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
6.13	Cover slabs 0.9 m x 0.5m x 0.125m LD																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
6.14	Cover slabs 0.9 m x 0.5m x 0.150m HD																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
6.15	Construction of Subsurface drains using 160mm dia type 1000 P.V.C pipes																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS

7.1	M.C.R-1 Maximum 1.0 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.2	M.C.R-2 Maximum 1.5 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.3	M.C.R-3 Maximum 2.0 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.4	M.C.R-4 Maximum 2.5 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.5	M.C.R-9 Maximum 3.0m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.6	M.C.R-2 Maximum 3.5 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.7	M.C.R-3 Maximum 4.0 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.8	M.C.R-4 Maximum 4.5 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.9	M.C.R-9 Maximum 5.0m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.10	R.C-1 Maximum 1.5m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.11	R.C-2 Maximum 2.0 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.12	R.C-3 Maximum 2.5 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS

7.13	R.C-4 Maximum 3.0 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.14	R.C-5 Maximum 3.5 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.15	C.B.G-1 Maximum 1.5 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.16	C.B.G-2 Maximum 2.5 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.17	C.B.G-3 Maximum 3.5 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.18	C.B.G-4 Maximum 4.5 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.19	R.B.G-1 Maximum 1.5 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.20	R.B.G-2 Maximum 2.5 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.21	R.B.G-3 Maximum 3.5 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
7.22	R.B.G-4 Maximum 4.5 m hight																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS

8.1	Supply & Road Marking into 3.0 mm thick using reflectorized thermoplastic paint including Transport																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
8.2	Single pole, sign area up to 0.5m2																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
8.3	Double Pole, Sign Area upto 3m2																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
8.4	Chervon warning sign																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
8.5	Foot walk Kerb																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
8.6	Foot Interlock paving																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
8.7	Graverly soil base layer for foot walk																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
8.8	Grass Sodding (Turfing)																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
8.9	Supply & Laying 450 mm dia Hume pipes for Access Roads																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS
8.10	Supply & Laying 610 mm dia Hume pipes for Access Roads																			
	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS	Description	From Ch.	To Ch.	LHS	RHS

1.6	**Allow for relocation of Public Utilities**																			
	Shifting of Eletrical Posts																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Shifting of Electric Cable lines																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Shifting of Telephone Post																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Shifting of Telephone Cable lines																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Shifting of Water Pipe lines (PVC pipe)																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Shifting of Water Pipe lines (GI pipe)																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
1.7	**Dismantle & removal of Existing Structures**																			
	Dismantle & remove brick masonry structures / culvert pipes																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Dismantle & remove Random Rubble masonry structures																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Dismantle & remove Dress stone mosonary structures																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Remove fencing																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Removal of existing buildings floor area																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Removal of existing interlock area																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		

1.8	**Removal of Trees, Stumps and cutting of Overhanging Branches**																			
	Removing Trees																			
	- Girth 300 to 600 mm																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	- Girth 600 to 1,200 mm																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	- Girth 1,200 to 2,000 mm																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	- Girth over 2000 mm																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Cutting and Removing of Overhanging Branches																			
	- Girth 300 to 600 mm																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	- Girth 600 to 1,200 mm																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	- Girth over 1200 mm																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
1.9	**Allow sum for Construction of Culverts**																			
	Single Row Without Encasement (Type 3)																			
	Construction of 600 mm dia Culverts																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Construction of 900mm dia Culverts																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Construction of 1200mm dia Culverts																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Single Row With RF Encasement (Type 1)																			
	Construction of 600 mm dia Culverts																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Construction of 900mm dia Culverts																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Construction of 1200mm dia Culverts																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Single Row With Mass concrete Encasement (Type 2)																			
	Construction of 600 mm dia Culverts																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Construction of 900mm dia Culverts																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Construction of 1200mm dia Culverts																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		
	Double Row Without Encasement (Type 6)																			
	Construction of 600 mm dia Culverts																			
			Location	**Side**			**Location**	**Side**				**Location**	**Side**				**Location**	**Side**		

	Construction of 900mm dia Culverts																			
			Location	Side			Location	Side				Location	Side				Location	Side		
	Construction of 1200mm dia Culverts																			
			Location	Side			Location	Side				Location	Side				Location	Side		
	Double Row With RF Encasement (Type 4)																			
	Construction of 600 mm dia Culverts																			
			Location	Side			Location	Side				Location	Side				Location	Side		
	Construction of 900mm dia Culverts																			
			Location	Side			Location	Side				Location	Side				Location	Side		
	Construction of 1200mm dia Culverts																			
			Location	Side			Location	Side				Location	Side				Location	Side		
	Double Row With Massconcrete Encasement (Type 5)																			
	Construction of 600 mm dia Culverts																			
			Location	Side			Location	Side				Location	Side				Location	Side		
	Construction of 900mm dia Culverts																			
			Location	Side			Location	Side				Location	Side				Location	Side		
	Construction of 1200mm dia Culverts																			
			Location	Side			Location	Side				Location	Side				Location	Side		
	Slab Culverts																			
	Construction of Slab Culverts Width - 0.9 m																			
			Location	Side			Location	Side				Location	Side				Location	Side		
	Construction of Slab Culverts Width - 1.2 m																			
			Location	Side			Location	Side				Location	Side				Location	Side		
	Construction of Slab Culverts Width - 2.0 m																			
			Location	Side			Location	Side				Location	Side				Location	Side		

	Box Culverts																			
	Box Culvert (Size -1 x 1)																			
			Location	Side			Location	Side				Location	Side				Location	Side		
	Box Culvert (Size -1.5 x 1.5)																			
			Location	Side			Location	Side				Location	Side				Location	Side		
	Box Culvert (Size -2 x 1)																			
			Location	Side			Location	Side				Location	Side				Location	Side		
	Box Culvert (Size -2 x 1.5)																			
			Location	Side			Location	Side				Location	Side				Location	Side		
	Box Culvert (Size -2.5 x 1)																			
			Location	Side			Location	Side				Location	Side				Location	Side		
1.10	**Tres plantation & Maintainance**																			
	Tree locations																			
			Location	Side			Location	Side				Location	Side				Location	Side		

Table 01: Parameters for Asphalt Concrete Surfacing

						Overlay							Widening			Pothole patching	
																Minor, depth <=50mm	Major, depth >50mm
Type	**Existing Road Surfacing**	**Existing Surface Condition**	**Carriage Width**	**Camber**	**Normal Cross Fall**	**Minimum Subbase (mm)**	**Subbase for cambering (mm)**	**Minimum ABC (mm)**	**Average ABC for cambering(mm)**	**Additional ABC**	**Minimum Wearing Course (mm)**	**Average Wearing Course for cambering (mm)**	**Total ABC Thick(mm)**	**Wearing Course (mm)**	**Average Wearing Course for cambering (mm)**	**Binder Course (mm)**	**ABC (mm)**
A 1	Soil / Gravel Road		<= 4.0m	One way	2.00%	150	50	150		15%	40						
A 2	Soil / Gravel Road		> 4.0 m	Two way	2.50%	150	50	150		15%	40						
A 3	Soil Road	If length <= 1km FOR LOCAL ROADS	<= 4.0m	One way	2.00%	150	50	100		15%	40						
			> 4.0 m	Two way	2.50%												
A 4	Gravel Roads	If length <= 1km FOR LOCAL ROADS	<= 4.0m	One way	2.00%			100		15%	40						
			> 4.0 m	Two way	2.50%												
A 5	Gravel Roads	If length > 1km FOR LOCAL ROADS	<= 4.0m	One way	2.00%	150		125		15%	40						
			> 4.0 m	Two way	2.50%												
A 6	Maccadam/SB ST/DBST	fairly good/ less potholes/minor potholes	<= 4.0m	One way	Existing or 1%						40	10	200	40	10	30	200
A 7	Maccadam/SB ST/DBST	fairly good/ less potholes/minor potholes	> 4.0 m	Two way	Existing or 1%						40	10	200	40	10	30	200
A 8	Maccadam/SB ST/DBST	weak surface/ potholes/large potholes	<= 4.0m	One way	2.00%			125	30	15%	40		350	40			
A 9	Maccadam/SB ST/DBST	weak surface/ potholes/large potholes	> 4.0 m	Two way	2.50%			125	50	15%	40		350	40			
A 10	Maccadam/SB ST/DBST	weak surface/ potholes/large potholes FOR LOCAL ROADS	<= 4.0m	One way	2.00%			100	50	15%	40		250	40			
			> 4.0 m	Two way	2.50%												

Table 02: Parameters for Concrete Surfacing

						Overlay							Widening					Pothole patching
Type	**Existing Road Surfacing**	**Condition**	**Carriage Width**	**Camber**	**Normal Cross Fall**	**Minimum Subbase (mm)**	**Subbase for cambering (mm)**	**Minimum ABC (mm)**	**ABC for cambering (mm)**	**Minimum Concrete G30/20 (mm)**	**Average Concrete for cambering(mm)**	**Minimum Wearing Course (mm)**	**ABC (mm)**	**Concrete G15/40 (mm)**	**Concrete G30/20 (mm)**	**Average Concrete for camberin g(mm)**	**Wearing Course (mm)**	**ABC (mm)**
C 1	Gravel Road		<= 4.0m	One way	1.00%	150	50			150								
C 2	Gravel Road	LOCAL ROADS			1.00%	150	50			125								
C 3	Maccadam/SBST/ DBST	Gradient >=15 or Inundation	<= 4.0m	One way	1.00%			100	30	150			200					
C 4	Maccadam/SBST/ DBST	Gradient >=15 or Inundation	> 4.0m	two way	1.00%			100	30	150			200					200
C 5	Poor Concrete Base		<= 4.0m	One way	1.00%					100	30			Existing /100	100	30		
C 6	Good Concrete Base		<= 4.0m	One way	1.00%							40			Existing /150		40	

Table 03: Parameters for Interlock Paving

					Overlay		
Type	Existing Road Surfacing	Carriage Width	Camber	Normal Cross Fall	ABC (mm)	Sand bedding (mm)	Interlock
I 1	Gravel Road	<= 4.0m	One way	1.00%		50	80
I 2	Base failed Interlock	Any	One way	1.00%	100	50	80

APPENDIX E

REHABILITATION/ IMPROVEMENT OF ROADS UNDER THE IMPLEMENTATION OF 100,000 KM ALTERNATIVE ROAD SYSTEM UNDER THE GOVERNMENT'S POLICY STATEMENT OF "VISTAS OF PROSPERITY AND SPLENDOUR"				
Province		**Western**		
District		**Colombo**		
Package No.		**Package 10**		
Contract Number		**MORH/RDA/LBRRP/WP/COL/2020/P10**		
Road Serial Nos.		**P10-1**		
Road Name	**Road Length (m)**	**Divisional Secretariat**	**Electorate/s**	**GN Division/s**
01) Road Name	-	-	-	-
02)	-	-	-	-
03)	-	-	-	-
04)	-	-	-	-
05)	-	-	-	-
06)	-	-	-	-
07)	-	-	-	-
08)	-	-	-	-
09)	-	-	-	-
10)	-	-	-	-
11)	-	-	-	-
12)	-	-	-	-
13)	-	-	-	-
14)	-	-	-	-
15)	-	-	-	-
16)	-	-	-	-
17)	-	-	-	-
18)	-	-	-	-
19)	-	-	-	-
20)	-	-	-	-

Contract Number **MORH/RDA/LBRRP/WP/COL/2020/P10**

SUMMARY OF PRICE SHEDULE

Item	Sub Activity Description	Unit	Engineer's Estimate Amount
Item 01	Preliminaries (Allow for Mobilization and Demobilization of plant and equipment, Provide all necessary Insurances & Bonds)	LS	682,821.33
Item 02	Site Clearing	LS	-
Item 03	Earth works	LS	-
Item 04	Bases & shoulder work	LS	-
Item 05	Surface application	LS	-
Item 06	Construction of Drainage Structures	LS	-
Item 07	Construction of Retaining Structures	LS	-
Item 08	Incidential construction	LS	-
	Sub total 01 (Item No. 1 to 8)		**682,821.33**
Item 09	Provide & maintain Project Name Board, Allow for traffic safety & cotrol providing, erecting and maintaining barricades, road signs, markings, lights etc, Allow for relocation of Public Utilities, Dismantle & removal of Existing Structures, Removal of Trees, Stumps and cutting of Overhanging Branches, Allow sum for Construction of Culverts	PS	228,530.00
	Sub total 02 (Sub total 01 + Item No. 9))		**911,351.33**
	Contingency for the Package		68,282.13
	TOTAL Engineers estimate / Bid Price (Without VAT)		**979,633.46**

	Existing Road Section	Gravel Section	Macadam, DBST, SBST, Tar Surface Section	Concrete Surface Section	Interlock Paved Section

SAMPLE ESTIMATE OF THE EXPENSE NECESSARY TO BE INCURRED FOR THE REHABILITATION OF RURAL ROADS

DATA SHEET

Ex- P01-1 / P01(QA)-1

	Province	Western	District	Colombo	Road Serial No.	P10-1
	Divisional Secretariat					
	Electorate/s					
	GN Division/s					
	Road Name	Road Name				
	Road Improvemt Type	A9				
	Road Length	0.000 km				
	Avg. Road Width (Existing)	#DIV/0! m				
	Road width (Proposed)	#DIV/0! m				

Sample Transport Distances - (NOTE - Material Distances to be Decided by the Estimator)							
Fine Agg.	30	km	Course Agg.	30	km	Asphalt	60	km
			Emulsion	50	km	Soil	50	km

	Existing Road Section	Gravel Section			Macadam, DBST, SBST, Tar Surface Section			Concrete Surface Section			Interlock Paved Section		
	Length	0		m	0		m	0		m	0		m
	Proposed Width	0.0		m	0.0		m	0.0		m	0.0		m
	Avg.Existing Width	0.0		m	0.0		m	0.0		m	0.0		m
2.1	**Clearing & Grubbing**												
2.1.1	Cumulative Area (LHS & RHS)	0		Sq.m	0		Sq.m	0		Sq.m	0		Sq.m
3.1	**Roadway Excavation**												
		LHS	RHS		LHS	RHS		LHS	RHS		LHS	RHS	
3.1.1	Cumulative Cut Slope Volume	0	0	Cu.m	0	0	Cu.m	0	0	Cu.m	0	0	Cu.m
3.1.2	Edge Widening												
	Total Length	N/A			0	0	m	0	0	m	0	0	m
	Avg.Width	N/A			0.25	0.25	m	0.25	0.25	m			m
	Avg.Depth	N/A			0.200		m	0.125		m	N/A		
3.1.3	Shoulder Excavation												
	Cumulative Length	0	0	m	0	0	m	0	0	m	0	0	m
	Avg.Width	0.5	0.5	m	0.5	0.5	m	0	0	m			m
	Depth	0.100	0.100	m	0.200	0.200	m	0.100	0.100	m	0.000	0.000	m
3.1.4	Excavation for Base Faliers	LHS	RHS		LHS	RHS		LHS	RHS		LHS	RHS	
	Cumulative Volume	0	0	Cu.m	0	0	Cu.m	0	0	Cu.m	0	0	Cu.m
3.2	**Trimming , levelling & compaction of original ground to 100% of standared density**												
		LHS	RHS		LHS	RHS		LHS	RHS		LHS	RHS	
3.2.1	Edge Widening												
	Cumulative Length	N/A			0	0	m	0	0	m	0	0	m
	Avg.Width	N/A			0.25	0.25	m	0.25	0.25	m	0	0	m
3.2.2	Shoulder Excavation												
	Cumulative Length	0	0	m	0	0	m	0	0	m	0	0	m
	Avg.Width	0.5	0.5	m	0.5	0.5	m	0	0	m	0	0	m
3.2.3	Foam a new Road	0		Sq.m	N/A			N/A			N/A		
3.3	**Embankment construction using borrow material, Type I & Compacted in Possition**												
		LHS	RHS		LHS	RHS		LHS	RHS		LHS	RHS	
3.3.1	Cumulative Volume	0	0	Cu.m	0	0	Cu.m	0	0	Cu.m	0	0	Cu.m
3.4	**Supplying, Spreading & Compacting 6" x 9" Rubble**												
		LHS	RHS		LHS	RHS		LHS	RHS		LHS	RHS	
3.4.1	Cumulative Volume			Cu.m	0	0	Cu.m	0	0	Cu.m	0	0	Cu.m
3.5	**Supply & laying Seperation layer using Geotextile**												
	Seperation layer (Rubble Pack & ABC)												
3.5.1	Cumalative Area	0		Sq.m	N/A			N/A			N/A		
3.6	**Rock Blasting**												
		LHS	RHS		LHS	RHS		LHS	RHS		LHS	RHS	
3.6.1	Cumulative Volume	0	0	Cu.m	0	0	Cu.m	0	0	Cu.m	0	0	Cu.m
3.7	**Rock Blasting Using Chemical**												
		LHS	RHS		LHS	RHS		LHS	RHS		LHS	RHS	
3.7.1	Cumulative Volume	0	0	Cu.m	0	0	Cu.m	0	0	Cu.m	0	0	Cu.m
4.1	**Approved soil supply,spreading & compacting using machinery for Sub Base Type I**												
4.1.1	Camber Correct												
	Cumulative Length	0		m	N/A			N/A			N/A		
	Width	0		m	N/A			N/A			N/A		
4.1.2	Overlay												
	Cumulative Length	0		m	N/A			N/A			N/A		
	Width	0		m	N/A			N/A			N/A		

4.2	**Scarification of existing base**									
4.2.1	Scraifing									
	Cumulative Length	N/A		0	m	N/A		N/A		
	Avg.Width	N/A		0	m	N/A		N/A		
4.3	**Crusing Existing Concrete Surface**									
	Cumalative length	N/A		N/A		0.000		N/A		
	Avg.Width	N/A		N/A		0.000		N/A		
4.4	**Supplying, spreading & compaction of dense graded Aggregate Base Course (37.5mm)**									
4.4.1	Overlaying									
	Cumulative Length	0	m	0	m	0		N/A		
	Thickness	0.225	m	0.225	m	0.225		N/A		
4.4.2	Camber Correct									
	Cumulative Length	N/A		0	m	0		N/A		
	Thickness	N/A		0.050	m	0.050		N/A		
4.4.3	Edge Widning									
	LHS (Cumulative)	N/A		0	m	0		N/A		
	RHS (Cumulative)	N/A		0	m	0		N/A		
	Thickness (without Overlay)	N/A		0.200	m	0.125		N/A		
4.4.4	Base Falier (Cumulative ABC Volume)	N/A		0.000	Cu.m	N/A		0.000	Cu.m	
4.4.5	Major Pothole Patching (Cumulative)	N/A	Sq.m	0.000	Sq.m	N/A	Sq.m	N/A	Sq.m	
4.4.6	Gradiant more than 15% and top surface finish with 150mm thick Concrete surfacing									
	Overlaying length 100mm thick (Cumulative)	N/A		0	m	N/A		N/A		
4.5	**Approved soil supply, spreading & compacting using machinery for Shoulder construction**									
4.5.1	Shoulder Length									
	LHS (Cumulative)	0	m	0	m	0	m	0	m	
	RHS (Cumulative)	0	m	0	m	0	m	0	m	
	Shoulder Thickness	0.300	m	0.390	m	0.225	m	0.130	m	
5.1	**Applying Prime coat using Bitumen Emulsion CSS-1at the rate of 1.0Ltr/Sqm Inclusive blinding with sand at the rate of 250m2/Cum**									
5.1.1	Overlay Length (Cumulative)	0	m	0	m	0		N/A		
				LHS RHS						
5.1.2	For Edgewidening ONLY IF NO ABC OVERLAY			0 0	Sq.m					
5.2	**Applying Tack coat using Bitumen Emulsion CSS-1 at the rate of 0.50 ltr/sqm.**									
5.2.1	Overlay Length (Cumulative)	0	m	0	m	0	m	N/A		
5.3	**Laying and compacting of Asphalt wearing course using PAVERS**									
5.3.1	Asphalt length (Cumulative)	0	m	0	m	0	m	N/A		
5.3.2	Asphalt thickness	0.040	m	0.040	m	0.040	m	N/A		
5.3.3	Camber Correct thickness	N/A		0.000	m	N/A	m	N/A		
5.4	**Laying and compacting of Asphalt Wearing course, MANUAL laying**									
5.4.1	Asphalt length (Cumulative)	0	m	0	m	0	m	N/A		
5.4.2	Asphalt thickness	0.040	m	0.050	m	0.040	m	N/A		
5.4.3	Camber Correct thickness	N/A		0.000	m	N/A	m	N/A		
5.5	**Laying and compacting of Asphalt Regulating course Using Binder Base**									
5.5.1	Minor Potholes lessthan 50mm depth (Cumulative) & 30mm Correction Layer	N/A		0	Sq.m	N/A		N/A		
5.5.2	Length of Binder Course Layer (Cumalative)			0	m					
5.5.3	Binder thickness			0.050	m					

5.6	**Supply, laying & compacting Grade 15 Concrete for Concrete surface rectification & Concrete Edge widening including Formwork**													
5.6.1	Edge Widening	N/A			N/A			LHS	RHS			N/A		
	Total Length	N/A			N/A			0	0	m		N/A		
	Avg.Width	N/A			N/A			0.25	0.25	m		N/A		
	Avg.Depth	N/A			N/A			0.125		m		N/A		
5.7	**Supply, laying & compacting Grade 30 Concrete layer including Formwork**													
5.7.1	Length (Cumulative)	0	m		N/A			0		m		N/A		
	Width	0	m		N/A			0		m		N/A		
	Minimum Thickness	0.150	m		N/A			0.100		m		N/A		
								LHS	RHS					
5.7.2	Edge widening length only for Type C6	N/A			N/A			0	0	m		N/A		
	Avg.Width	N/A			N/A			0.25	0.25	m		N/A		
	Avg.Depth	N/A			N/A			0.125		m		N/A		
5.8	**Supply, laying & compacting Grade 30 Concrete 150 mm thick layer including Formwork for Gradient >=15 or Innundation locations**													
5.8.1	Length (Cumulative)	N/A			0	m		N/A		m		N/A		
	Width	N/A			0.0	m		N/A		m		N/A		
5.9	**Supply & Laying Geo-Composite**													
5.9.1	Length (Cumulative)	N/A			N/A			0		m		N/A		
	Avg.Width	N/A			N/A			0		m		N/A		
5.10	**Concrete paving Cement Block (Grade 25) size of 220mm x 100mm x80mm Cement colour approved by Engineer (Edge Concrete Included).**													
5.10.1	Rectify Length (Cumulative)	N/A			N/A			N/A				0		Sq.m
5.10.2	New Locations (Cumulative)	0	m		N/A			N/A				N/A		
6.1	**Cutting Earth drains & leadaway drains in unclassified soil**													
6.1.1	Length -Cumulative	0	m											
	Avg.Width	0.4	m											
	Avg.Depth	0.4	m											
6.2	**Concrete L drains 0.2m x 0.3m x 0.1m**													
6.2.1	Length -Cumulative	0	m											
	L Hight	0.2	m											
	Avg.Width	0.3	m											
6.3	**Concrete Dish drains Type 1 (Total width 0.4m)**													
6.2.1	Length -Cumulative	0	m											
6.4	**Concrete Dish drains Type 2 (Total width 0.6m)**													
6.2.1	Length -Cumulative	0	m											
6.5	**Concrete U drains 0.3m x 0.3m x 0.1m**													
6.3.1	Length -Cumulative	0	m											
	Avg.Width	0.3	m											
	Avg.Depth	0.3	m											
6.6	**Concrete U drains 0.45m x 0.45m x 0.1m**													
6.4.1	Length -Cumulative	0	m		FOR RDA ROADS									
	Avg.Width	0.45	m											
	Avg.Depth	0.45	m											

6.6A	**Concrete U drains 1.0 m x 1.0 m x 0.15m**												
6.4.1	Length -Cumulative	0		m	FOR RDA ROADS								
	Avg.Width	1		m									
	Avg.Depth	1		m									
6.6B	**Concrete U drains 0.6 m x 0.8 m x 0.15m**												
6.4.1	Length -Cumulative	0		m	FOR RDA ROADS								
	Avg.Width	1		m									
	Avg.Depth	1		m									
6.7	**Cover slabs 0.5m x 0.5m x 0.115m Lite Duety**												
6.5.1	0.5 x 0.5 Slabs Numbers	0		Nos									
	Length	0.5		m									
	Width	0.5		m									
	Hight	0.1		m									
6.8	**Cover slabs 0.5m x 0.5m x 0.125m Heavy Duety**												
6.6.1	0.5 x 0.5 Slabs Numbers	0		Nos									
	Length	0.5		m									
	Width	0.5		m									
	Hight	0.1		m									
6.9	**Cover slabs 0.65m x 0.5m x 0.115m Lite Duety**												
6.7.1	0.65 x 0.65 Slabs Numbers	0		Nos	FOR RDA ROADS								
	Length	0.5		m									
	Width	0.5		m									
	Hight	0.1		m									
6.10	**Cover slabs 0.65m x 0.5m x 0.125m Heavy Duety**												
6.8.1	0.65 x 0.65 Slabs Numbers	0		Nos	FOR RDA ROADS								
	Length	0.5		m									
	Width	0.5		m									
	Hight	0.1		m									
6.11	**Cover slabs 1.3 m x 0.5m x 0.125m Lite Duety**												
6.8.1	1.3 x 0.5 Slabs Numbers	0		Nos	FOR RDA ROADS								
	Length	1.3		m									
	Width	0.5		m									
	Hight	0.125		m									
6.12	**Cover slabs 1.3 m x 0.5m x 0.150m Heavy Duety**												
6.8.1	1.3 x 0.5 Slabs Numbers	0		Nos	FOR RDA ROADS								
	Length	1.3		m									
	Width	0.5		m									
	Hight	0.15		m									
6.13	**Cover slabs 0.9m x 0.5m x 0.125m Lite Duety**												
6.8.1	0.9 x 0.5 Slabs Numbers	0		Nos	FOR RDA ROADS								
	Length	0.9		m									
	Width	0.5		m									
	Hight	0.125		m									
6.14	**Cover slabs 0.9m x 0.5m x 0.150m Heavy Duety**												
6.8.1	0.9 x 0.5 Slabs Numbers	0		Nos	FOR RDA ROADS								
	Length	0.9		m									
	Width	0.5		m									
	Hight	0.15		m									
6.15	**Construction of Subsurface drains using 160mm dia type 1000 P.V.C pipes**												
6.9.1	Cumulative Length	0		m									
7.1	**M.C.R-1 Maximum 1.0 m hight**												
7.1.1	Cumulative Length	0		m									
7.2	**M.C.R-2 Maximum 1.5 m hight**												
7.2.2	Cumulative Length	0		m									
7.3	**M.C.R-3 Maximum 2.0 m hight**												
7.3.2	Cumulative Length	0		m									
7.4	**M.C.R-4 Maximum 2.5 m hight**												
7.4.2	Cumulative Length	0		m									

7.5	**M.C.R-5 Maximum 3.0 m hight**												
7.5.2	Cumulative Length	0		m									
7.6	**M.C.R-6 Maximum 3.5 m hight**												
7.6.2	Cumulative Length	0		m									
7.7	**M.C.R-7 Maximum 4.0 m hight**												
7.7.2	Cumulative Length	0		m									
7.8	**M.C.R-8 Maximum 4.5 m hight**												
7.8.1	Cumulative Length	0		m									
7.9	**M.C.R-9 Maximum 5.0m hight**												
7.9.1	Cumulative Length	0		m									
7.10	**R.C-1 Maximum 1.5 m hight**												
7.10.1	Cumulative Length	0		m									
7.11	**R.C-2 Maximum 2.0 m hight**												
7.11.1	Cumulative Length	0		m									
7.12	**R.C-3 Maximum 2.5 m hight**												
7.12.1	Cumulative Length	0		m									
7.13	**R.C-4 Maximum 3.0 m hight**												
7.13.1	Cumulative Length	0		m									
7.14	**R.C-5 Maximum 3.5 m hight**												
7.14.1	Cumulative Length	0		m									
7.15	**C.B.G-1 Maximum 1.5 m hight**												
7.15.1	Cumulative Length	0		m									
7.16	**C.B.G-2 Maximum 2.5 m hight**												
7.16.1	Cumulative Length	0		m									
7.17	**C.B.G-3 Maximum 3.5 m hight**												
7.17.1	Cumulative Length	0		m									
7.18	**C.B.G-4 Maximum 4.5 m hight**												
7.18.1	Cumulative Length	0		m									
7.19	**R.B.G-1 Maximum 1.5 m hight**												
7.18.1	Cumulative Length	0		m									
7.20	**R.B.G-2 Maximum 2.5 m hight**												
7.18.1	Cumulative Length	0		m									
7.21	**R.B.G-3 Maximum 3.5 m hight**												
7.18.1	Cumulative Length	0		m									
7.22	**R.B.G-4 Maximum 4.5 m hight**												
7.18.1	Cumulative Length	0		m									

8.1	**Supply & Road Marking into 3.0 mm thick using reflectorized thermoplastic paint including Transport**											
8.1.1	Edge Cumulative Length	0		m								
8.1.2	Pedestrian Crossings Cumulative Area	0		Sq.m								
8.1.3	Other Cumulative Area	0		Sq.m								
8.2	**Single pole, sign area up to 0.5m2**											
8.2.1	Numbers	0		Nos.								
8.3	**Double Pole, Sign Area upto 3m2**											
8.3.1	Numbers	0		Nos.								
8.4	**Chervon warning sign**											
8.4.1	Numbers	0		Nos.								
8.5	**Footwalk Kerb Construction**											
8.5.1	Cumulative Length	0		m	FOR RDA ROADS							
8.6	**Footwalk Interlock paving Area (Block (Grade 25) size of 220mm x 100mm x80mm Cement colour approved by Engineer)**											
8.6.1	Cumulative Area	0		Sq.m	FOR RDA ROADS							
8.7	**Graverly soil base layer for footwalk**											
8.6.1	Cumulative Volume	0		Cu.m	FOR RDA ROADS							
8.8	**Grass Sodding (Turfing)**											
8.7.1	Cumulative Area	0		Sq.m								
8.9	**Supply & Laying 450 mm dia Hume pipes for Access Roads**											
8.9.1	Cumalative Length	0		L.m								
8.10	**Supply & Laying 610 mm dia Hume pipes for Access Roads**											
8.10.1	Cumalative Length	0		L.m								
	Details for Preliminary & General											
1.6	**Allow for relocation of Public Utilities**											

	PS Amount		**Remarks** (Nos & Lengths)	
Shifting of Eletrical Posts	-	Rs.		
Shifting of Electric Cable lines		Rs.		
Shifting of Telephone Post	-	Rs.		
Shifting of Telephone Cable lines		Rs.		
Shifting of Water Pipe lines (PVC pipe)	-	Rs.		
Shifting of Water Pipe lines (GI pipe)		Rs.		

1.7	**Dismantle & removal of Existing Structures**					
	Dismantle & remove brick masonry structures / culvert pipes			Cum	0	
	Dismantle & remove Random Rubble masonry structures			Cum	0	
	Dismantle & remove concrete structures			Cum	0	
	Dismantle & remove Dress stone mosonary structures			Cum	0	
	Remove fencing			L.m	0	
	Removal of existing buildings floor area			Sq.m	0	
	Removal of existing interlock area			Sq.m	0	
1.8	**Removal of Trees, Stumps and cutting of Overhanging Branches**					
	Removing Trees					
	- Girth 300 to 600 mm			Nos	0	
	- Girth 600 to 1,200 mm			Nos	0	
	- Girth 1,200 to 2,000 mm			Nos	0	
	- Girth over 2000 mm			Nos	0	
	Cutting and Removing of Overhanging Branches					
	- Girth 300 to 600 mm			Nos	0	
	- Girth 600 to 1,200 mm			Nos	0	
	- Girth over 1200 mm			Nos	0	
1.9	**Allow sum for Construction of Culverts**					
	Single Row Without Encasement (Type 3)					
	Construction of 600 mm dia Culverts			L.m	0	
	Construction of 900mm dia Culverts			L.m	0	
	Construction of 1200mm dia Culverts			L.m	0	
	Single Row With Encasement (Type 1)					
	Construction of 600 mm dia Culverts			L.m	0	
	Construction of 900mm dia Culverts			L.m	0	
	Construction of 1200mm dia Culverts			L.m	0	
	Single Row With Mass concrete Encasement (Type 2)					
	Construction of 600 mm dia Culverts			L.m	0	
	Construction of 900mm dia Culverts			L.m	0	
	Construction of 1200mm dia Culverts			L.m	0	
	Double Row Without Encasement (Type 6)					
	Construction of 600 mm dia Culverts			L.m	0	
	Construction of 900mm dia Culverts			L.m	0	
	Construction of 1200mm dia Culverts			L.m	0	
	Double Row With Encasement (Type 4)					
	Construction of 600 mm dia Culverts			L.m	0	
	Construction of 900mm dia Culverts			L.m	0	
	Construction of 1200mm dia Culverts			L.m	0	
	Double Row With Massconcrete Encasement (Type 5)					
	Construction of 600 mm dia Culverts			L.m	0	
	Construction of 900mm dia Culverts			L.m	0	
	Construction of 1200mm dia Culverts			L.m	0	
	Slab Culverts					
	Construction of Slab Culverts Width - 0.9 m			L.m	0	
	Construction of Slab Culverts Width - 1.2 m			L.m	0	
	Construction of Slab Culverts Width - 2.0 m			L.m	0	
	Box Culverts					
	Box Culvert (Size -1 x 1)			L.m	0	
	Box Culvert (Size -1.5 x 1.5)			L.m	0	
	Box Culvert (Size -2 x 1)			L.m	0	
	Box Culvert (Size -2 x 1.5)			L.m	0	
	Box Culvert (Size -2.5 x 1)			L.m	0	
1.10	**Trees Plantation & maintainance**					
	Number of Trees			Nos	0	

1.2	**Provide all necessary Insurances**							907,540.00				
1.3	**Provide all necessary Bonds**											

1.4	**Provide & maintain Project Name Board (2 m x 1.5m)**	**Add**
1.5	**Allow for traffic safety & control providing, erecting and maintaining barricades, road signs, markings, lights etc. (As per RDA Traffic control manual Part - 11)**	**Add**

Road Name

ITEM NO	RATE NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT RS. Cts.
BILL NO - 01 PRELIMINARY AND GENERAL						
1.1		Allow for Mobilization and Demobilization of plant and equipment	LS	Item	Allow	679,010.00
1.2		Provide all necessary Insurances	LS	Item	Allow	2,722.62
1.3		Provide all necessary Bonds	LS	Item	Allow	1,088.71
1.4		Provide & maintain Project Name Board (2 m x 1.5m)	PS	Item	Allow	35,730.00
1.5		Allow for traffic safety & cotrol providing, erecting and maintaining barricades, road signs, markings, lights etc. (As per RDA Traffic control manual Part - 11)	PS	Item	Allow	192,800.00
1.6		Allow for relocation of Public Utilities	PS	Item	Allow	-
1.7		Dismantle & removal of Existing Structures	PS	Item	Allow	-
1.8		Removal of Trees, Stumps and cutting of Overhanging Branches	PS	Item	Allow	-
1.9		Allow sum for Construction of Culverts	PS	Item	Allow	-
1.10		Trees Plantation & maintainance	PS	Item	Allow	-
1.11						
SUB TOTAL BILL NO -01						**911,351.33**
BILL NO - 02 SITE CLEARING						
2.1	RA-01	Clearing and grabbing inclusive of removing top soil to an average depth of 0.15m and backfilling/trenches caused by removal of stumps	Sq.m	-	85.00	-
SUB TOTAL BILL NO - 02						-
BILL NO - 03 EARTH WORKS						
3.1	RA-02	Roadway excavation	Cu.m	-	820.00	-
3.2	RA-03	Trimming , levelling & compaction of original ground	Sq.m	-	104.00	-
3.3	RA-04	Embankment construction using borrow material, Type I & Compacted in Possition	Cu.m	-	4,470.00	-
3.4	RA-05	Supplying, Spreading & Compacting 6" x 9" Rubble	Cu.m	-	4,650.00	-
3.5	SSR51	Supply & laying Seperation layer using Geotextile	Sq.m	-	363.90	-
3.6	RA-26	Rock Blasting	Cu.m	-	6,916.00	-
3.7	RA-27	Rock Blasting Using Chemical	Cu.m	-	12,135.60	-
SUB TOTAL BILL NO - 03						-
BILL NO - 04 BASES AND SHOULDERS						
4.1	RA-06	Approved soil supply,spreading & compacting using machinery for Sub Base Type I	Cu.m	-	4,780.00	-
4.2	RA-07	Scarification of existing base	Sq.m	-	94.00	-
4.3	RA-07A	Crusing existing damage concrete surface	Sq.m	-	68.00	-
4.4	RA-08	Supplying, spreading & compaction of dense graded Aggregate Base Course (37.5mm)	Cu.m	-	5,150.00	-
4.5	RA-09	Approved soil supply, spreading & compacting using machinery for Shoulder construction	Cu.m	-	4,780.00	-
SUB TOTAL BILL NO -04						-

BILL NO - 05. SURFACE APPLICATION						
5.1	RA-10	Applying Prime coat using Bitumen Emulsion CSS-1at the rate of 1.0Ltr/Sqm Inclusive blinding with sand at the rate of 250m^2/Cum	Sq.m	-	129.00	-
5.2	RA-11	Applying Tack coat using Bitumen Emulsion CSS-1 at the rate of 0.50 ltr/sqm.	Sq.m	-	49.00	-
		Asphalt Wearing Coarse				
5.3A	RA-12A	Supply of Asphalt Wearing Course	Mt.		11,160.00	
5.3	RA-12	Laying and compacting of Supplied Asphalt wearing course using pavers	Mt.	-	1,540.00	-
5.4	RA-13	Laying and compacting of Supplied Asphalt Wearing course, manuel laying	Mt.	-	3,490.00	-
		Asphalt Regulating Coarse				
5.5A	RA-14A	Supply of Asphalt Binder	Mt.		10,770.00	
5.5	RA-14	Laying and compacting of Supplied Asphalt Regulating course using Binder Base	Mt.	-	1,540.00	-
		Concrete Surfacing				
5.6	RA-15	Supply, laying & compacting Grade 15 Concrete for Concrete surface rectification & Concrete Edge widening including Formwork	Cu.m	-	20,540.00	-
5.7	RA-16	Supply, laying & compacting Grade 30 Concrete layer including Formwork	Cu.m	-	25,730.00	-
5.8	RA-16	Supply, laying & compacting Grade 30 Concrete 150 mm thick layer including Formwork for Gradient >=15 or Innundation locations	Cu.m	-	25,730.00	-
5.9	RA-16 A	Supply & Laying Geo-Composite	Sq.m	-	1,100.00	-
		Interlock Paving				
5.10	RA-17	Concrete paving Cement Block (Grade 25) size of 220mm x 100mm x80mm Cement colour approved by Engineer (Edge Concrete Included).	Sq.m	-	3,369.00	-
SUB TOTAL BILL NO -05						-

BILL NO - 06 DRAINAGE CONSTRUCTION						
6.1	RA-18	Cutting Earth drains & leadaway drains in unclassified soil	L.m	-	169.00	-
6.2	RA-19	Concrete L drains 0.2m x 0.3m x 0.1m	L.m	-	3,713.00	-
6.3	RA-19A	Concrete Dish drains Type 1 (Total width 0.4m)	L.m	-	1,980.00	-
6.4	RA-19B	Concrete Dish drains Type 2 (Total width 0.6m)	L.m	-	2,918.00	-
6.5	RA-20	Concrete U drains 0.3m x 0.3m x 0.1m	L.m	-	7,354.00	-
6.6	RA-29	Concrete U drains 0.45m x 0.45m x 0.1m	L.m	-	11,720.00	-
6.6 A	RA-29A	Concrete U drains 1.0 m x 1.0 m x 0.15m	L.m	-	29,480.00	-
6.6 B	RA-29B	Concrete U drains 0.6 m x 0.8 m x 0.15m	L.m	-	22,163.00	-
6.7	RA-21	Cover slabs 0.5m x 0.5m x 0.115m Lite Duety	Nos	-	2,812.00	-
6.8	RA-28	Cover slabs 0.5m x 0.5m x 0.125m Heavy Duety	Nos	-	3,035.00	-
6.9	RA-30	Cover slabs 0.65m x 0.5m x 0.115m Lite Duety	Nos	-	3,806.00	-
6.10	RA-31	Cover slabs 0.65m x 0.5m x 0.125m Heavy Duety	Nos	-	5,375.00	-

6.11	RA-31B	Cover slabs 1.3 m x 0.5m x 0.125m Lite Duety	Nos	-	6,973.00	-
6.12	RA-31C	Cover slabs 1.3 m x 0.5m x 0.150m Heavy Duety	Nos	-	10,532.00	-
6.13	RA-31D	Cover slabs 0.9m x 0.5m x 0.125m Lite Duety	Nos	-	5,405.00	-
6.14	RA-31E	Cover slabs 0.9m x 0.5m x 0.150m Heavy Duety	Nos	-	7,844.00	-
6.15	SSR50	Construction of Subsurface drains using 160mm dia type 1000 P.V.C pipes	L.m	-	9,414.00	-
SUB TOTAL BILL NO -06						-
BILL NO - 07 RETAINING STRUCTURES CONSTRUCTION						
		Mass Concrete Retaining Wall (MCR)				
7.1	SSR1	M.C.R-1 Maximum 1.0 m hight	L.m	-	33,958.00	-
7.2	SSR2	M.C.R-2 Maximum 1.5 m hight	L.m	-	58,080.00	-
7.3	SSR3	M.C.R-3 Maximum 2.0 m hight	L.m	-	76,620.00	-
7.4	SSR4	M.C.R-4 Maximum 2.5 m hight	L.m	-	107,734.00	-
7.5	SSR5	M.C.R-5 Maximum 3.0 m hight	L.m	-	129,016.00	-
7.6	SSR6	M.C.R-6 Maximum 3.5 m hight	L.m	-	188,296.00	-
7.7	SSR7	M.C.R-7 Maximum 4.0 m hight	L.m	-	241,681.00	-
7.8	SSR8	M.C.R-8 Maximum 4.5 m hight	L.m	-	270,285.00	-
7.9	SSR9	M.C.R-9 Maximum 5.0m hight	L.m	-	320,682.00	-
		Reinforce Concrete Retaining Wall (RC)				
7.10	SSR25	R.C-1 Maximum 1.5 m hight	L.m	-	67,748.06	-
7.11	SSR26	R.C-2 Maximum 2.0 m hight	L.m	-	87,256.50	-
7.12	SSR27	R.C-3 Maximum 2.5 m hight	L.m	-	110,340.08	-
7.13	SSR28	R.C-4 Maximum 3.0 m hight	L.m	-	160,997.93	-
7.14	SSR29	R.C-5 Maximum 3.5 m hight	L.m	-	181,147.22	-
		Gabbion Wall -Concrete Base (CBG)				
7.15	SSR17	C.B.G-1 Maximum 1.5 m hight	L.m	-	68,397.66	-
7.16	SSR18	C.B.G-2 Maximum 2.5 m hight	L.m	-	108,779.98	-
7.17	SSR19	C.B.G-3 Maximum 3.5 m hight	L.m	-	157,476.19	-
7.18	SSR20	C.B.G-4 Maximum 4.5 m hight	L.m	-	214,092.38	-
		Gabbion Wall -Rubble Base (RBG)				
7.19	SSR21	R.B.G-1 Maximum 1.5 m hight	L.m	-	61,974.92	-
7.20	SSR22	R.B.G-2 Maximum 2.5 m hight	L.m	-	96,282.50	-
7.21	SSR23	R.B.G-3 Maximum 3.5 m hight	L.m	-	137,764.36	-
7.22	SSR24	R.B.G-4 Maximum 4.5 m hight	L.m	-	186,420.49	-
SUB TOTAL BILL NO -07						-
BILL NO - 08 INCIDENTAL CONSTRUCTION						
		Road Marking				
8.1	RA-22	Supply & Road Marking into 3.0 mm thick using reflectorized thermoplastic paint including Transport	Sq.m	-	1,591.00	-
		Traffic sign boards				
8.2	RA-23	Single pole, sign area up to $0.5m^2$	Nos	-	14,622.60	-
8.3	RA-24	Double Pole, Sign Area upto $3m^2$	Nos	-	51,674.90	-
8.4	RA-25	Chervon warning sign	Nos	-	14,622.60	-
8.5	RA-32	Footwalk Kerb Construction	L.m	-	3,079.00	-
8.6	RA-17	Footwalk Interlock paving Area (Block (Grade 25) size of 220mm x 100mm x80mm Cement colour approved by Engineer)	Sq.m	-	3,369.00	-
8.7	RA-33	Graverly soil base layer for footwalk	Cu.m	-	4,660.00	-
8.8	RA-34	Grass Sodding (Turfing)	Sq.m	-	657.00	-
8.9	SSR52	Supply & Laying 450 mm dia Hume pipes for Access Roads	L.m	-	7,589.00	-
8.10	SSR53	Supply & Laying 610 mm dia Hume pipes for Access Roads	L.m	-	11,201.00	-
SUB TOTAL BILL NO -08						-

Contract Number **MORH/RDA/LBRRP/WP/COL/2020/P10**

Total Discount Amount (Rs.)	**-**
Total Discount Amount in Words :	**Rupees : only.**

SUMMARY OF PRICE SHEDULE

Item	Sub Activity Description	Unit	Discounted Estimate Amount
Item 01	Preliminaries (Allow for Mobilization and Demobilization of plant and equipment, Provide all necessary Insurances & Bonds)	LS	682,821.33
Item 02	Site Clearing	LS	-
Item 03	Earth works	LS	-
Item 04	Bases & shoulder work	LS	-
Item 05	Surface application	LS	-
Item 06	Construction of Drainage Structures	LS	-
Item 07	Construction of Retaining Structures	LS	-
Item 08	Incidential construction	LS	-
	Sub total 01 (Item No. 1 to 8)		**682,821.33**
Item 09	Provide & maintain Project Name Board, Allow for traffic safety & cotrol providing, erecting and maintaining barricades, road signs, markings, lights etc, Allow for relocation of Public Utilities, Dismantle & removal of Existing Structures, Removal of Trees, Stumps and cutting of Overhanging Branches, Allow sum for Construction of Culverts	PS	228,530.00
	Sub total 02 (Sub total 01 + Item No. 9))		**911,351.33**
	Contingency for the Package		68,282.13
	TOTAL Engineers estimate / Bid Price (Without VAT)		**979,633.46**