

Date: February 28, 2022

To

**Virescent Infrastructure Investment Manager Private Limited**

10th Floor, Parinee Crescenzo

C- 30 'G' Block

Bandra Kurla Complex

Bandra (East),

Mumbai 400051, Maharashtra, India

Dear Sir,

**Re: Submission of Final Report of Technical due diligence study for the project "Godhra Expressway Private Limited (GEPL)".**

With reference to the captioned matter, we are here with submitting the Final Report of "Technical Diligence for 4 Laning of Godhra - Gujarat/ Madhya Pradesh border Section of NH-59 from km 129.300 to km 215.900 in the State of Gujarat "

Yours faithfully,

For **Samarth Infraengg Technocrats Pvt. Ltd.**

**Authorized Signatory**

Kalva Kiran Kumar



**Technical Diligence for 4 Laning of  
Godhra-Gujarat/ Madhya Pradesh  
border Section of NH-59 from km  
129.300 to km 215.900 in the State of  
Gujarat**

**For Virescent Infrastructure Investment  
Manager Private Limited (For the purpose of  
Highways Infrastructure Trust)**

**FINAL REPORT**

**SAMARTH INFRAENGG Technocrats Private Limited**



**Feb 2022**

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## I. INTRODUCTION

NHAI has awarded the work of Rehabilitation and Upgrading to four lane from km 129.300 to km 215.900 existing 2 lane Highway section of NH-59 between Godhra to Gujarat/Madhya Pradesh Border in the state of Gujarat under NHDP-Phase-III on Design, Build, Finance, Operate, and Transfer (“DBFOT”) Toll basis to the Bidder M/s BSCPL Infrastructure Ltd.,

Consequent to this, M/s BSCPL Infrastructure Ltd. formed a Special Purpose Vehicle (SPV) in the name of BSCPL Godhra Toll ways Ltd., for implementation/execution of the project, registered under the companies act, 1956. The Concession Agreement was signed between NHAI and the SPV, M/s. BSCPL Godhra Toll ways Ltd., on 25.02.2010.

On 23.02.2017, India Infrastructure Fund II (IIF-II) acquired control of 80% stake of M/s Godhra Expressways Pvt. Ltd. (Formerly known as BSCPL Godhra Tollways Ltd.) and balance 20% was acquired on 27.02.2017. Further, on 17.12.2021, Galaxy Investments II Pte. Ltd. acquired control of 100% stakes of M/s Godhra Expressways Pvt. Ltd. from India Infrastructure Fund-II.

The project is presently under operation and maintenance by the Concessionaire Godhra Expressways Pvt. Ltd. (GEPL”). Samarth Infraengg Technocrats Pvt. Ltd. has been engaged as Technical/ Engineering Due Diligence Advisor for Highways Infrastructure Trust purpose.

This report highlights the findings of due diligence study undertaken by consultants on the project

## II. PROJECT AT A GLANCE

- The Project Corridor starts on the outskirts of Godhra town at Km 129.300 and traverses towards Madhya Pradesh Border and ends before the Gujarat/Madhya Pradesh Border Check post at Km 215.900. The Total Project Road length is 87.102 Km and the Project road is having four lane divided carriageway configuration.
- The project corridor has rigid pavement in the entire length, with 7.0m wide carriageway flanked by 1.5m paved shoulder plus 1.5m to 2.0m earthen shoulder on each side except at approaches to grade separators and underpasses.
- In general, the median width is 4.5m all along the project road except at median openings associated with storage lane (median width is 1.5m) and at some of the bridge locations and at underpass locations median width is varying between 4.5m to 12.5m
- The Project Road has four major junctions and these are at Bypass termini points of Piploid, Limkheda and Dahod. Further, the project road has about 81 minor junctions along its length.
- Altogether, the Project road has about Twenty-four (24) Bus shelters on Main Carriageway with Bus Bays and at remaining forty (40) locations it has only bus shelters.
- The Project Road has six Truck lay byes, two each at km 134.400, km 157.800 & km 190.500. These truck lay byes have been provided with rigid Pavement and the condition appears to be good

- The Project Road has one Toll Plaza at km 146.150. Rigid pavement exists in the toll plaza as well as in tapering portions. The condition of toll plaza appears to be good. There are three normal lanes and one extra wide lane in each direction. One more extra lane is observed for 2-wheeler & 3-wheeler on both sides
- Originally the Pavement envisaged was Flexible for main carriageway; however, the Concessionaire changed the pavement type from flexible to Rigid; however, for small portion of about 7.5 km carriageway length is having flexible pavement.
- The Project received LOA on 01.01.2010 and the agreement was signed on 25.02.2010.
- Appointed date was declared on 01.03.2011 and the Project received First Provisional Certificate on 31.10.2013 for a length of 75.0% of project and the Commercial Operation started from 31.10.2013.
- The Project received PCOD-2 on 25.09.2015 for a length of 98.12% of project, (except 1.635 Km approach of Km 171+300 ROB) and the Toll rates were revised for the PCOD-2 and the rates are effective from 30.09.2015.
- Due to delay in Land acquisition at Dahod Kasba, Change of Scope of 4 ROBs and the waiver of maintenance charge issues by the Railway had delayed the project completion. The project was completed 100% and got Final Completion Certificate on 29.06.2016.
- As per CA, the Concession Period for the project is 27 Years from appointment date, subject to extension as per Concession Agreement. Original Concession end date is 28.02.2038 However, IE & NHA PIU has recommended for extension in concession period by 5.4 years based on traffic variation. Accordingly revised end date of concession i.e. 23.07.2043 has been considered for costing purpose.

### III. SALIENT FEATURES

| Sl. No. | Particulars                      | Length/No  |
|---------|----------------------------------|--|
| 1       | No of Grade Separated Structures | 4Nos. (2 Numbers Flyovers and 2 numbers Over passes) |
| 2       | Service Road                     | 19.760 km (Both Sides)                               |
| 3       | ROBs                             | 4Nos.  |
| 4       | ROB location (chainage)          | km 137+083, km 144+827, km 167+324 & km 171+300      |
| 5       | No of Bypass                     | 3 Nos.   |
| 6       | Length of Bypass / Realignment   | Total Bypass Length - 14.260 km                      |
|         |                                  | Piploid Bypass km 152.030-km 156.450= km 4.420       |
|         |                                  | Limkheda Bypass km 160.950-km 165.600= km 4.650      |
|         |                                  | Dahod realignment km 189.430-km 194.620=km 5.190     |
| 7       | No of Major Bridges              | 6 Nos.   |

| Sl. No. | Particulars                              | Length/No  |
|---------|--|--|
| 8       | No of Minor Bridges                      | 16 Nos.  |
| 9       | No of Culvert                            | 32 Nos. Box Culvert -98 Nos. Pipe Culvert            |
| 10      | No of VUP                                | 4Nos.  |
| 11      | No of PUP/Cattle underpass               | 13 Nos.  |
| 12      | No of major intersection/Junction        | 4 Nos.   |
| 13      | No of Toll Plaza/                        | 1 No.  |
| 14      | Location of Toll Plaza chainage)         | Km 146+150   |
| 15      | No of Truck Lay byes                     | 6 Nos  |
| 16      | No of Bus Bays with Shelter              | 24 Nos Bus Bays with Shelter & 40 Nos only Shelters  |
| 17      | No of Wayside Amenities & Rest Rooms     | 6 (Way Side Amenities) & 6 (Rest Rooms)              |
| 18      | Location of Wayside Amenities (Chainage) | Km 134.400 (BHS), Km (157.800(BHS) & Km 190.500(BHS) |
| 19      | Stone Pitching                           | 8.380 Kms  |
| 20      | Grouting                                 | 0.060 Kms  |
| 21      | RE Wall                                  | 6.670 Kms  |
| 22      | Green Blanketing                         | 2.840 Kms  |
| 23      | Partial RE Wall with Embankment          | 0.570 Kms  |
| 24      | Partial RE Wall with Stone Pitching      | 0.690 Kms  |
| 25      | Partial RE wall with Green Blanketing    | 1.730 Kms  |
| 26      | Delineators                              | 136 Nos.   |
| 27      | RCC Covered Drain                        | 8.840 Kms  |
| 28      | Lined Drain                              | 3.470 Kms  |
| 29      | Major Junctions                          | 4 Nos.   |
| 30      | Minor Junctions                          | 81 Nos.  |
| 31      | High Mast Lighting                       | 11 Nos.  |
| 32      | Double Arm Lightning's                   | 349 Nos.   |
| 33      | Single Arm Lightning's                   | 153 Nos.   |
| 34      | Median Openings                          | 37 Nos.  |
| 35      | Median Chutes                            | 3050 Nos.  |
| 36      | Median Plantation Functional             | 86.452 Kms   |

| Sl. No. | Particulars              | Length/No  |
|---------|--------------------------|------------|
| 37      | Metal Beam Crash Barrier | 49.560 Kms |
| 38      | Concrete Safety barrier  | 14.890 km  |
| 39      | Pedestrian Guard Rails   | 4.226 Kms  |
| 40      | Solar Blinkers           | 72 Nos.    |
| 41      | Road Signs               | 1439 Nos.  |

#### IV. IMPORTANT FINDINGS AND CONCLUSION

1. The project road has good pavement condition except very little surface related distress. Predominantly few locations raveling, longitudinal and transverse cracks/ Full depth cracks are noticed at very few locations. At Km 181.800 in LHS direction, Panel repair work is going on, this is the one location where major distress observed in Rigid Pavement along the Project Road.
2. Roughness surveys along corridor indicates that entire Project length is having Roughness values less than 2200mm/Km.
3. Review of Pavement Design Report and As-built drawings indicates that the rigid pavement is design for 40 years design period and the adopted composition is 300mm PQC+150mm DLC+150mm GSB.
4. Test pit surveys indicated average PQC thickness of 297mm, average DLC thickness of 140mm and average thickness of granular layers is 165 mm over subgrade.
5. The subgrade quality of the corridor appears to be good with high CBR above 10% at most of locations.
6. Crack sealing and Epoxy patching has been seen at isolated locations indicating the routine maintenance works are taken care to avoid further cracking and raveling.
7. As of now there is no HTMS but as per Schedule 12.12.1 of IRC: SP: 84-2009 (referred in Annex-1 of D) of CA, HTMS shall be considered when PCU>40,000. Accordingly, the Concessionaire is required to provide HTMS once traffic on project road crosses 40,000 PCU.
8. As informed by the Concessionaire, the project road will reach 40,000 PCU in the year 2030/31 and accordingly the cost of HTMS is considered.
9. As per clause 12.7 of Concession Agreement, after 8<sup>th</sup> Anniversary from COD if Authority Constructs Service Road, the same shall be maintained by Concessionaire.
10. Overall, there are 21 number grade separated structures exist along the project Road. 2 numbers flyovers, 2 numbers Overpasses, 4 numbers Vehicular underpasses and 13 numbers Pedestrian Underpasses.
11. Overall, there 22 Bridges exist along the project road. Six out of Twenty-two are Major bridges and remaining sixteen are Minor bridges.



12. All structures are in good condition expect few, wherever Minor distresses observed; presently Concessionaire carrying out rectification works for the same.
13. There is one toll Plaza along the project Road and all Project Facilities such Traffic aid post, medical aid post and Vehicle rescue posts are located near this Toll Plaza.
14. There are total six lay byes exist, three on each side and 24 number of Bus Bays with shelter and another 40 locations only bus shelter exists. Condition of all these is good.
15. Schedule K of CA species that Roughness values exceeds 2500 mm/km in a length of KM, needs to be corrected within 180 days. But since the pavement type is changed from Flexible to Rigid, subsequently the threshold roughness value is increased from 2500 mm/Km to 3000mm/Km
16. For Flexible Pavement Overlay thickness of 40mm BC is considered on Main carriageway in FY2029, FY2035, FY2043 and apart from this Micro Surfacing of total flexible pavement in Main Carriageway is considered in FY 2040 apart from the regular routine maintenance which is to be done on every year.
17. 25mm BC considered on Service Road Pavement in FY2029, FY2035, FY2043 apart from the regular routine maintenance which is to be done on every year.
18. For Rigid Pavement about 1% of panel repair/replacement and 1% of epoxy patching, 25% of pavement retexturing and 2 to 3 % replacement of joints at every 7<sup>th</sup> Year apart from the regular routine maintenance which is to be done on every year.
19. All the lands required from the Forest department has been acquired and the project has been completed and there is no issue pending regarding this
20. As per IE MPR, there is no Compensation disbursement pending against land acquisition.
21. Demolishing of unauthorized the Government Structures have been completed except Post Office at Saliya (Sant road) at Ch. 141+350, and it is understood that correspondences is being done between NHAI and Superintendent of Post Office, Panchmahal for demolishing this structure and shifting of Temple at Km 129+400 is in progress

**V. COST ABSTRACT**

| S. No | FY     | Abstract of Cost Without escalation<br>(in Crores)    |                           |               |
|-------|--------|---|---------------------------|---------------|
|       |        | Immediate Repair's Cost +Routine and Operational Cost | Periodic Maintenance Cost | Total Cost    |
| 1     | 2023   | 13.83   | 1.02                      | 14.85         |
| 2     | 2024   | 13.83   | -                         | 13.83         |
| 3     | 2025   | 13.83   | -                         | 13.83         |
| 4     | 2026   | 13.83   | -                         | 13.83         |
| 5     | 2027   | 13.83   | -                         | 13.83         |
| 6     | 2028   | 13.83   | -                         | 13.83         |
| 7     | 2029   | 13.83   | 18.52                     | 32.34         |
| 8     | 2030   | 13.83   | 15.09                     | 28.92         |
| 9     | 2031   | 13.83   | -                         | 13.83         |
| 10    | 2032   | 13.83   | -                         | 13.83         |
| 11    | 2033   | 13.83   | -                         | 13.83         |
| 12    | 2034   | 13.83   | -                         | 13.83         |
| 13    | 2035   | 13.83   | -                         | 13.83         |
| 14    | 2036   | 13.83   | 18.52                     | 32.34         |
| 15    | 2037   | 13.83   | 10.76                     | 24.59         |
| 16    | 2038   | 13.83   | -                         | 13.83         |
| 17    | 2039   | 13.83   | -                         | 13.83         |
| 18    | 2040   | 13.83   | -                         | 13.83         |
| 19    | 2041   | 13.83   | -                         | 13.83         |
| 20    | 2042   | 13.83   | -                         | 13.83         |
| 21    | 2043   | 13.83   | 20.53                     | 34.36         |
| 22    | 2044   | 4.44  | 8.71                      | 13.15         |
|       | Total: | <b>294.77</b>   | <b>93.15</b>              | <b>387.92</b> |

- Base Cost are arrived for FY2023
- All the material rates are February 2022 Rates
- All labour rates are taken from Central minimum wages (October'2021 cycle) and 2.5% escalation applied on the same to arrive FY2023 Rates
- All the costs are without any Escalation.
- All the Cost presented in the above table are excluding Head Office (HQ) Expenses

# DUEDILIGENCE REPORT

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## 1.1 INTRODUCTION

The Govt. of India (GOI) through Ministry of Shipping, Road Transport & Highways is contemplating to enhance the road capacity and safety for efficient transshipment of goods as well as passenger traffic on the heavily trafficked National Highway sections. GOI has entrusted National Highways Authority of India (NHAI) with the responsibility of augmenting the capacity of highway corridors. NHAI had identified one such corridor to Design, Build, Finance, Operation and Transfer of the Rehabilitation and Upgrading to four lane from km 129.300 to km 215.900 existing 2 lane Highway section of NH-59 between Godhra to Gujarat/Madhya Pradesh Border in the state of Gujarat under NHDP-Phase-III on Design, Build, Finance, Operate, and Transfer (“DBFOT”) Toll Basis.

NHAI has awarded the work of 4 laning of above stretch of highway, Design, Build, Finance, Operate, and Transfer (“DBFOT”) Toll Basis to the Bidder **M/s BSCPL Infrastructure Ltd.**,

Consequent to this, **M/s BSCPL Infrastructure Ltd.** formed a Special Purpose Vehicle (SPV) in the name of **BSCPL Godhra Tollways Ltd.**, for implementation/execution of the project, registered under the companies’ act, 1956. The Concession Agreement was signed between NHAI and the SPV, **M/s. BSCPL Godhra Tollways Ltd.**, on 25.02.2010.

The Project received First Provisional Certificate on 31.10.2013 for a length of 75.0% of project and the Commercial Operation started from 2nd day of November 2013. The Project received PCOD-2 on 25.09.2015 for a length of 98.12% of project, (except 1.635 Km approach of Km 171+300 ROB) and the Toll rates were revised for the PCOD-2 and the rates are effective from 30.09.2015. The Project Road received Final COD on 29.06.2016.

The project is presently under operation and maintenance by concessionaire **GODHRA EXPRESSWAY PRIVATE LIMITED (GEPL)**.

This report highlights the findings of due diligence study undertaken by consultants on the project

## 1.2 PROJECT AT A GLANCE

National Highway 59 connecting Ahmadabad with Indore, is one of the important Highway corridors of the Country. It serves an important link to connect Indore - Ahmedabad important cities with its rich hinterland part of Madhya Pradesh and Gujarat. NH-59 which originates from Ahmadabad and ends at Indore, en route passing through very important cities and towns line Kamba, Kathal, Balasinor Sevaliya, Timba, Godhra, Piplod, Limkheda, Dahod, Katwara, Jhabua, Rajgarh, Dhar and Lebad travelling a distance of 376 Km. through the states of Gujarat (9212 Km) and Madhya Pradesh (154 Km).

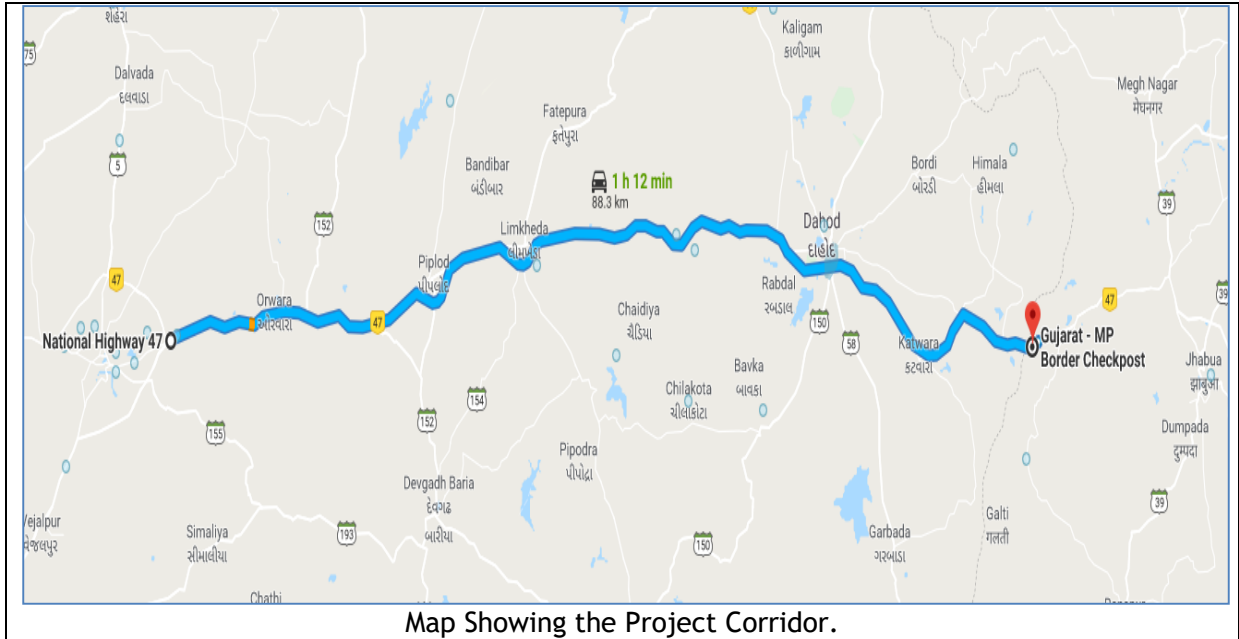


Table 1: Project Corridor Chainage System

| Referencing system | Project Corridor Start Point (km) | Project Corridor End Point (km) | Length (km) |
|--------------------|-----------------------------------|---------------------------------|-------------|
| Old Chainage       | 129+300                           | 215+900                         | 86.600      |
| Revised Chainage   | 127+848                           | 214+950                         | 87.102      |

The Project Corridor starts on the outskirts of Godhra town and traverses towards Madhya Pradesh Border and ends before the Gujarat/Madhya Pradesh Border Check post. Photograph showing the start and end point of the project road are presented below:



Following Table highlights the total project at a glance:

| SI No. | Description  | Date                         |
|--------|--|------------------------------|
| 1.     | Date of Letter of Award (LOA)  | 01.01.2010                   |
| 2.     | Date of Signing the Concession Agreement   | 25.02.2010                   |
| 3.     | Appointment Date   | 01.03.2011                   |
| 4.     | Scheduled Project completion   | 26.08.2013                   |
| 5      | Original Concession Period   | 27 Years from Appointed date |
| 6      | Original Concession end date   | 28.02.2038                   |
| 7      | Extension of Concession period due to variation in Traffic                       | Another 5.4 Years            |
| 8      | Revised Concession end date  | 23.07.2043                   |
| 9      | Date of issue of Provisional Completion Certificate for 75% of project length    | 31.10.2013                   |
| 10     | Date of issue of Provisional Completion Certificate for 98.12% of project length | 25.09.2015                   |
| 11     | Date of Commencement of Commercial Operation                                     | 31.10.2013                   |
| 12     | Date of Issue of Final Completion Certificate                                    | 29.06.2016                   |

**Table 2: Salient Features of Project Corridor**

| SI. No. | Particulars                              | Length/No  |
|---------|--|--|
| 1       | No of Grade Separated Structures         | 4Nos. (2 Nos. Over passes)                           |
| 2       | Service Road                             | 19.760 km (Both Sides)                               |
| 3       | ROBs                                     | 4Nos.  |
| 4       | ROB location (chainage)                  | km 137+083, km 144+827, km 167+324 & km 171+300      |
| 5       | No of Bypass                             | 3 Nos.   |
| 6       | Length of Bypass                         | Total Bypass Length - 14.260 km                      |
| 7       | No of Major Bridges                      | 6 Nos.   |
| 8       | No of Minor Bridges                      | 16 Nos.  |
| 9       | No of Culvert                            | 32 Nos. Box Culvert -98 Nos. Pipe Culvert            |
| 10      | No of VUP                                | 4 Nos.   |
| 11      | No of PUP/Cattle underpass               | 13 Nos.  |
| 12      | No of major intersection/Junction        | 4 Nos.   |
| 13      | No of Toll Plaza                         | 1 No.  |
| 14      | Location of Toll Plaza (chainage)        | Km 146+150   |
| 15      | No of Truck Lay byes                     | 6 Nos  |
| 16      | No of Bus Bays with Shelter              | 24 Nos Bus Bays with Shelter & 40 Nos only Shelters  |
| 17      | No of Wayside Amenities & Rest Rooms     | 6 (Way Side Amenities) & 6 (Rest Rooms)              |
| 18      | Location of Wayside Amenities (Chainage) | Km 134.400 (BHS), Km (157.800(BHS) & Km 190.500(BHS) |
| 19      | Stone Pitching                           | 24.355 Kms   |
| 20      | Grouting                                 | 0.060 Kms  |
| 21      | RE Wall                                  | 6.670 Kms  |

| Sl. No. | Particulars                           | Length/No    |
|---------|---------------------------------------|--------------|
| 22      | Green Blanketing                      | 2.840 Kms    |
| 23      | Partial RE Wall with Embankment       | 0.570 Kms    |
| 24      | Partial RE Wall with Stone Pitching   | 0.690 Kms    |
| 25      | Partial RE wall with Green Blanketing | 1.730 Kms    |
| 26      | Delineators                           | 136 Nos.     |
| 27      | RCC Covered Drain                     | 8.840 Kms    |
| 28      | Lined Drain                           | 3.470 Kms    |
| 29      | Major Junctions                       | 4 Nos.       |
| 30      | Minor Junctions                       | 81 Nos.      |
| 31      | High Mast Lighting                    | 10 Nos.      |
| 32      | Double Arm Lightning's                | 349 Nos.     |
| 33      | Single Arm Lightning's                | 153 Nos.     |
| 34      | Median Openings                       | 37 Nos.      |
| 35      | Median Chutes                         | 3075 Nos.    |
| 36      | Median Damages                        | 30 Locations |
| 37      | Median Plantation Functional          | 86.452 Kms   |
| 38      | Metal Beam Crash Barrier              | 54.853 Kms   |
| 39      | Concrete Safety barrier               | 16.000 km    |
| 40      | Pedestrian Guard Rails                | 4.226 Kms    |
| 41      | Solar Blinkers                        | 72 Nos.      |
| 42      | Km Stones LHS                         | 88 Nos.      |
| 43      | Hectometer Stone LHS                  | 348 Nos.     |
| 44      | Km Stones RHS                         | 88 Nos.      |
| 45      | Hectometer Stone RHS                  | 348 Nos.     |
| 46      | Road Signs                            | 1439 Nos.    |

- All the lands required from the Forest department has been acquired and the project has been completed and there is no issue pending regarding this
- As per IE MPR, there is no Compensation disbursement pending against land acquisition.
- Demolishing of unauthorized the Government Structures have been completed except Post Office at Saliya (Sant road) at Ch. 141+350, and it is understood that correspondences is being done between NHAI and Superintendent of Post Office, Panchmahal for demolishing this structure and shifting of Temple at Km 129+400 is in progress

### 1.3 OBJECTIVE AND SCOPE OF SERVICES - FOR DUE DILIGENCE

The main objective of the study is to review the current status of project corridor including details pertaining to its construction and maintenance and to provide requisite technical

information for processing the acquisition of said project by client. Objective of the study can be broadly defined with following tasks:

### 1.3.1 General

- Review of all documents related to Project including but not limited to provisional completion certificates, punch list items completion certificate, clearances, monthly IE reports, important correspondence if any.
- Review of Change of Scope/ other Claims submitted and to be submitted to Authority / IC, comment on the veracity of the same and approval status.
- Highlight any non-compliance of the terms of the CA or O&M manual and IC inspection reports etc.
- Review of any pending issues related to Utility shifting, maintenance etc. in accordance with the Concession Agreement.
- Comment on issues including any balance work that may have a potential impact on the maintenance costs going forward and which may warrant a one-time expense in future.
- In general review the toll plaza systems (incl. AVCC, weigh bridge, sensors, ETC etc.) and the hardware installed therein and comment on the adequacy and level of maintenance of the same to meet the requirements under CA.
- Review of as built drawings.
- Determine the appropriate level and frequency of routine and major maintenance activities required to keep the road assets in good condition and to meet the performance and O&M standards, specifications and requirements.
- Review the major maintenance work undertaken, and prepare projections for future major maintenance expenses (incl. any hand-back requirements), so as to ensure compliance with the terms of CA.
- Review of condition of SPV assets including all equipment and vehicles etc.
- Report on balance acquisition of land if any and possibility of acquisition.
- Report on current encroachments on the project stretch and future expected problems due to the same.

### 1.3.2 Assessment of Asset Condition

- i. Assessment of road assets in conformance with specifications, standards and codes stipulated in CA and O&M manual etc.
- ii. A detailed inventory survey of road assets including main carriageway, structures, service roads, lightings, drains, slope protection works, retaining walls, bus bays, bus shelters, truck lay byes, O&M center, road furniture including signages, MCB, guard rails etc. other safety measures, toll collection infrastructure, buildings, plantation, vehicles and other objects.
- iii. Assessment of condition of the structures including but not limited to visual inspections of bearings, expansion joints, superstructure, substructures, foundations, associated components, pre-stress anchorages (if any), review of geotechnical assumptions,

- perform geotechnical due diligence, review as-built design and assess design assumptions and provide a detailed report thereon.
- iv. Assessment of condition of the road pavement including but not limited to visual inspections of the pavement, review as-built design and assess design assumptions and provide a detailed report thereon.
  - v. Assessment of physical dimensions/ condition of the infrastructure to determine useful lives of the materials and equipment requiring rehabilitation and/or replacement.
  - vi. Recommendations for any major repair/ rehabilitation and strengthening based on the condition survey and design reports.
  - vii. To provide a detail photographic report of the infrastructure assets and its condition to withstand till end of concession period. Suggestion and cost evaluation for any additional repair / rectification / modification required.

### **1.3.3 Investigations to be carried out**

- 1.1. Assessing maintenance needs and its valuation according to the level of deterioration.
- 1.2. Evaluation of overall condition of flexible pavement including PQC/ BT at toll plaza, BC, DBM, Base/Sub base and sub grade and drainage condition survey.
- 1.3. Carry out visual condition survey for rigid (toll plaza) and flexible pavement
- 1.4. Carry out drainage survey to assess any potential future problems which will cause by moisture and runoff.
- 1.5. Assessment of variation/ COS orders on the project, if any, and evaluate their impact on expenditure, time to completion, future O&M obligations and tolling revenue.

### **1.3.4 O&M Assessment and Submission of Report**

- Develop a detailed O&M cost forecast for each year of the concession period and a detailed major maintenance cost forecast along with estimation of costs towards handover requirements.
- Provide comprehensive report by covering all scope of work mentioned herein this Engagement Letter.

## **1.4 SURVEYS AND INVESTIGATIONS**

The main objective of undertaking Surveys and Investigations is to appreciate the existing engineering features along the project corridor and to understand the present condition of the various elements of the project road and to prepare inputs required for various rehabilitation and maintenance strategies.

Following Survey and Investigations have been undertaken as a part of study with an objective to understand the present condition of the road and there by access the quality of construction and as well to prepare requisite rehabilitation/corrective designs where necessary.

- Road Inventory Surveys
- Visual Pavement Condition



- Structure Inventory and Condition Surveys

#### 1.4.1 Road Inventory

The project corridor has rigid pavement in the entire length, with 7.0m wide carriageway flanked by 1.5m paved shoulder plus 1.5m to 2.0m earthen shoulder on each side except at approaches to grade separators and underpasses.

In general, the median width is 4.5m all along the project road except at median openings associated with storage lane (median width is 1.5m) and at some of the bridge locations and at underpass locations median width is varying between 4.5m to 12.5m

The project corridor generally runs in plain to mild rolling terrain. The land use along the project road is mostly Agricultural. It passes through urban settlements like Godhra, Sant road, Piploid, Limkheda and Dahod and also through the small village settlements like Ladpur, Panchela, Jekot, Gamla etc.

In general, road embankments are in the range of 1-1.5m height. Embankments higher than 1.5m are observed mainly in the approaches of CD structures and Underpass locations. Maximum embankment height is observed near ROBs and Underpass locations.

The Project Road has four major junctions and these are at Bypass termini points of Piploid, Limkheda and Dahod. Further, the project road has about 81 minor junctions along its length. Photographs showing the Major Junctions are presented below:



Towards Piploid Town at km 152.050 (junction)



Towards Piploid town at km 156.400 (junction)



Towards Limkheda town at km165.600 (junction)



Towards Dahod town at km 189.450 (junction)

About 10 numbers of High mast lighting is observed along the project road. Four numbers are located at Toll Plaza location, two of them at over pass locations and remaining were at junction locations. Few photos showing High mast lighting are presented below:



High mast lighting on Island at overpass location at km 153.720



High mast lighting on Island at overpass location at km 193+800

Altogether, the Project road has about Twenty-four (24) Bus shelters on Main Carriageway with Bus Bays and at remaining forty (40) locations it has only bus shelters. Few photos taken at the bus shelters and bus bays are presented below:



Bus Shelter near km 131.780, LHS Service Road



Bus Bay with shelter near km 160.080, LHS Main Carriageway



Bus bay with shelter near km 166.600, RHS Main Carriage way

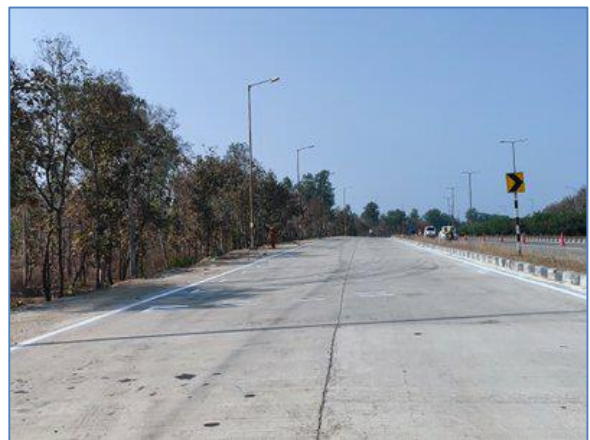


Bus shelter near km 201.400, RHS Main Carriage way

The Project Road has six Truck lay byes, two each at km 134.400, km 157.800 & km 190.500. These truck lay byes have been provided with rigid Pavement and the condition appears to be good. Few photos depicting the truck lay bye portion are presented below:



Truck Lay bye on LHS km 134.400



Truck Lay bye on RHS km 134.400



Truck Lay bye on LHS km 157.800



Toilet Block and Rest Room at Truck Lay bye on RHS km 157.800



Truck Lay bye on LHS km 190.500



Rest Room at Truck Lay bye on RHS km 190.500

Toilet blocks and rest rooms have been provided at all truck lay bye location. Separator is provided between main carriageway and Truck lay bye portion. Lighting in the form of single arm poles have been provided on the separator and outer edge of the truck lay bye. On each side, 10 single arm lights are observed and almost all are found to be in good condition.

The Project Road has one Toll Plaza at km 146.150. Rigid pavement exists in the toll plaza as well as in tapering portions. The condition of toll plaza appears to be good. There are three normal lanes and one extra wide lane in each direction. One more extra lane is observed for 2-wheeler & 3-wheeler on both sides. 4 numbers of High mast lighting has been provided at Toll plaza location and on the approach to Toll plaza, double arm lighting has been provided on median.

Few photos taken at toll plaza location are presented below:



Toll Plaza near km 146.150



Static Weigh bridge



Admin Building

Service road/slip roads have been observed at underpass locations and at few village locations. Few photos depicting the service road pavement surface type, condition and the other associated features like covered drain, pedestrian guard railing are presented below.



Service Road @ km 128.030 to km 128.800-LHS\_7m wide



Service Road @ km 131.610 to km 132.090 LHS\_7.5m wide



Service Road @ km 143.440 to km 144.260-  
LHS\_5.5m wide



Service Road @ km 151.700 to km 152.400-LHS\_7m  
wide



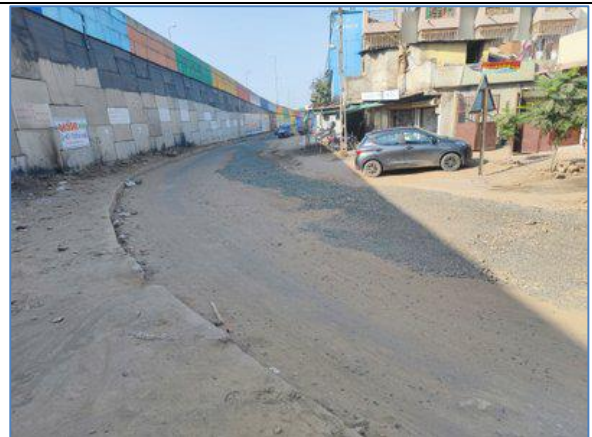
Service Road @ km 153.520 to km 153.620-  
LHS\_5.5m wide



Service Road @ km 162.340 to km 163.200-  
RHS\_7m wide



Service Road @ km 173.600 to km 174.210-  
LHS\_7.5m wide



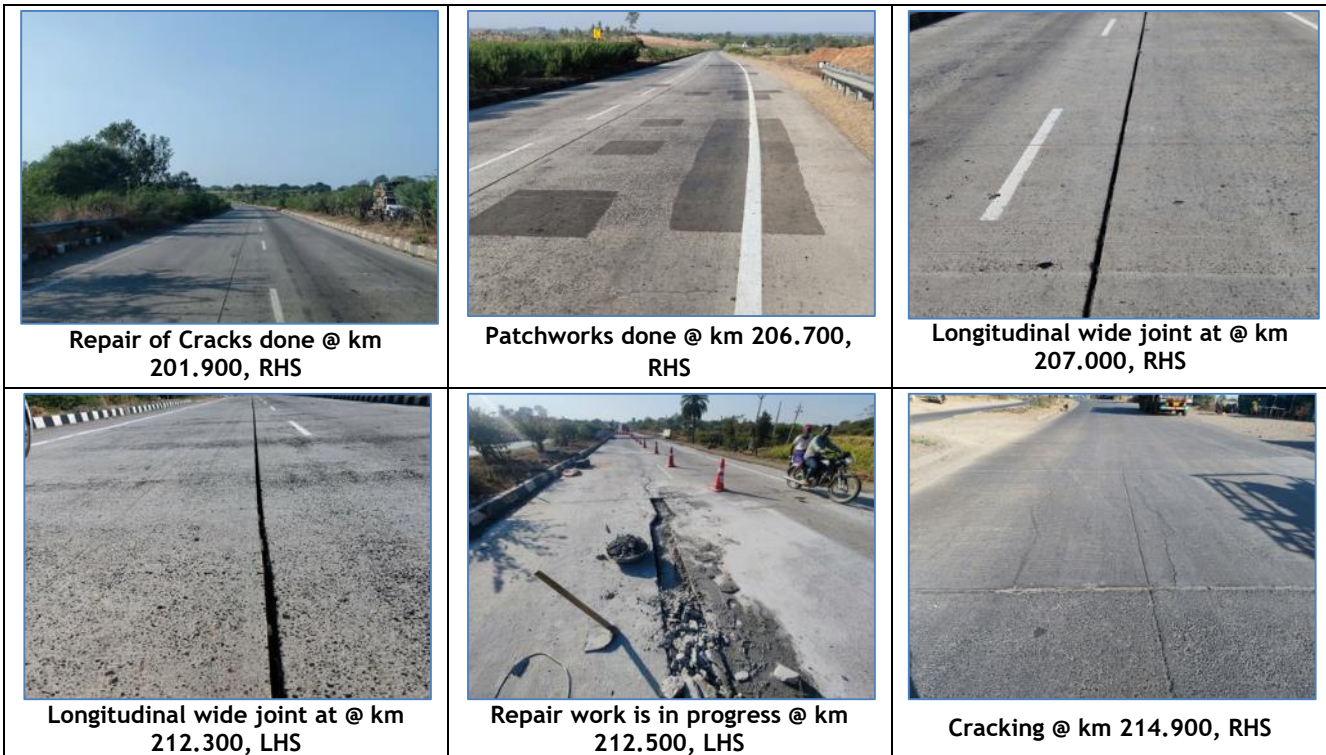
Service Road @ km 194.010 to km 194.300-  
LHS\_5.5m wide

#### 1.4.2 Visual Pavement Condition Surveys

Rigid pavement condition along the project road appears to be fair to good in most of the sections and the riding quality is good. Longitudinal and transverse cracks and full depth cracks are noticed at some isolated locations. Surface of rigid pavement appears to ravel with loss of

texture. Exposure of aggregates and loss of fines are noticed at some locations. Majority of joints appear to be intact with very few failures. Pop outs and potholes mainly seen at locations where severe ravelling is seen. The condition of Flexible pavement provided on the approaches of the underpasses appears to be good and the riding quality is satisfactory.

|   |  |   |
|---|--|---|
|   |  |   |
| <p>Good Condition @ km 128.350, LHS</p>             | <p>Cracking @ km 136.550, LHS</p>              | <p>Good Condition at Pavement surface @ km 138.800, LHS</p> |
|   |  |   |
| <p>Good Condition @km 151.800, LHS</p>              | <p>Raveling @ km 156.050, LHS</p>              | <p>Good Condition @ km 162.900, LHS</p>                     |
|   |  |   |
| <p>Cracking at @km 169.970, LHS</p>                 | <p>Cracking Cum Raveling @ km 178.100, LHS</p> | <p>Repair of Cracks done @ km 181.800, LHS</p>              |
|   |  |   |
| <p>Level difference b/w lanes @ km 182.350, RHS</p> | <p>Repair of Cracks done @ km 189.600, RHS</p> | <p>Good Condition @ km 194.100, LHS</p>                     |



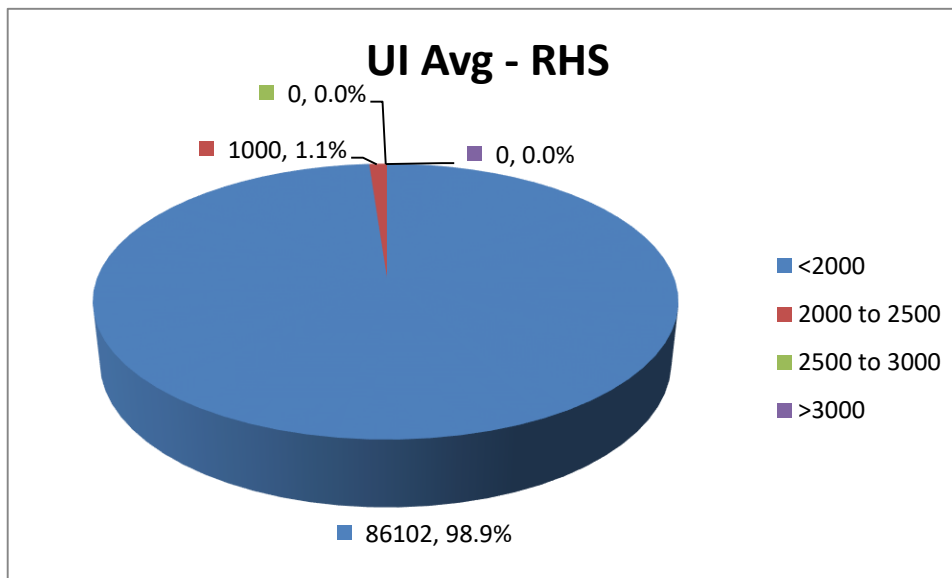
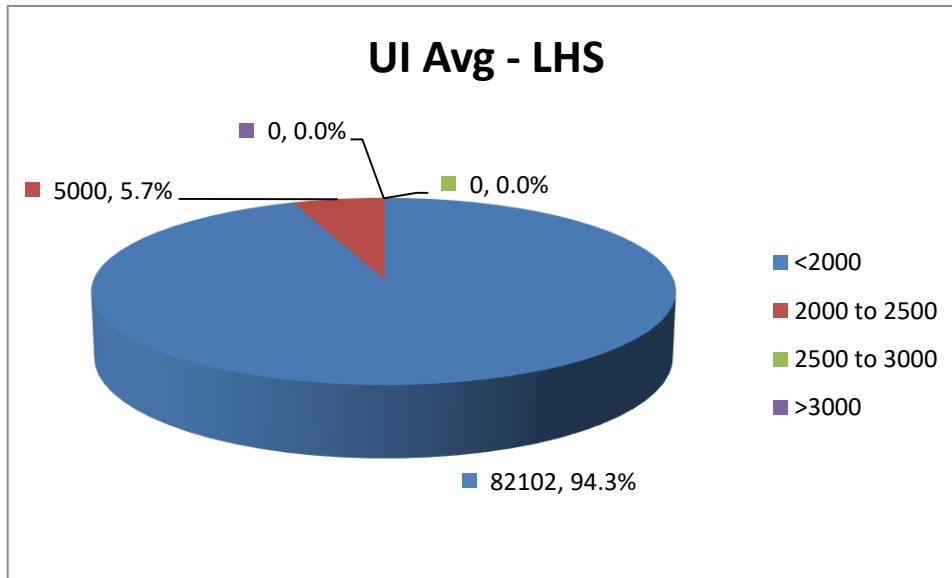
### 1.4.3 Roughness surveys

Roughness Report Received from Company indicates that the Roughness data has been collected using Vehicle mounted Roughness Measuring Device (CMBI-21) in the first week of January 2021. The Data has been analyzed in terms of International Roughness Index (IRI), separately for each lane, for both direction of travel.

As per IRCP:16-2004, Rigid pavement is surface is considered to be good when its UI value is less than 2000 mm/km and the same is considered to be average for UI values between 2000 and 3000 mm/km whilst the surface is treated as Poor for UI values greater than 3000 mm/km.

Average UI values along the corridor were grouped in to four categories, Pie chart showing the range of UI values in each carriageway of the project road have been presented below:





It can be seen from the above pie charts, that about 94.3% & 98.9% length of the Project Road has good riding quality (UI<2000 mm/km) in LHS carriageway and RHS carriageway respectively.

#### 1.4.4 Subgrade Investigation

The composition of the existing pavement crust has been noted from test pit surveys. Test pits have been undertaken at an interval of 10.0 km in each carriageway along the project road. Thus, a total of 20 pits have been dug along the corridor and the data on composition of pavement has been noted. Eighteen out of 20 pits done on Main Carriageway edge and remaining test pits done on Service Road edge. Few sample photos taken are presented below:



km 130.000 LHS (GMP-TP-1)



km 155.400 RHS (GMP-TP-6)



km 134.950 RHS (GMP-TP-2)



km 174.400 RHS (GMP-TP-10)



km 143.200 RHS (GMP-TP-4)



km 190.000 LHS (GMP-TP-13)



km 205.200 RHS (GMP-TP-16)



km 205.200 RHS (GMP-TP-16)

Results of the test pit survey showing average thickness of pavement layers are presented in the Table below.

**Table 3: Pavement Composition**

| Sl. No | Test Pit Number | Existing Chainage | Direction | PQC | DLC | GSB | Total |
|--------|-----------------|-------------------|-----------|-----|-----|-----|-------|
| 1      | GMP-TP-1        | 130+000           | LHS       | 300 | 180 | 120 | 600   |
| 2      | GMP-TP-2        | 134+950           | RHS       | 290 | 100 | 200 | 590   |
| 3      | GMP-TP-3        | 139+400           | LHS       | 300 | 150 | 150 | 600   |
| 4      | GMP-TP-4        | 143+200           | RHS       | 310 | 150 | 150 | 610   |
| 5      | GMP-TP-5        | 150+000           | LHS       | 300 | 120 | 180 | 600   |
| 6      | GMP-TP-6        | 155+400           | RHS       | 280 | 150 | 150 | 580   |
| 7      | GMP-TP-7        | 159+800           | LHS       | 320 | 150 | 150 | 620   |
| 8      | GMP-TP-8        | 165+150           | RHS       | 300 | 150 | 150 | 600   |
| 9      | GMP-TP-9        | 170+000           | LHS       | 300 | 150 | 150 | 600   |
| 10     | GMP-TP-10       | 174+400           | RHS       | 270 | 150 | 150 | 570   |
| 11     | GMP-TP-11       | 179+800           | LHS       | 320 | 130 | 150 | 600   |
| 12     | GMP-TP-12       | 185+400           | RHS       | 270 | 140 | 200 | 610   |
| 13     | GMP-TP-13       | 190+000           | LHS       | 280 | 150 | 200 | 630   |
| 14     | GMP-TP-14       | 194+600           | RHS       | 320 | 100 | 130 | 550   |
| 15     | GMP-TP-15       | 200+000           | LHS       | 320 | 150 | 150 | 620   |
| 16     | GMP-TP-16       | 205+200           | RHS       | 270 | 100 | 300 | 670   |
| 17     | GMP-TP-17       | 210+300           | LHS       | 320 | 150 | 150 | 620   |
| 18     | GMP-TP-18       | 214+900           | RHS       | 270 | 150 | 170 | 600   |

| Sl. No | Test Pit Number | Existing Chainage | Direction | BT | WMM | GSB | Total |
|--------|-----------------|-------------------|-----------|----|-----|-----|-------|
| 19     | GMP-SR-TP-19    | 140+800           | LHS       | 80 | 180 | 150 | 410   |
| 20     | GMP-SR-TP-20    | 173+560           | RHS       | 70 | 150 | 150 | 370   |

Total average crust thickness of the MCW pavement is 604mm. The average thickness of PQC layer is 297 mm. Pavement is mainly composed of a PQC layer, DLC& GSB base over subgrade.

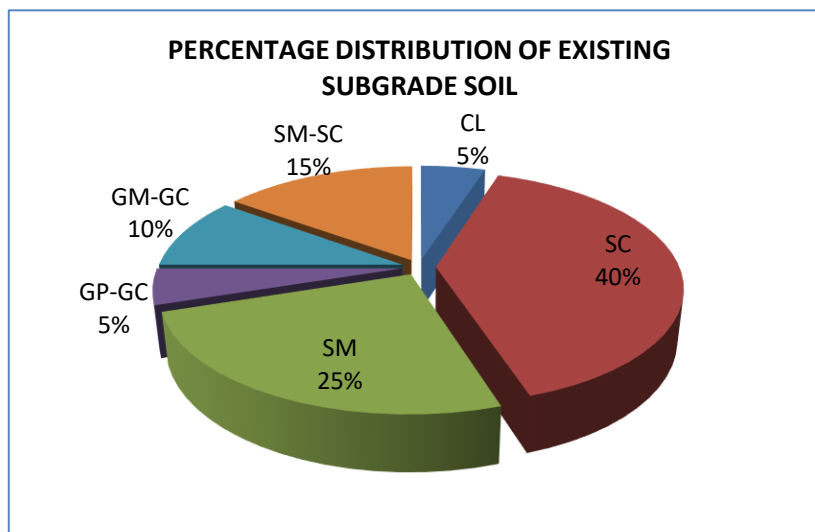
#### 1.4.5 Subgrade Investigations & Laboratory Testing

Sub-grade Investigations have been carried out to examine the subgrade soil characteristics along the project road. A total number of 20 Test pits have been carefully dug from the pavement surface up to sub-grade level. Eighteen out of 20 pits done on Main Carriageway edge and remaining two test pits done on Service Road edge. Field density tests have been conducted for subgrade samples and a small quantity of sample has also been collected in airtight containers for determining the field moisture content. Upon completion of the field density test, representative sample of sub-grade soil has been collected in bulk, in gunny bags, from each test pit for laboratory testing.

The soil samples collected have been tested for the following properties to assess the existing sub-grade soil properties.

- Sieve analysis
- Atterberg limits
- Heavy compaction
- Four (4) days soaked CBR as per IS standards at 97% of MDD as applicable for sub-grade (Heavy Compaction)
- Free swelling index

Soil classification has been done according to IS Classification of Soils (ISC) as detailed in IS 1498 - 1970. Laboratory test results indicate that all the Subgrade soil samples collected belongs to Coarse Grained Soil. Pie Chart showing the percentage distribution of soil classification of existing subgrade sample is presented below:



## 1.5 VALIDATION OF EXECUTED WORKS

The project road has been closely inspected to verify the executed works on ground vis-à-vis the scope envisaged in CA. The as-built drawings made available have been studied in detail before examining them on ground. Each and every structure has been inspected to note down its structural configuration and condition. The following works highlight the findings on executed works on ground.

### 1.5.1 Road Works

The project corridor appears to have been constructed with the cross-sectional elements matching to those given in CA TCS drawings. The carriageway width of 7.0 plus paved shoulders of 1.5m and a shyness of 0.25m has been provided over the entire length except at structures. Earthen shoulders of 1.5m on either side of carriageway have also been provided.

Service roads/Slip roads are constructed to a width as shown in TCS. Location of service roads and slip roads as constructed are as below:

**Table 4: Service Road/Slip Road Locations**

| Service/Slip Road Details Both Sides               |                            |         |                            |         |      |               |             |           |                    |
|--|----------------------------|---------|----------------------------|---------|------|---------------|-------------|-----------|--------------------|
| S.No.  | Chainage (Including Taper) |         | Chainage (Excluding taper) |         | Side | Pavement Type | As Per Site | Width (m) | Remarks            |
|  | From (km)                  | To (km) | From (km)                  | To (km) |      |               |             |           |                    |
| 1  | 127.97                     | 128.95  | 128.03                     | 128.8   | LHS  | Flexible      | 0.98        | 7         |                    |
| 2  | 131.55                     | 132.17  | 131.61                     | 132.09  | LHS  | Flexible      | 0.62        | 7.5       |                    |
| 3  | 136.9                      | 137.45  | 137                        | 137.34  | LHS  | Flexible      | 0.55        | 7.5       |                    |
| 4  | 138.6                      | 139.3   | 138.71                     | 139.16  | LHS  | Flexible      | 0.7         | 7.5       |                    |
| 5  | 140.7                      | 141.8   | 140.78                     | 141.78  | LHS  | Flexible      | 1.1         | 7.5       |                    |
| 6  | 143.3                      | 144.2   | 143.44                     | 144.15  | LHS  | Flexible      | 0.9         | 5.5       |                    |
| 7  | 151.5                      | 151.95  | 151.7                      | 151.9   | LHS  | Flexible      | 0.45        | 7.5       |                    |
| 8  | 153.65                     | 153.62  | 153.65                     | 153.62  | LHS  | Flexible      | 0.5         | 5.5       | Over pass location |
| 9  | 153.76                     | 153.9   | 153.76                     | 153.9   | LHS  | Flexible      | 0.8         | 5.5       | Over pass location |
| 10   | 160.5                      | 160.9   | 160.61                     | 160.85  | LHS  | Flexible      | 0.4         | 7.2       |                    |
| 11   | 162.3                      | 163.3   | 162.34                     | 163.2   | LHS  | Flexible      | 1           | 7         |                    |
| 12   | 173.5                      | 174.33  | 173.6                      | 174.21  | LHS  | Flexible      | 0.83        | 7.5       |                    |
| 13   | 194.01                     | 194.1   | 194.01                     | 194.1   | LHS  | Flexible      | 0.5         | 5.5       | Over pass location |
| 14   | 194.15                     | 194.3   | 194.15                     | 194.3   | LHS  | Flexible      | 0.45        | 5.5       | Over pass location |
| 15   | 128.55                     | 128.95  | 128.55                     | 128.82  | RHS  | Flexible      | 0.4         | 7         |                    |
| 16   | 131.5                      | 132.65  | 131.58                     | 132.38  | RHS  | Flexible      | 1.15        | 7.5       |                    |
| 17   | 138.6                      | 139.3   | 138.71                     | 139.16  | RHS  | Flexible      | 0.7         | 7.5       |                    |
| 18   | 143.3                      | 144.2   | 143.44                     | 144.1   | RHS  | Flexible      | 0.9         | 5.5       |                    |
| 19   | 146.6                      | 147.7   | 146.68                     | 147.66  | RHS  | Flexible      | 1.1         | 7         |                    |
| 20   | 151.6                      | 152.45  | 151.7                      | 152.4   | RHS  | Flexible      | 0.85        | 7         |                    |
| 21   | 153.52                     | 153.62  | 153.52                     | 153.62  | RHS  | Flexible      | 0.8         | 5.5       | Over pass location |
| 22   | 153.76                     | 153.9   | 153.76                     | 153.9   | RHS  | Flexible      | 0.5         | 5.5       | Over pass location |
| 23   | 160.5                      | 161.3   | 160.61                     | 161.25  | RHS  | Flexible      | 0.8         | 7         |                    |
| 24   | 162.3                      | 163.3   | 162.34                     | 163.2   | RHS  | Flexible      | 1           | 7         |                    |
| 25   | 173.5                      | 174.33  | 173.6                      | 174.21  | RHS  | Flexible      | 0.83        | 7.5       |                    |
| 26   | 194.01                     | 194.1   | 194.01                     | 194.1   | RHS  | Flexible      | 0.45        | 5.5       | Over pass location |
| 27   | 194.15                     | 194.3   | 194.15                     | 194.3   | RHS  | Flexible      | 0.5         | 5.5       | Over pass location |
| As per Site Total Length of Service/Slip Road (Km) |                            |         |                            |         |      |               | 19.76       |           |                    |

Lined Covered drains exist at service road and truck lay bye locations along the project road. Cleaning of gratings is required for flow of surface water from service road to drain. The locations of Line covered drains are presented in the Table below:

**Table 5: Lined Covered Drain Locations**

| S.No   | Chainage |         | Side | Length       | Condition    | Remarks                                       |
|--|----------|---------|------|--------------|--------------|---|
|  | From     | To      |      |              |              |   |
| 1  | 131.600  | 132.000 | LHS  | 0.400        | Good         | RCC Cum Footpath Drain on SR                  |
| 2  | 131.600  | 132.400 | RHS  | 0.800        | Good         | RCC Cum Footpath Drain on SR                  |
| 3  | 134.250  | 134.450 | LHS  | 0.200        | Good         | RCC Cum Footpath Drain on Truck lay bye (TLB) |
| 4  | 134.250  | 134.450 | RHS  | 0.200        | Good         | RCC Cum Footpath Drain on TLB                 |
| 5  | 138.650  | 139.050 | LHS  | 0.400        | Good         | RCC Cum Footpath Drain on SR                  |
| 6  | 138.670  | 139.150 | RHS  | 0.480        | Good         | RCC Cum Footpath Drain on SR                  |
| 7  | 139.100  | 139.250 | LHS  | 0.150        | Good         | RCC Cum Footpath Drain on SR                  |
| 8  | 143.400  | 144.150 | RHS  | 0.750        | Good         | RCC Cum Footpath Drain on SR                  |
| 9  | 143.560  | 144.100 | LHS  | 0.540        | Good         | RCC Cum Footpath Drain on SR                  |
| 10   | 153.570  |         | LHS  | 0.500        | Good         | RCC Cum Footpath Drain on SR                  |
| 11   | 153.800  |         | LHS  | 0.500        | Good         | RCC Cum Footpath Drain on SR                  |
| 12   | 158.700  | 158.900 | LHS  | 0.200        | Good         | RCC Cum Footpath Drain on TLB                 |
| 13   | 158.700  | 158.900 | RHS  | 0.200        | Good         | RCC Cum Footpath Drain on TLB                 |
| 14   | 160.600  | 160.900 | RHS  | 0.300        | Good         | RCC Cum Footpath Drain on SR                  |
| 15   | 173.600  | 174.200 | LHS  | 0.600        | Good         | RCC Cum Footpath Drain on SR                  |
| 16   | 173.600  | 174.220 | RHS  | 0.620        | Good         | RCC Cum Footpath Drain on SR                  |
| 17   | 193.980  |         | LHS  | 0.500        | Fair to Poor | RCC Cum Footpath Drain on SR                  |
| 18   | 193.980  |         | RHS  | 0.500        | Good         | RCC Cum Footpath Drain on SR                  |
| 19   | 194.080  |         | LHS  | 0.500        | Good         | RCC Cum Footpath Drain on SR                  |
| 20   | 194.080  |         | RHS  | 0.500        | Good         | RCC Cum Footpath Drain on SR                  |
| <b>Total Length of RCC covered Drain(km)</b> |          |         |      | <b>8.840</b> |              |   |

Open lined drains of trapezoidal shape exist at few locations and toe drains are also presented above the partial RE wall at approach locations and are as listed in Table below:

**Table 6: Open Lined Drains**

| S. No | Chainage |         | Side | Length | Condition | Remarks                            |
|-------|----------|---------|------|--------|-----------|------------------------------------|
|       | From     | To      |      |        |           |                                    |
| 1     | 128.150  | 128.350 | LHS  | 0.2    | Good      | Trapezoidal open lined drain       |
| 2     | 136.200  | 136.800 | RHS  | 0.6    | Good      | open lined Drain at top of RE Wall |
| 3     | 136.500  | 136.800 | LHS  | 0.3    | Good      | open lined Drain at top of RE Wall |
| 4     | 144.300  | 144.500 | LHS  | 0.2    | Good      | open lined Drain at top of RE Wall |
| 5     | 144.300  | 144.400 | RHS  | 0.1    | Good      | open lined Drain at top of RE Wall |
| 6     | 144.600  | 145.100 | LHS  | 0.5    | Good      | open lined Drain at top of RE Wall |
| 7     | 144.620  | 145.100 | RHS  | 0.48   | Good      | open lined Drain at top of RE Wall |
| 8     | 160.650  | 160.800 | RHS  | 0.15   | Good      | open lined Drain at top of RE Wall |
| 9     | 160.800  | 161.100 | RHS  | 0.3    | Good      | Trapezoidal open lined drain       |
| 10    | 161.200  | 161.300 | RHS  | 0.1    | Good      | open lined Drain at top of RE Wall |
| 11    | 170.780  | 171.000 | LHS  | 0.22   | Good      | open lined Drain at top of RE Wall |

| S. No                                | Chainage |         | Side | Length | Condition | Remarks                            |
|--------------------------------------|----------|---------|------|--------|-----------|------------------------------------|
|                                      | From     | To      |      |        |           |                                    |
| 12                                   | 170.800  | 171.000 | RHS  | 0.2    | Good      | open lined Drain at top of RE Wall |
| 13                                   | 171.080  | 171.140 | LHS  | 0.06   | Good      | open lined Drain at top of RE Wall |
| 14                                   | 171.080  | 171.140 | RHS  | 0.06   | Good      | open lined Drain at top of RE Wall |
| Total Length of Open lined Drain(km) |          |         |      | 3.470  |           |                                    |

Unlined drains exist at the main carriage way edge and these are in good condition. Maintenance needs to be required for these unlined drains. Earthen drains are listed below:

**Table 7: Earthen Drains**

| S.no | Chainage |         | Side | Length (m) | Remarks                    |
|------|----------|---------|------|------------|----------------------------|
|      | From     | To      |      |            |                            |
| 1    | 128.620  | 131.120 | RHS  | 2500.000   | Earthen Drain              |
| 2    | 128.650  | 131.145 | LHS  | 2495.000   | Earthen Drain              |
| 3    | 131.120  | 131.532 | RHS  | 412.000    | STONE PITCHING             |
| 4    | 131.145  | 131.410 | LHS  | 265.000    | STONE PITCHING TREPIZOIDAL |
| 5    | 131.410  | 131.865 | LHS  | 455.000    | Earthen Drain              |
| 6    | 131.532  | 131.865 | RHS  | 333.000    | Earthen Drain              |
| 7    | 132.295  | 133.050 | LHS  | 755.000    | Earthen Drain              |
| 8    | 132.650  | 133.830 | RHS  | 1180.000   | STONE PITCHING             |
| 9    | 133.050  | 133.830 | LHS  | 780.000    | STONE PITCHING TREPIZOIDAL |
| 10   | 133.830  | 134.040 | LHS  | 210.000    | Earthen Drain              |
| 11   | 133.830  | 134.020 | RHS  | 190.000    | Earthen Drain              |
| 12   | 134.020  | 134.990 | RHS  | 970.000    | STONE PITCHING             |
| 13   | 134.040  | 134.583 | LHS  | 543.000    | STONE PITCHING TREPIZOIDAL |
| 14   | 134.683  | 136.780 | LHS  | 2097.000   | Earthen Drain              |
| 15   | 134.990  | 136.493 | RHS  | 1503.000   | Earthen Drain              |
| 16   | 137.046  | 137.140 | RHS  | 94.000     | Earthen Drain              |
| 17   | 137.400  | 138.970 | RHS  | 1570.000   | Earthen Drain              |
| 18   | 137.610  | 138.970 | LHS  | 1360.000   | Earthen Drain              |
| 19   | 139.420  | 141.000 | LHS  | 1580.000   | Earthen Drain              |
| 20   | 139.420  | 141.000 | RHS  | 1580.000   | Earthen Drain              |
| 21   | 142.000  | 142.398 | LHS  | 398.000    | STONE PITCHING TREPIZOIDAL |
| 22   | 142.140  | 142.400 | RHS  | 260.000    | STONE PITCHING TREPIZOIDAL |
| 23   | 142.398  | 143.700 | LHS  | 1302.000   | Earthen Drain              |
| 24   | 142.400  | 143.700 | RHS  | 1300.000   | Earthen Drain              |
| 25   | 144.700  | 144.950 | LHS  | 250.000    | Earthen Drain              |
| 26   | 144.700  | 144.900 | RHS  | 200.000    | Earthen Drain              |
| 27   | 145.500  | 146.200 | LHS  | 700.000    | Earthen Drain              |
| 28   | 145.700  | 146.010 | RHS  | 310.000    | Earthen Drain              |
| 29   | 148.040  | 158.050 | RHS  | 10010.000  | Earthen Drain              |
| 30   | 148.100  | 153.750 | LHS  | 5650.000   | Earthen Drain              |
| 31   | 154.250  | 158.050 | LHS  | 3800.000   | Earthen Drain              |
| 32   | 158.160  | 160.650 | LHS  | 2490.000   | Earthen Drain              |

| S.no                | Chainage |         | Side | Length (m)        | Remarks                         |
|---------------------|----------|---------|------|-------------------|---------------------------------|
|                     | From     | To      |      |                   |                                 |
| 33                  | 158.160  | 160.900 | RHS  | 2740.000          | Earthen Drain                   |
| 34                  | 160.650  | 160.900 | LHS  | 250.000           | TREPIZOIDAL CEMENT DRAIN B/W SR |
| 35                  | 160.900  | 166.400 | LHS  | 5500.000          | Earthen Drain                   |
| 36                  | 161.435  | 166.400 | RHS  | 4965.000          | Earthen Drain                   |
| 37                  | 167.900  | 171.050 | LHS  | 3150.000          | Earthen Drain                   |
| 38                  | 167.900  | 171.000 | RHS  | 3100.000          | Earthen Drain                   |
| 39                  | 171.229  | 171.331 | RHS  | 102.000           | Earthen Drain                   |
| 40                  | 171.430  | 173.850 | RHS  | 2420.000          | Earthen Drain                   |
| 41                  | 171.460  | 173.850 | LHS  | 2390.000          | Earthen Drain                   |
| 42                  | 174.465  | 193.980 | LHS  | 19515.000         | Earthen Drain                   |
| 43                  | 174.465  | 193.980 | RHS  | 19515.000         | Earthen Drain                   |
| 44                  | 194.230  | 199.530 | LHS  | 5300.000          | Earthen Drain                   |
| 45                  | 194.230  | 199.530 | RHS  | 5300.000          | Earthen Drain                   |
| 46                  | 199.530  | 199.950 | LHS  | 420.000           | STONE PITCHING TREPIZOIDAL      |
| 47                  | 199.530  | 200.850 | RHS  | 1320.000          | Earthen Drain                   |
| 48                  | 199.950  | 202.900 | LHS  | 2950.000          | Earthen Drain                   |
| 49                  | 200.850  | 215.217 | RHS  | 14367.000         | Earthen Drain                   |
| 50                  | 202.900  | 203.550 | LHS  | 650.000           | STONE PITCHING TREPIZOIDAL      |
| 51                  | 203.550  | 215.217 | LHS  | 11667.000         | Earthen Drain                   |
| <b>Total Length</b> |          |         |      | <b>153163.000</b> |                                 |

On curved sections with super-elevation, Chutes provided in the median portion. The locations and no. of cuts in median are presented in table below:

**Table 8: Median Chutes**

| Details of Median Chutes |         |         |        |             |         |
|--------------------------|---------|---------|--------|-------------|---------|
| Sr. No.                  | From    | To      | Length | No. of Cuts | Remarks |
| 1                        | 128.000 | 128.600 | 0.600  | 45          |         |
| 2                        | 130.420 | 130.540 | 0.120  | 18          |         |
| 3                        | 131.040 | 131.160 | 0.120  | 13          |         |
| 4                        | 131.350 | 131.500 | 0.150  | 16          |         |
| 5                        | 132.050 | 132.560 | 0.510  | 55          |         |
| 6                        | 133.200 | 134.000 | 0.800  | 71          |         |
| 7                        | 134.050 | 134.200 | 0.150  | 13          |         |
| 8                        | 134.650 | 134.900 | 0.250  | 22          |         |
| 9                        | 136.030 | 136.600 | 0.570  | 46          |         |
| 10                       | 136.970 | 137.000 | 0.030  | 3           |         |



| Details of Median Chutes |         |         |        |             |         |
|--------------------------|---------|---------|--------|-------------|---------|
| Sr. No.                  | From    | To      | Length | No. of Cuts | Remarks |
| 11                       | 137.000 | 137.680 | 0.680  | 60          |         |
| 12                       | 139.200 | 139.450 | 0.250  | 14          |         |
| 13                       | 140.380 | 140.670 | 0.290  | 21          |         |
| 14                       | 141.960 | 142.000 | 0.040  | 6           |         |
| 15                       | 142.000 | 142.500 | 0.500  | 49          |         |
| 16                       | 144.040 | 144.420 | 0.380  | 60          |         |
| 17                       | 145.000 | 145.250 | 0.250  | 22          |         |
| 18                       | 145.450 | 145.550 | 0.100  | 13          |         |
| 19                       | 146.500 | 146.800 | 0.300  | 31          |         |
| 20                       | 148.150 | 149.000 | 0.850  | 80          |         |
| 21                       | 149.000 | 149.350 | 0.350  | 31          |         |
| 22                       | 150.030 | 150.150 | 0.120  | 11          |         |
| 23                       | 151.940 | 152.000 | 0.060  | 7           |         |
| 24                       | 152.020 | 152.350 | 0.330  | 31          |         |
| 25                       | 153.650 | 154.000 | 0.350  | 44          |         |
| 26                       | 154.000 | 154.260 | 0.260  | 29          |         |
| 27                       | 154.400 | 154.630 | 0.230  | 29          |         |
| 28                       | 155.980 | 156.000 | 0.020  | 5           |         |
| 29                       | 156.000 | 156.380 | 0.380  | 34          |         |
| 30                       | 156.500 | 156.760 | 0.260  | 26          |         |
| 31                       | 157.350 | 157.560 | 0.210  | 26          |         |
| 32                       | 160.930 | 161.000 | 0.070  | 6           |         |
| 33                       | 161.000 | 161.200 | 0.200  | 10          |         |
| 34                       | 162.860 | 162.930 | 0.070  | 8           |         |
| 35                       | 163.070 | 163.250 | 0.180  | 27          |         |
| 36                       | 163.800 | 164.000 | 0.200  | 31          |         |
| 37                       | 164.000 | 164.110 | 0.110  | 12          |         |
| 38                       | 164.400 | 165.000 | 0.600  | 48          |         |
| 39                       | 165.000 | 165.600 | 0.600  | 63          |         |
| 40                       | 168.000 | 168.180 | 0.180  | 17          |         |
| 41                       | 168.440 | 168.600 | 0.160  | 16          |         |
| 42                       | 170.680 | 171.000 | 0.320  | 22          |         |
| 43                       | 171.200 | 171.350 | 0.150  | 19          |         |
| 44                       | 171.700 | 172.000 | 0.300  | 40          |         |
| 45                       | 172.000 | 172.230 | 0.230  | 19          |         |
| 46                       | 173.200 | 173.500 | 0.300  | 27          |         |
| 47                       | 174.100 | 174.300 | 0.200  | 28          |         |

| Details of Median Chutes |         |         |        |             |         |
|--------------------------|---------|---------|--------|-------------|---------|
| Sr. No.                  | From    | To      | Length | No. of Cuts | Remarks |
| 48                       | 174.560 | 174.860 | 0.300  | 40          |         |
| 49                       | 175.050 | 175.400 | 0.350  | 38          |         |
| 50                       | 176.200 | 176.560 | 0.360  | 38          |         |
| 51                       | 176.700 | 177.000 | 0.300  | 36          |         |
| 52                       | 177.000 | 177.100 | 0.100  | 15          |         |
| 53                       | 177.900 | 178.000 | 0.100  | 15          |         |
| 54                       | 178.000 | 178.260 | 0.260  | 27          |         |
| 55                       | 178.700 | 178.780 | 0.080  | 10          |         |
| 56                       | 178.810 | 179.000 | 0.190  | 20          |         |
| 57                       | 179.000 | 179.200 | 0.200  | 19          |         |
| 58                       | 180.030 | 180.360 | 0.330  | 30          |         |
| 59                       | 180.780 | 181.000 | 0.220  | 22          |         |
| 60                       | 181.000 | 181.130 | 0.130  | 15          |         |
| 61                       | 181.610 | 182.000 | 0.390  | 41          |         |
| 62                       | 182.000 | 182.200 | 0.200  | 26          |         |
| 63                       | 182.820 | 183.000 | 0.180  | 19          |         |
| 64                       | 183.000 | 183.760 | 0.760  | 87          |         |
| 65                       | 184.500 | 185.000 | 0.500  | 49          |         |
| 66                       | 185.000 | 185.030 | 0.030  | 8           |         |
| 67                       | 185.180 | 185.360 | 0.180  | 24          |         |
| 68                       | 186.800 | 187.000 | 0.200  | 20          |         |
| 69                       | 187.000 | 187.250 | 0.250  | 26          |         |
| 70                       | 188.400 | 188.640 | 0.240  | 28          |         |
| 71                       | 188.700 | 188.000 | -0.700 | 33          |         |
| 72                       | 189.000 | 189.030 | 0.030  | 3           |         |
| 73                       | 189.610 | 189.650 | 0.040  | 4           |         |
| 74                       | 189.700 | 189.920 | 0.220  | 23          |         |
| 75                       | 191.200 | 191.400 | 0.200  | 24          |         |
| 76                       | 191.200 | 191.400 | 0.200  | 25          |         |
| 77                       | 191.600 | 191.660 | 0.060  | 10          |         |
| 78                       | 194.620 | 194.680 | 0.060  | 6           |         |
| 79                       | 194.700 | 194.800 | 0.100  | 16          |         |
| 80                       | 195.820 | 196.000 | 0.180  | 31          |         |
| 81                       | 196.000 | 196.200 | 0.200  | 18          |         |
| 82                       | 196.500 | 196.700 | 0.200  | 26          |         |
| 83                       | 196.900 | 197.000 | 0.100  | 14          |         |
| 84                       | 197.000 | 197.230 | 0.230  | 26          |         |

| Details of Median Chutes |         |         |               |             |         |
|--------------------------|---------|---------|---------------|-------------|---------|
| Sr. No.                  | From    | To      | Length        | No. of Cuts | Remarks |
| 85                       | 197.900 | 198.000 | 0.100         | 11          |         |
| 86                       | 198.300 | 198.400 | 0.100         | 12          |         |
| 87                       | 198.800 | 199.000 | 0.200         | 23          |         |
| 88                       | 199.000 | 199.800 | 0.800         | 64          |         |
| 89                       | 200.550 | 200.850 | 0.300         | 25          |         |
| 90                       | 200.900 | 201.000 | 0.100         | 16          |         |
| 91                       | 201.000 | 201.880 | 0.880         | 76          |         |
| 92                       | 202.930 | 203.000 | 0.070         | 11          |         |
| 93                       | 203.000 | 203.200 | 0.200         | 22          |         |
| 94                       | 204.400 | 204.700 | 0.300         | 37          |         |
| 95                       | 204.800 | 205.000 | 0.200         | 25          |         |
| 96                       | 205.000 | 205.100 | 0.100         | 8           |         |
| 97                       | 205.200 | 205.700 | 0.500         | 52          |         |
| 98                       | 205.930 | 206.000 | 0.070         | 22          |         |
| 99                       | 206.000 | 206.800 | 0.800         | 98          |         |
| 100                      | 207.000 | 207.980 | 0.980         | 96          |         |
| 101                      | 208.300 | 209.000 | 0.700         | 74          |         |
| 102                      | 209.130 | 209.360 | 0.230         | 25          |         |
| 103                      | 210.450 | 210.730 | 0.280         | 39          |         |
| 104                      | 211.720 | 212.000 | 0.280         | 35          |         |
| 105                      | 213.000 | 213.230 | 0.230         | 30          |         |
| 106                      | 213.600 | 213.900 | 0.300         | 27          |         |
| 107                      | 214.800 | 214.880 | 0.080         | 11          |         |
| <b>Total</b>             |         |         | <b>28.150</b> | <b>3075</b> |         |

Stone Pitching is found in approaches of some of the Grade-Separators/ROB/Major Bridges along the Project. Side kerb and chutes are also observed in the approaches whereas the dissipation chambers are covered with garbage and soil. Slope Protection details and side kerb details are listed in the tables below.

**Table 9: Slope Protection Details**

| S. no | Chainage (km) |        | Length | Side | Embankment | Green Blanking | Stone Pitching | RE wall | Partial RE Wall | Grouting | Condition | Remarks |
|-------|---------------|--------|--------|------|------------|----------------|----------------|---------|-----------------|----------|-----------|---------|
|       | From          | To     |        |      |            |                |                |         |                 |          |           |         |
| 1     | 128.05        | 128.35 | 0.300  | LHS  | Yes        | Yes            | No             | No      | No              | No       | Poor      |         |
| 2     | 128.4         | 128.75 | 0.350  | LHS  | No         | No             | No             | Yes     | No              | No       | Good      |         |
| 3     | 128.4         | 128.75 | 0.350  | RHS  | No         | No             | No             | Yes     | No              | No       | Good      |         |
| 4     | 131.12        | 131.3  | 0.180  | LHS  | Yes        | Yes            | No             | No      | No              | No       | Good      |         |
| 5     | 131.32        | 131.42 | 0.100  | LHS  | Yes        | Yes            | No             | No      | No              | No       | Good      |         |

| S. no | Chainage (km) |        | Length | Side | Embankment | Green Blanking | Stone Pitching | RE wall | Partial RE Wall | Grouting | Condition    | Remarks                  |
|-------|---------------|--------|--------|------|------------|----------------|----------------|---------|-----------------|----------|--------------|--------------------------|
|       | From          | To     |        |      |            |                |                |         |                 |          |              |                          |
| 6     | 131.1         | 131.3  | 0.200  | RHS  | Yes        | Yes            | No             | No      | No              | No       | Good         |                          |
| 7     | 131.32        | 131.42 | 0.100  | RHS  | Yes        | Yes            | No             | No      | No              | No       | Fair to Poor |                          |
| 8     | 136.05        | 136.15 | 0.100  | LHS  | Yes        | Yes            | No             | No      | No              | No       | Poor         |                          |
| 9     | 136.15        | 136.72 | 0.570  | LHS  | Yes        | No             | No             | No      | Yes             | No       | Good         | Partial RE wall provided |
| 10    | 136.8         | 137.25 | 0.450  | LHS  | No         | No             | No             | Yes     | No              | No       | Good         |                          |
| 11    | 136.2         | 136.8  | 0.600  | RHS  | Yes        | Yes            | No             | No      | Yes             | No       | Good         | Partial RE wall provided |
| 12    | 139.7         | 140.03 | 0.330  | RHS  | Yes        | Yes            | No             | No      | No              | No       | Fair to Poor |                          |
| 13    | 140.25        | 140.4  | 0.150  | RHS  | Yes        | Yes            | No             | No      | No              | No       | Fair to Poor |                          |
| 14    | 140.42        | 140.47 | 0.050  | RHS  | Yes        | No             | No             | No      | No              | No       | Good         |                          |
| 15    | 140.8         | 141.2  | 0.400  | LHS  | No         | No             | No             | Yes     | No              | No       | Good         |                          |
| 16    | 141.28        | 141.66 | 0.380  | LHS  | No         | No             | No             | Yes     | No              | No       | Good         |                          |
| 17    | 140.8         | 141.2  | 0.400  | RHS  | No         | No             | No             | Yes     | No              | No       | Good         |                          |
| 18    | 141.28        | 141.66 | 0.380  | RHS  | No         | No             | No             | Yes     | No              | No       | Good         |                          |
| 19    | 144.27        | 144.5  | 0.230  | LHS  | Yes        | Yes            | No             | No      | Yes             | No       | Good         | Partial RE wall provided |
| 20    | 144.66        | 145.1  | 0.440  | LHS  | Yes        | Yes            | No             | No      | Yes             | No       | Good         | Partial RE wall provided |
| 21    | 144.15        | 144.25 | 0.100  | RHS  | Yes        | Yes            | No             | No      | No              | No       | Good         |                          |
| 22    | 146.75        | 147.17 | 0.420  | LHS  | No         | No             | No             | Yes     | No              | No       | Good         |                          |
| 23    | 147.2         | 147.6  | 0.400  | LHS  | No         | No             | No             | Yes     | No              | No       | Good         |                          |
| 24    | 146.75        | 147.17 | 0.420  | RHS  | No         | No             | No             | Yes     | No              | No       | Good         |                          |
| 25    | 147.2         | 147.6  | 0.400  | RHS  | No         | No             | No             | Yes     | No              | No       | Good         |                          |
| 26    | 151.7         | 152.02 | 0.320  | LHS  | No         | No             | No             | Yes     | No              | No       | Good         |                          |
| 27    | 152.07        | 152.4  | 0.330  | LHS  | Yes        | Yes            | No             | No      | No              | No       | Good         |                          |
| 28    | 151.7         | 152.02 | 0.320  | RHS  | No         | No             | No             | Yes     | No              | No       | Good         |                          |
| 29    | 152.07        | 152.4  | 0.330  | RHS  | No         | No             | No             | Yes     | No              | No       | Good         |                          |
| 30    | 161.2         | 161.32 | 0.120  | RHS  | Yes        | Yes            | No             | No      | No              | No       | Fair to Poor |                          |
| 31    | 162.47        | 162.91 | 0.440  | LHS  | No         | No             | No             | Yes     | No              | No       | Good         |                          |
| 32    | 162.93        | 163.1  | 0.170  | LHS  | No         | No             | No             | Yes     | No              | No       | Good         |                          |
| 33    | 162.47        | 162.91 | 0.440  | RHS  | No         | No             | No             | Yes     | No              | No       | Good         |                          |
| 34    | 162.93        | 163.15 | 0.220  | RHS  | No         | No             | No             | Yes     | No              | No       | Good         |                          |
| 35    | 166.97        | 167.02 | 0.050  | LHS  | Yes        | No             | No             | No      | No              | Yes      | Good         |                          |
| 36    | 167.01        | 167.02 | 0.010  | RHS  | No         | No             | No             | No      | No              | Yes      | Good         |                          |
| 37    | 170.48        | 170.64 | 0.160  | LHS  | Yes        | No             | No             | No      | No              | No       | Good         |                          |
| 38    | 170.66        | 170.82 | 0.160  | LHS  | Yes        | Yes            | No             | No      | No              | No       | Fair to Poor |                          |
| 39    | 170.82        | 170.96 | 0.140  | LHS  | Yes        | Yes            | No             | No      | Yes             | No       | Good         | Partial RE wall provided |
| 40    | 170.96        | 171    | 0.040  | LHS  | No         | No             | No             | Yes     | No              | No       | Good         |                          |

| S. no             | Chainage (km) |        | Length       | Side | Embankment | Green Blanking | Stone Pitching | RE wall | Partial RE Wall | Grouting | Condition | Remarks                  |
|-------------------|---------------|--------|--------------|------|------------|----------------|----------------|---------|-----------------|----------|-----------|--------------------------|
|                   | From          | To     |              |      |            |                |                |         |                 |          |           |                          |
| 41                | 171.08        | 171.4  | 0.320        | LHS  | Yes        | Yes            | No             | No      | Yes             | No       | Good      | Partial RE wall provided |
| 42                | 170.5         | 170.64 | 0.140        | RHS  | Yes        | No             | No             | No      | No              | No       | Good      |                          |
| 43                | 170.66        | 170.96 | 0.300        | RHS  | Yes        | Yes            | No             | No      | No              | No       | Good      |                          |
| 44                | 170.96        | 171    | 0.040        | RHS  | No         | No             | No             | Yes     | No              | No       | Good      |                          |
| 45                | 171.08        | 171.25 | 0.170        | RHS  | Yes        | Yes            | No             | No      | No              | No       | Good      |                          |
| 46                | 171.6         | 171.8  | 0.200        | RHS  | Yes        | Yes            | No             | No      | No              | No       | Good      |                          |
| 47                | 171.8         | 172    | 0.200        | RHS  | Yes        | No             | No             | No      | No              | No       | Good      |                          |
| 48                | 181           | 181.12 | 0.120        | LHS  | Yes        | No             | No             | No      | No              | No       | Good      |                          |
| 49                | 181.15        | 181.2  | 0.050        | LHS  | Yes        | No             | No             | No      | No              | No       | Good      |                          |
| 50                | 181.05        | 181.12 | 0.070        | RHS  | Yes        | No             | No             | No      | No              | No       | Poor      | Damaged 50m @3.0m height |
| 51                | 181.61        | 181.8  | 0.190        | RHS  | Yes        | No             | No             | No      | No              | No       | Good      |                          |
| 52                | 199           | 199.08 | 0.080        | LHS  | Yes        | No             | No             | No      | No              | No       | Good      |                          |
| 53                | 199.11        | 199.2  | 0.090        | LHS  | Yes        | No             | No             | No      | No              | No       | Good      |                          |
| 54                | 201.75        | 201.93 | 0.180        | LHS  | Yes        | No             | No             | No      | No              | No       | Poor      | Damaged 60m @ 3.5m       |
| 55                | 201.95        | 202.15 | 0.200        | LHS  | Yes        | No             | No             | No      | No              | No       | Good      |                          |
| 56                | 201.75        | 201.93 | 0.180        | RHS  | Yes        | No             | No             | No      | No              | No       | Good      |                          |
| 57                | 201.95        | 202.15 | 0.200        | RHS  | Yes        | No             | No             | No      | No              | No       | Good      |                          |
| <b>Total (km)</b> |               |        | <b>13.78</b> |      |            |                |                |         |                 |          |           |                          |

**Stone Pitching**

| S. No | Chainage |         | Length | Side | Remarks        |
|-------|----------|---------|--------|------|----------------|
|       | From     | To      |        |      |                |
| 1     | 128.400  | 128.500 | 0.100  | LHS  | Stone Pitching |
| 2     | 131.060  | 131.140 | 0.080  | LHS  | Stone Pitching |
| 3     | 131.060  | 131.160 | 0.100  | RHS  | Stone Pitching |
| 4     | 131.520  | 131.590 | 0.070  | RHS  | Stone Pitching |
| 5     | 131.540  | 131.590 | 0.050  | LHS  | Stone Pitching |
| 6     | 132.120  | 132.240 | 0.120  | RHS  | Stone Pitching |
| 7     | 136.440  | 136.470 | 0.030  | LHS  | Stone Pitching |
| 8     | 136.500  | 137.040 | 0.540  | LHS  | Stone Pitching |
| 9     | 136.960  | 137.040 | 0.080  | RHS  | Stone Pitching |
| 10    | 137.140  | 137.400 | 0.260  | RHS  | Stone Pitching |
| 11    | 138.200  | 138.440 | 0.240  | LHS  | Stone Pitching |
| 12    | 139.960  | 140.280 | 0.320  | RHS  | Stone Pitching |
| 13    | 140.010  | 140.290 | 0.280  | LHS  | Stone Pitching |
| 14    | 140.520  | 140.620 | 0.100  | LHS  | Stone Pitching |
| 15    | 140.540  | 140.620 | 0.080  | RHS  | Stone Pitching |
| 16    | 141.820  | 142.100 | 0.280  | RHS  | Stone Pitching |
| 17    | 142.680  | 142.740 | 0.060  | LHS  | Stone Pitching |

| S. No | Chainage |         | Length | Side | Remarks        |
|-------|----------|---------|--------|------|----------------|
|       | From     | To      |        |      |                |
| 18    | 142.980  | 143.040 | 0.060  | LHS  | Stone Pitching |
| 19    | 143.440  | 143.480 | 0.040  | LHS  | Stone Pitching |
| 20    | 144.530  | 144.700 | 0.170  | RHS  | Stone Pitching |
| 21    | 144.880  | 145.040 | 0.160  | RHS  | Stone Pitching |
| 22    | 144.900  | 145.200 | 0.300  | LHS  | Stone Pitching |
| 23    | 145.220  | 145.560 | 0.340  | LHS  | Stone Pitching |
| 24    | 145.580  | 145.620 | 0.040  | LHS  | Stone Pitching |
| 25    | 146.580  | 146.660 | 0.080  | RHS  | Stone Pitching |
| 26    | 147.160  | 147.400 | 0.240  | LHS  | Stone Pitching |
| 27    | 148.900  | 149.020 | 0.120  | LHS  | Stone Pitching |
| 28    | 149.400  | 149.600 | 0.200  | LHS  | Stone Pitching |
| 29    | 150.000  | 150.220 | 0.220  | RHS  | Stone Pitching |
| 30    | 150.380  | 150.460 | 0.080  | LHS  | Stone Pitching |
| 31    | 152.760  | 152.840 | 0.080  | LHS  | Stone Pitching |
| 32    | 152.760  | 152.840 | 0.080  | RHS  | Stone Pitching |
| 33    | 153.060  | 153.360 | 0.300  | LHS  | Stone Pitching |
| 34    | 153.080  | 153.360 | 0.280  | RHS  | Stone Pitching |
| 35    | 155.000  | 155.120 | 0.120  | RHS  | Stone Pitching |
| 36    | 155.290  | 155.500 | 0.210  | RHS  | Stone Pitching |
| 37    | 155.310  | 155.500 | 0.190  | LHS  | Stone Pitching |
| 38    | 155.520  | 155.620 | 0.100  | LHS  | Stone Pitching |
| 39    | 155.520  | 155.620 | 0.100  | RHS  | Stone Pitching |
| 40    | 157.020  | 157.120 | 0.100  | RHS  | Stone Pitching |
| 41    | 157.400  | 157.460 | 0.060  | LHS  | Stone Pitching |
| 42    | 160.380  | 160.460 | 0.080  | LHS  | Stone Pitching |
| 43    | 160.420  | 160.500 | 0.080  | RHS  | Stone Pitching |
| 44    | 160.940  | 161.190 | 0.250  | RHS  | Stone Pitching |
| 45    | 160.960  | 161.050 | 0.090  | LHS  | Stone Pitching |
| 46    | 161.210  | 161.880 | 0.670  | RHS  | Stone Pitching |
| 47    | 161.440  | 161.900 | 0.460  | LHS  | Stone Pitching |
| 48    | 164.700  | 164.780 | 0.080  | RHS  | Stone Pitching |
| 49    | 164.720  | 164.780 | 0.060  | LHS  | Stone Pitching |
| 50    | 165.120  | 165.340 | 0.220  | RHS  | Stone Pitching |
| 51    | 165.540  | 165.640 | 0.100  | RHS  | Stone Pitching |
| 52    | 166.180  | 166.285 | 0.105  | LHS  | Stone Pitching |
| 53    | 166.220  | 166.285 | 0.065  | RHS  | Stone Pitching |
| 54    | 166.305  | 166.420 | 0.115  | LHS  | Stone Pitching |
| 55    | 166.305  | 166.360 | 0.055  | RHS  | Stone Pitching |
| 56    | 169.360  | 169.520 | 0.160  | RHS  | Stone Pitching |

| S. No | Chainage |         | Length | Side | Remarks        |
|-------|----------|---------|--------|------|----------------|
|       | From     | To      |        |      |                |
| 57    | 169.380  | 169.500 | 0.120  | LHS  | Stone Pitching |
| 58    | 170.960  | 171.210 | 0.250  | LHS  | Stone Pitching |
| 59    | 170.960  | 171.210 | 0.250  | RHS  | Stone Pitching |
| 60    | 171.360  | 171.510 | 0.150  | LHS  | Stone Pitching |
| 61    | 171.360  | 171.510 | 0.150  | RHS  | Stone Pitching |
| 62    | 171.870  | 171.910 | 0.040  | LHS  | Stone Pitching |
| 63    | 171.870  | 171.910 | 0.040  | RHS  | Stone Pitching |
| 64    | 171.950  | 172.290 | 0.340  | LHS  | Stone Pitching |
| 65    | 171.950  | 172.290 | 0.340  | RHS  | Stone Pitching |
| 66    | 172.700  | 172.760 | 0.060  | LHS  | Stone Pitching |
| 67    | 172.800  | 173.040 | 0.240  | RHS  | Stone Pitching |
| 68    | 173.200  | 173.280 | 0.080  | RHS  | Stone Pitching |
| 69    | 173.240  | 173.320 | 0.080  | LHS  | Stone Pitching |
| 70    | 173.540  | 173.620 | 0.080  | LHS  | Stone Pitching |
| 71    | 174.740  | 174.960 | 0.220  | LHS  | Stone Pitching |
| 72    | 174.800  | 174.880 | 0.080  | RHS  | Stone Pitching |
| 73    | 175.060  | 175.300 | 0.240  | LHS  | Stone Pitching |
| 74    | 175.160  | 175.300 | 0.140  | RHS  | Stone Pitching |
| 75    | 175.580  | 175.660 | 0.080  | RHS  | Stone Pitching |
| 76    | 175.660  | 175.760 | 0.100  | LHS  | Stone Pitching |
| 77    | 175.720  | 175.780 | 0.060  | RHS  | Stone Pitching |
| 78    | 175.840  | 175.880 | 0.040  | RHS  | Stone Pitching |
| 79    | 175.900  | 175.960 | 0.060  | LHS  | Stone Pitching |
| 80    | 176.120  | 176.240 | 0.120  | RHS  | Stone Pitching |
| 81    | 176.480  | 176.560 | 0.080  | LHS  | Stone Pitching |
| 82    | 176.740  | 176.920 | 0.180  | LHS  | Stone Pitching |
| 1     | 176.860  | 176.940 | 0.080  | RHS  | Stone Pitching |
| 2     | 177.280  | 177.420 | 0.140  | RHS  | Stone Pitching |
| 3     | 177.500  | 177.580 | 0.080  | LHS  | Stone Pitching |
| 4     | 177.500  | 177.600 | 0.100  | RHS  | Stone Pitching |
| 5     | 177.860  | 177.900 | 0.040  | RHS  | Stone Pitching |
| 6     | 178.200  | 178.240 | 0.040  | LHS  | Stone Pitching |
| 7     | 178.360  | 178.440 | 0.080  | LHS  | Stone Pitching |
| 8     | 178.600  | 178.840 | 0.240  | RHS  | Stone Pitching |
| 9     | 178.720  | 178.820 | 0.100  | LHS  | Stone Pitching |
| 10    | 179.260  | 179.420 | 0.160  | LHS  | Stone Pitching |
| 11    | 179.840  | 180.000 | 0.160  | RHS  | Stone Pitching |
| 12    | 180.160  | 180.320 | 0.160  | LHS  | Stone Pitching |
| 13    | 180.160  | 180.200 | 0.040  | RHS  | Stone Pitching |

| S. No | Chainage |         | Length | Side | Remarks        |
|-------|----------|---------|--------|------|----------------|
|       | From     | To      |        |      |                |
| 14    | 180.580  | 180.640 | 0.060  | LHS  | Stone Pitching |
| 15    | 180.840  | 181.040 | 0.200  | LHS  | Stone Pitching |
| 16    | 181.360  | 181.404 | 0.044  | RHS  | Stone Pitching |
| 17    | 181.411  | 181.661 | 0.250  | RHS  | Stone Pitching |
| 18    | 181.440  | 181.640 | 0.200  | LHS  | Stone Pitching |
| 19    | 181.681  | 181.880 | 0.199  | RHS  | Stone Pitching |
| 20    | 182.360  | 182.440 | 0.080  | LHS  | Stone Pitching |
| 21    | 182.500  | 182.560 | 0.060  | RHS  | Stone Pitching |
| 22    | 182.640  | 182.680 | 0.040  | RHS  | Stone Pitching |
| 23    | 182.780  | 183.040 | 0.260  | RHS  | Stone Pitching |
| 24    | 184.980  | 185.160 | 0.180  | LHS  | Stone Pitching |
| 25    | 185.180  | 185.300 | 0.120  | LHS  | Stone Pitching |
| 26    | 185.740  | 185.840 | 0.100  | LHS  | Stone Pitching |
| 27    | 186.380  | 186.660 | 0.280  | RHS  | Stone Pitching |
| 28    | 186.400  | 186.580 | 0.180  | LHS  | Stone Pitching |
| 29    | 187.340  | 187.580 | 0.240  | RHS  | Stone Pitching |
| 30    | 187.500  | 187.620 | 0.120  | LHS  | Stone Pitching |
| 31    | 187.720  | 187.780 | 0.060  | LHS  | Stone Pitching |
| 32    | 187.720  | 187.780 | 0.060  | RHS  | Stone Pitching |
| 33    | 188.500  | 188.900 | 0.400  | RHS  | Stone Pitching |
| 34    | 189.620  | 189.660 | 0.040  | LHS  | Stone Pitching |
| 35    | 189.740  | 189.940 | 0.200  | LHS  | Stone Pitching |
| 36    | 189.860  | 190.080 | 0.220  | RHS  | Stone Pitching |
| 37    | 190.000  | 190.080 | 0.080  | LHS  | Stone Pitching |
| 38    | 190.120  | 190.320 | 0.200  | RHS  | Stone Pitching |
| 39    | 190.360  | 190.420 | 0.060  | LHS  | Stone Pitching |
| 40    | 190.740  | 190.980 | 0.240  | RHS  | Stone Pitching |
| 41    | 190.820  | 191.020 | 0.200  | LHS  | Stone Pitching |
| 42    | 191.600  | 191.660 | 0.060  | LHS  | Stone Pitching |
| 43    | 192.380  | 192.480 | 0.100  | RHS  | Stone Pitching |
| 44    | 197.700  | 197.840 | 0.140  | LHS  | Stone Pitching |
| 45    | 197.700  | 197.860 | 0.160  | RHS  | Stone Pitching |
| 46    | 199.020  | 199.080 | 0.060  | RHS  | Stone Pitching |
| 47    | 199.300  | 199.366 | 0.066  | RHS  | Stone Pitching |
| 48    | 199.373  | 199.480 | 0.107  | RHS  | Stone Pitching |
| 49    | 200.280  | 200.460 | 0.180  | RHS  | Stone Pitching |
| 50    | 201.780  | 202.380 | 0.600  | RHS  | Stone Pitching |
| 51    | 202.140  | 202.200 | 0.060  | LHS  | Stone Pitching |
| 52    | 202.280  | 202.380 | 0.100  | LHS  | Stone Pitching |



| S. No               | Chainage |         | Length        | Side | Remarks        |
|---------------------|----------|---------|---------------|------|----------------|
|                     | From     | To      |               |      |                |
| 53                  | 202.460  | 202.500 | 0.040         | RHS  | Stone Pitching |
| 54                  | 202.840  | 202.940 | 0.100         | LHS  | Stone Pitching |
| 55                  | 202.860  | 203.060 | 0.200         | RHS  | Stone Pitching |
| 56                  | 204.210  | 204.246 | 0.036         | LHS  | Stone Pitching |
| 57                  | 204.220  | 204.236 | 0.016         | RHS  | Stone Pitching |
| 58                  | 204.253  | 204.540 | 0.287         | RHS  | Stone Pitching |
| 59                  | 204.260  | 204.540 | 0.280         | LHS  | Stone Pitching |
| 60                  | 204.780  | 204.940 | 0.160         | RHS  | Stone Pitching |
| 61                  | 205.300  | 205.520 | 0.220         | LHS  | Stone Pitching |
| 62                  | 205.960  | 206.020 | 0.060         | LHS  | Stone Pitching |
| 63                  | 206.940  | 207.080 | 0.140         | LHS  | Stone Pitching |
| 64                  | 207.240  | 207.420 | 0.180         | RHS  | Stone Pitching |
| 65                  | 207.840  | 207.900 | 0.060         | LHS  | Stone Pitching |
| 66                  | 209.080  | 209.220 | 0.140         | RHS  | Stone Pitching |
| 67                  | 209.440  | 209.600 | 0.160         | LHS  | Stone Pitching |
| 68                  | 210.060  | 210.200 | 0.140         | LHS  | Stone Pitching |
| 69                  | 210.060  | 210.180 | 0.120         | RHS  | Stone Pitching |
| 70                  | 210.260  | 210.520 | 0.260         | LHS  | Stone Pitching |
| 71                  | 210.280  | 210.520 | 0.240         | RHS  | Stone Pitching |
| 72                  | 210.780  | 210.920 | 0.140         | RHS  | Stone Pitching |
| 73                  | 211.000  | 211.200 | 0.200         | RHS  | Stone Pitching |
| 74                  | 211.020  | 211.300 | 0.280         | LHS  | Stone Pitching |
| 75                  | 211.720  | 211.960 | 0.240         | RHS  | Stone Pitching |
| 76                  | 212.360  | 212.520 | 0.160         | LHS  | Stone Pitching |
| 77                  | 212.360  | 212.480 | 0.120         | RHS  | Stone Pitching |
| 78                  | 213.440  | 213.520 | 0.080         | LHS  | Stone Pitching |
| 79                  | 213.500  | 213.540 | 0.040         | RHS  | Stone Pitching |
| 80                  | 214.200  | 214.300 | 0.100         | LHS  | Stone Pitching |
| 81                  | 214.880  | 214.940 | 0.060         | RHS  | Stone Pitching |
| <b>Total Length</b> |          |         | <b>24.355</b> |      |                |

Table 10: Side Kerb and chute Details

| S. No. | Chainage (km) |        | Side | Length(km) | No of Chutes | No of Chutes Damaged | Side kerb damaged | Remarks |
|--------|---------------|--------|------|------------|--------------|----------------------|-------------------|---------|
|        | From          | To     |      |            |              |                      |                   |         |
| 1      | 128.1         | 128.6  | LHS  | 0.5        | 10           | -                    | -                 |         |
| 2      | 130.8         | 130.9  | LHS  | 0.1        | 8            |                      |                   |         |
| 3      | 131.25        | 131.35 | LHS  | 0.1        | 4            | -                    | -                 |         |
| 4      | 136           | 136.8  | LHS  | 0.8        | 42           | -                    | -                 |         |
| 5      | 137.95        | 138.15 | LHS  | 0.2        | 17           | -                    | -                 |         |

| S. No. | Chainage (km) |        | Side | Length(km) | No of Chutes | No of Chutes Damaged | Side kerb damaged | Remarks |
|--------|---------------|--------|------|------------|--------------|----------------------|-------------------|---------|
|        | From          | To     |      |            |              |                      |                   |         |
| 6      | 139.7         | 140.1  | LHS  | 0.4        | 16           | -                    | -                 |         |
| 7      | 140.2         | 140.35 | LHS  | 0.15       | 12           | -                    | -                 |         |
| 8      | 142.4         | 142.75 | LHS  | 0.35       | 10           | -                    | -                 |         |
| 9      | 144.2         | 145.3  | LHS  | 1.1        | 45           | -                    | -                 |         |
| 10     | 146.6         | 146.8  | LHS  | 0.2        | 10           |                      |                   |         |
| 11     | 148.6         | 148.7  | LHS  | 0.1        | 9            | 1                    | -                 |         |
| 12     | 149.1         | 149.3  | LHS  | 0.2        | 14           | -                    | -                 |         |
| 13     | 150.1         | 150.2  | LHS  | 0.1        | 6            | -                    | -                 |         |
| 14     | 152.4         | 152.5  | LHS  | 0.1        | 5            | -                    | -                 |         |
| 15     | 152.7         | 153.1  | LHS  | 0.4        | 19           | 3                    | 5                 |         |
| 16     | 155           | 155.4  | LHS  | 0.4        | 21           | -                    | -                 |         |
| 17     | 157.4         | 157.5  | LHS  | 0.1        | 5            | -                    | -                 |         |
| 18     | 160.6         | 161    | LHS  | 0.4        | 12           | -                    | -                 |         |
| 19     | 161.95        | 162.5  | LHS  | 0.55       | 18           | -                    | -                 |         |
| 20     | 162.51        | 162.65 | LHS  | 0.14       | 15           | -                    | -                 |         |
| 21     | 164.45        | 164.5  | LHS  | 0.05       | 10           | -                    | -                 |         |
| 22     | 166.1         | 166.3  | LHS  | 0.2        | 12           | -                    | -                 |         |
| 23     | 166.6         | 167.01 | LHS  | 0.41       | 39           | -                    | -                 |         |
| 24     | 167.06        | 167.42 | LHS  | 0.36       | 24           | -                    | -                 |         |
| 25     | 168.2         | 168.4  | LHS  | 0.2        | 3            | -                    | -                 |         |
| 26     | 169           | 169.3  | LHS  | 0.3        | 12           | -                    | -                 |         |
| 27     | 171.12        | 171.4  | LHS  | 0.28       | 23           | -                    | -                 |         |
| 28     | 171.6         | 171.7  | LHS  | 0.1        | 3            | -                    | -                 |         |
| 29     | 172.46        | 172.6  | LHS  | 0.14       | 5            | -                    | -                 |         |
| 30     | 172.9         | 173.1  | LHS  | 0.2        | 4            | -                    | -                 |         |
| 31     | 174.6         | 175.05 | LHS  | 0.45       | 32           | 4                    | 5                 |         |
| 32     | 175.2         | 175.4  | LHS  | 0.2        | 9            | -                    | -                 |         |
| 33     | 175.6         | 175.7  | LHS  | 0.1        | 7            | -                    | -                 |         |
| 34     | 176.2         | 176.3  | LHS  | 0.1        | 6            | -                    | -                 |         |
| 35     | 176.6         | 176.8  | LHS  | 0.2        | 13           | -                    | -                 |         |
| 36     | 177.4         | 177.6  | LHS  | 0.2        | 6            | 2                    | -                 |         |
| 37     | 177.8         | 177.9  | LHS  | 0.1        | 4            | -                    | -                 |         |
| 38     | 178.1         | 178.2  | LHS  | 0.1        | 6            | 2                    | -                 |         |
| 39     | 178.4         | 178.6  | LHS  | 0.2        | 6            | 1                    | -                 |         |
| 40     | 178.9         | 179.2  | LHS  | 0.3        | 10           | 3                    | -                 |         |
| 41     | 179.9         | 180.05 | LHS  | 0.15       | 11           | 2                    | -                 |         |
| 42     | 180.2         | 180.3  | LHS  | 0.1        | 5            | -                    | 5                 |         |
| 43     | 180.55        | 180.8  | LHS  | 0.25       | 9            | 2                    | -                 |         |
| 44     | 181           | 181.2  | LHS  | 0.2        | 14           | -                    | -                 |         |

| S. No. | Chainage (km) |        | Side | Length(km) | No of Chutes | No of Chutes Damaged | Side kerb damaged | Remarks |
|--------|---------------|--------|------|------------|--------------|----------------------|-------------------|---------|
|        | From          | To     |      |            |              |                      |                   |         |
| 45     | 181.4         | 181.6  | LHS  | 0.2        | 7            | -                    | -                 |         |
| 46     | 184.6         | 184.85 | LHS  | 0.25       | 14           | -                    | -                 |         |
| 47     | 184.85        | 185.05 | LHS  | 0.2        | 8            | -                    | -                 |         |
| 48     | 185.55        | 185.65 | LHS  | 0.1        | 8            | 2                    | -                 |         |
| 49     | 186.1         | 186.3  | LHS  | 0.2        | 13           | -                    | -                 |         |
| 50     | 187.1         | 187.25 | LHS  | 0.15       | 9            | 1                    | -                 |         |
| 51     | 187.4         | 187.6  | LHS  | 0.2        | 5            | -                    | -                 |         |
| 52     | 189.4         | 189.6  | LHS  | 0.2        | 4            | -                    | 5                 |         |
| 53     | 189.7         | 189.8  | LHS  | 0.1        | 23           | -                    | -                 |         |
| 54     | 189.9         | 190    | LHS  | 0.1        | 6            | -                    | -                 |         |
| 55     | 190.3         | 190.5  | LHS  | 0.2        | 9            | -                    | -                 |         |
| 56     | 191.2         | 191.4  | LHS  | 0.2        | 5            | -                    | -                 |         |
| 57     | 193.1         | 193.3  | LHS  | 0.2        | 21           | 2                    | -                 |         |
| 58     | 193.4         | 193.5  | LHS  | 0.1        | 4            | -                    | -                 |         |
| 59     | 197.5         | 197.6  | LHS  | 0.1        | 10           | -                    | -                 |         |
| 60     | 199.2         | 199.4  | LHS  | 0.2        | 5            | -                    | -                 |         |
| 61     | 202           | 202.15 | LHS  | 0.15       | 8            | -                    | -                 |         |
| 62     | 202.6         | 202.8  | LHS  | 0.2        | 8            | -                    | -                 |         |
| 63     | 203.95        | 204    | LHS  | 0.05       | 3            | -                    | -                 |         |
| 64     | 204           | 204.35 | LHS  | 0.35       | 20           | -                    | -                 |         |
| 65     | 204.5         | 204.7  | LHS  | 0.2        | 12           | -                    | -                 |         |
| 66     | 205           | 205.2  | LHS  | 0.2        | 16           | -                    | -                 |         |
| 67     | 206.7         | 206.75 | LHS  | 0.05       | 5            | -                    | -                 |         |
| 68     | 206.8         | 206.9  | LHS  | 0.1        | 10           | -                    | -                 |         |
| 69     | 207           | 207.05 | LHS  | 0.05       | 3            | -                    | -                 |         |
| 70     | 207.5         | 207.6  | LHS  | 0.1        | 5            | -                    | -                 |         |
| 71     | 209.16        | 209.2  | LHS  | 0.04       | 12           | -                    | -                 |         |
| 72     | 209.8         | 209.99 | LHS  | 0.19       | 10           | -                    | -                 |         |
| 73     | 210           | 210.3  | LHS  | 0.3        | 18           | -                    | -                 |         |
| 74     | 211           | 211.28 | LHS  | 0.28       | 20           | -                    | -                 |         |
| 75     | 212           | 212.3  | LHS  | 0.3        | 12           | -                    | -                 |         |
| 76     | 213.4         | 213.5  | LHS  | 0.1        | 6            | -                    | -                 |         |
| 77     | 214.3         | 214.5  | LHS  | 0.2        | 7            | -                    | -                 |         |
| 78     | 214.62        | 214.64 | LHS  | 0.02       | 2            | -                    | -                 |         |
| 79     | 130.6         | 130.8  | RHS  | 0.2        | 6            | -                    | -                 |         |
| 80     | 131.2         | 131.4  | RHS  | 0.2        | 7            | -                    | 5                 |         |
| 81     | 136.5         | 136.7  | RHS  | 0.2        | 12           | -                    | -                 |         |
| 82     | 137           | 137.6  | RHS  | 0.6        | 11           | -                    | -                 |         |
| 83     | 139.8         | 140    | RHS  | 0.2        | 20           | -                    | -                 |         |

| S. No. | Chainage (km) |        | Side | Length(km) | No of Chutes | No of Chutes Damaged | Side kerb damaged | Remarks |
|--------|---------------|--------|------|------------|--------------|----------------------|-------------------|---------|
|        | From          | To     |      |            |              |                      |                   |         |
| 84     | 140.1         | 140.2  | RHS  | 0.1        | 13           | -                    | -                 |         |
| 85     | 141.6         | 141.8  | RHS  | 0.2        | 20           | -                    | -                 |         |
| 86     | 144.2         | 144.5  | RHS  | 0.3        | 43           | -                    | -                 |         |
| 87     | 144.6         | 145.4  | RHS  | 0.8        | 22           | -                    | -                 |         |
| 88     | 146.6         | 146.8  | RHS  | 0.2        | 6            | -                    | -                 |         |
| 89     | 149.7         | 149.9  | RHS  | 0.2        | 6            | -                    | -                 |         |
| 90     | 152.8         | 153.1  | RHS  | 0.3        | 20           | -                    | -                 |         |
| 91     | 154.6         | 154.7  | RHS  | 0.1        | 9            | -                    | -                 |         |
| 92     | 155           | 155.6  | RHS  | 0.6        | 23           | -                    | -                 |         |
| 93     | 156.7         | 156.85 | RHS  | 0.15       | 12           | -                    | -                 |         |
| 94     | 159.6         | 159.8  | RHS  | 0.2        | 8            | -                    | -                 |         |
| 95     | 159.95        | 160.1  | RHS  | 0.15       | 8            | -                    | -                 |         |
| 96     | 160.5         | 160.9  | RHS  | 0.4        | 19           | -                    | -                 |         |
| 97     | 160.95        | 161.3  | RHS  | 0.35       | 43           | -                    | -                 |         |
| 98     | 164.3         | 164.4  | RHS  | 0.1        | 17           | -                    | -                 |         |
| 99     | 164.9         | 165.05 | RHS  | 0.15       | 10           | 3                    | -                 |         |
| 100    | 165.2         | 165.3  | RHS  | 0.1        | 7            | -                    | -                 |         |
| 101    | 165.8         | 166    | RHS  | 0.2        | 8            | -                    | -                 |         |
| 102    | 166.05        | 166.15 | RHS  | 0.1        | 6            | -                    | -                 |         |
| 103    | 166.7         | 166.95 | RHS  | 0.25       | 21           | -                    | -                 |         |
| 104    | 167           | 167.05 | RHS  | 0.05       | 4            | -                    | -                 |         |
| 105    | 169.1         | 169.25 | RHS  | 0.15       | 9            | -                    | -                 |         |
| 106    | 170.7         | 171    | RHS  | 0.3        | 24           | -                    | -                 |         |
| 107    | 171.6         | 171.9  | RHS  | 0.3        | 28           | 1                    | 5                 |         |
| 108    | 172.3         | 172.5  | RHS  | 0.2        | 17           | -                    | -                 |         |
| 109    | 172.9         | 173.1  | RHS  | 0.2        | 10           | -                    | -                 |         |
| 110    | 173.4         | 173.5  | RHS  | 0.1        | 7            | -                    | -                 |         |
| 111    | 174.5         | 174.6  | RHS  | 0.1        | 5            | -                    | -                 |         |
| 112    | 174.8         | 175.02 | RHS  | 0.22       | 10           | -                    | -                 |         |
| 113    | 175.25        | 175.3  | RHS  | 0.05       | 1            | -                    | -                 |         |
| 114    | 175.35        | 175.4  | RHS  | 0.05       | 2            | -                    | -                 |         |
| 115    | 175.45        | 175.5  | RHS  | 0.05       | 3            | -                    | -                 |         |
| 116    | 175.55        | 175.65 | RHS  | 0.1        | 4            | -                    | -                 |         |
| 117    | 175.7         | 175.9  | RHS  | 0.2        | 9            | -                    | -                 |         |
| 118    | 176.6         | 176.8  | RHS  | 0.2        | 4            | -                    | -                 |         |
| 119    | 177           | 177.2  | RHS  | 0.2        | 11           | -                    | -                 |         |
| 120    | 177.66        | 177.8  | RHS  | 0.14       | 10           | -                    | -                 |         |
| 121    | 178.45        | 178.6  | RHS  | 0.15       | 16           | -                    | -                 |         |
| 122    | 179.1         | 179.2  | RHS  | 0.1        | 3            | -                    | -                 |         |

| S. No.                    | Chainage (km) |        | Side | Length(km)   | No of Chutes | No of Chutes Damaged | Side kerb damaged | Remarks |
|---------------------------|---------------|--------|------|--------------|--------------|----------------------|-------------------|---------|
|                           | From          | To     |      |              |              |                      |                   |         |
| 123                       | 179.6         | 179.85 | RHS  | 0.25         | 17           | -                    | -                 |         |
| 124                       | 180.25        | 180.4  | RHS  | 0.15         | 4            | -                    | -                 |         |
| 125                       | 181.05        | 181.1  | RHS  | 0.05         | 4            | -                    | -                 |         |
| 126                       | 181.15        | 181.4  | RHS  | 0.25         | 19           | 1                    | -                 |         |
| 127                       | 181.45        | 181.7  | RHS  | 0.25         | 14           | -                    | -                 |         |
| 128                       | 182.1         | 182.2  | RHS  | 0.1          | 5            | -                    | -                 |         |
| 129                       | 182.5         | 182.55 | RHS  | 0.05         | 4            | -                    | -                 |         |
| 130                       | 182.6         | 182.65 | RHS  | 0.05         | 5            | -                    | -                 |         |
| 131                       | 182.65        | 182.75 | RHS  | 0.1          | 20           | -                    | -                 |         |
| 132                       | 187.1         | 187.3  | RHS  | 0.2          | 17           | -                    | -                 |         |
| 133                       | 187.4         | 187.5  | RHS  | 0.1          | 5            | -                    | -                 |         |
| 134                       | 188.2         | 188.6  | RHS  | 0.4          | 29           | -                    | -                 |         |
| 135                       | 189.4         | 189.45 | RHS  | 0.05         | 4            | -                    | -                 |         |
| 136                       | 189.45        | 189.7  | RHS  | 0.25         | 13           | -                    | -                 |         |
| 137                       | 190.17        | 190.3  | RHS  | 0.13         | 11           | -                    | -                 |         |
| 138                       | 190.6         | 190.8  | RHS  | 0.2          | 12           | -                    | -                 |         |
| 139                       | 192.2         | 192.4  | RHS  | 0.2          | 5            | -                    | -                 |         |
| 140                       | 193.4         | 193.6  | RHS  | 0.2          | 10           | -                    | -                 |         |
| 141                       | 197.7         | 197.9  | RHS  | 0.2          | 12           | -                    | -                 |         |
| 142                       | 199.5         | 199.7  | RHS  | 0.2          | 8            | -                    | -                 |         |
| 143                       | 200.1         | 200.2  | RHS  | 0.1          | 6            | -                    | -                 |         |
| 144                       | 200.5         | 200.7  | RHS  | 0.2          | 12           | -                    | -                 |         |
| 145                       | 201.5         | 201.98 | RHS  | 0.48         | 36           | 4                    | -                 |         |
| 146                       | 202           | 202.1  | RHS  | 0.1          | 8            | -                    | -                 |         |
| 147                       | 202.55        | 202.85 | RHS  | 0.3          | 14           | -                    | 5                 |         |
| 148                       | 203.95        | 204    | RHS  | 0.05         | 4            | -                    | -                 |         |
| 149                       | 204           | 204.4  | RHS  | 0.4          | 23           | -                    | -                 |         |
| 150                       | 206.98        | 207    | RHS  | 0.02         | 12           | -                    | -                 |         |
| 151                       | 208.7         | 208.8  | RHS  | 0.1          | 10           | -                    | -                 |         |
| 152                       | 209.75        | 209.98 | RHS  | 0.23         | 10           | -                    | 5                 |         |
| 153                       | 210           | 210.3  | RHS  | 0.3          | 16           | -                    | -                 |         |
| 154                       | 210.35        | 210.5  | RHS  | 0.15         | 12           | -                    | -                 |         |
| 155                       | 210.6         | 210.9  | RHS  | 0.3          | 14           | -                    | -                 |         |
| 156                       | 211.5         | 211.8  | RHS  | 0.3          | 17           | 2                    | -                 |         |
| 157                       | 212.1         | 212.25 | RHS  | 0.15         | 9            | -                    | -                 |         |
| 158                       | 213.2         | 213.4  | RHS  | 0.2          | 4            | -                    | -                 |         |
| 159                       | 214.6         | 214.75 | RHS  | 0.15         | 5            | -                    | -                 |         |
| <b>Total No of Chutes</b> |               |        |      | <b>32.98</b> | <b>1883</b>  | <b>36</b>            | <b>40</b>         |         |

Median width of 4.5m is generally observed along the project road. Median opening and Blinker Signal locations are presented in Tables below:

**Table 11: Locations of Median Openings**

| S. No. | Chainage (km) | Width (m)              | Length (m) | Reserve lane | Remarks |
|--------|---------------|------------------------|------------|--------------|---------|
| 1      | 130+150       | 1.2                    | 30         | Yes          |         |
| 2      | 132+800       | 1.2                    | 25         | Yes          |         |
| 3      | 136+000       | 1.2                    | 28         | Yes          |         |
| 4      | 137+750       | 1.2                    | 30         | Yes          |         |
| 5      | 139+560       | 1.2                    | 30         | Yes          |         |
| 6      | 141+500       | At under pass location |            |              |         |
| 7      | 142+600       | 1.2                    | 25         | Yes          |         |
| 8      | 147+200       | At under pass location |            |              |         |
| 9      | 149+450       | 1.2                    | 30         | Yes          |         |
| 10     | 150+850       | 1.2                    | 30         | Yes          |         |
| 11     | 153+140       | 1.2                    | 25         | Yes          |         |
| 12     | 154+340       | 1.2                    | 30         | Yes          |         |
| 13     | 156+030       | 4.5                    | 10         | No           |         |
| 14     | 156+400       | 4.5/1.2                | 30         | Yes          |         |
| 15     | 158+640       | 1.2                    | 30         | Yes          |         |
| 16     | 161+840       | 1.2                    | 30         | Yes          |         |
| 17     | 165+650       | 4.5/1.2                | 20         | Yes          |         |
| 18     | 168+950       | 1.2                    | 25         | Yes          |         |
| 19     | 172+350       | 1.2                    | 25         | Yes          |         |
| 20     | 174+650       | 1.2                    | 30         | Yes          |         |
| 21     | 177+800       | 1.2                    | 25         | Yes          |         |
| 22     | 180+480       | 1.2                    | 30         | Yes          |         |
| 23     | 182+450       | 1.2                    | 30         | Yes          |         |
| 24     | 185+630       | 1.2                    | 25         | Yes          |         |
| 25     | 187+430       | 1.2                    | 25         | Yes          |         |
| 26     | 188+070       | 1.2                    | 20         | Yes          |         |
| 27     | 189+430       | 4.5/1.2                | 20         | Yes          |         |
| 28     | 191+100       | 1.2                    | 30         | Yes          |         |
| 29     | 193+230       | 1.2                    | 25         | Yes          |         |
| 30     | 194+600       | 1.2                    | 25         | Yes          |         |
| 31     | 198+120       | 1.2                    | 25         | Yes          |         |
| 32     | 200+200       | 1.2                    | 30         | Yes          |         |
| 33     | 203+650       | 1.2                    | 30         | Yes          |         |
| 34     | 205+160       | 1.2                    | 30         | Yes          |         |
| 35     | 208+120       | 1.2                    | 30         | Yes          |         |
| 36     | 211+620       | 1.2                    | 20         | Yes          |         |
| 37     | 214+080       | 1.2                    | 25         | Yes          |         |

Median openings and cross road locations with Solar Blinkers are presented below:

Table 12: Details of Solar Blinkers

| S. No | Chainage (km) | Location     | No. of Blinkers | Condition         |                | Damage                               |
|-------|---------------|--------------|-----------------|-------------------|----------------|--------------------------------------|
|       |               |              |                 | Towards MP Border | Towards Godhra |                                      |
| 1     | 130+150       | Median       | 2               | Working           | Working        |                                      |
| 2     | 132+800       | Median       | 2               | Working           | Working        |                                      |
| 3     | 136+000       | Median       | 2               | Working           | Working        |                                      |
| 4     | 137+750       | Median       | 2               | Working           | Working        |                                      |
| 5     | 138+900       | LHS Shoulder | 1               | Working           | -              |                                      |
|       | 138+900       | RHS Shoulder | 1               | -                 | Working        |                                      |
| 6     | 139+560       | Median       | 2               | Working           | Working        |                                      |
| 7     | 142+600       | Median       | 2               | Working           | Working        |                                      |
| 8     | 149+450       | Median       | 2               | Working           | Working        |                                      |
| 9     | 150+850       | Median       | 2               | Working           | Working        |                                      |
| 10    | 153+140       | Median       | 2               | Working           | Working        |                                      |
| 11    | 154+340       | Median       | 2               | Working           | Working        |                                      |
| 12    | 156+030       | Median       | 2               | Working           | Damage         | Blinker Damage & Solar Panel Missing |
| 13    | 156+400       | Median       | 2               | Working           | Working        |                                      |
| 14    | 158+640       | Median       | 2               | Working           | Working        |                                      |
| 15    | 161+840       | Median       | 2               | Working           | Working        |                                      |
| 16    | 165+650       | Median       | 2               | Working           | Working        |                                      |
| 17    | 168+950       | Median       | 2               | Working           | Working        |                                      |
| 18    | 172+350       | Median       | 2               | Working           | Working        |                                      |
| 19    | 174+650       | Median       | 2               | Working           | Working        |                                      |
| 20    | 177+800       | Median       | 2               | Working           | Working        |                                      |
| 21    | 180+480       | Median       | 2               | Not Working       | Working        |                                      |
| 22    | 182+450       | Median       | 2               | Working           | Working        |                                      |
| 23    | 185+630       | Median       | 2               | Working           | Working        |                                      |
| 24    | 187+430       | Median       | 2               | Not Working       | Not Working    |                                      |
| 25    | 188+070       | Median       | 2               | Working           | Working        |                                      |
| 26    | 189+430       | Median       | 2               | Working           | Working        |                                      |
| 27    | 191+100       | Median       | 2               | Working           | Working        |                                      |
| 28    | 193+230       | Median       | 2               | Working           | Working        |                                      |
| 29    | 194+600       | Median       | 2               | Working           | Not Working    |                                      |
| 30    | 198+120       | Median       | 2               | Working           | Working        |                                      |
| 31    | 200+200       | Median       | 2               | Working           | Working        |                                      |
| 32    | 203+650       | Median       | 2               | Working           | Working        |                                      |
| 33    | 205+160       | Median       | 2               | Working           | Working        |                                      |
| 34    | 208+120       | Median       | 2               | Working           | Working        |                                      |
| 35    | 211+620       | Median       | 2               | Working           | Working        |                                      |

| S. No | Chainage (km) | Location | No. of Blinkers | Condition         |                | Damage |
|-------|---------------|----------|-----------------|-------------------|----------------|--------|
|       |               |          |                 | Towards MP Border | Towards Godhra |        |
| 36    | 214+080       | Median   | 2               | Working           | Working        |        |
| Total |               |          | 72              |                   |                |        |

There are few unauthorized median cuts and damaged medians exist along the project corridor and are presented in Table below:

**Table 13: Median Damaged Locations**

| Sr.No. | Location | Length (In Mtrs) | Current Status | Police Station | Remark |
|--------|----------|------------------|----------------|----------------|--------|
| 1      | 134+820  | 2                | Open           | Godhra Taluka  |        |
| 2      | 135+500  | 0.5              | Open           | Godhra Taluka  |        |
| 3      | 138+660  | 0.5              | Open           | Morva (Hadaf)  |        |
| 4      | 154+ 770 | 0.5              | Open           | Devgad Bariya  |        |
| 5      | 159+770  | 0.5              | Open           | Limbkheda      |        |
| 6      | 169+ 380 | 0.5              | Open           | Limbkheda      |        |
| 7      | 169+ 950 | 0.5              | Open           | Limbkheda      |        |
| 8      | 167+350  | 0.5              | Open           | Limbkheda      |        |
| 9      | 170+ 400 | 1                | Open           | Limbkheda      |        |
| 10     | 170+ 550 | 0.9              | Open           | Limbkheda      |        |
| 11     | 175+ 750 | 0.5              | Open           | Limbkheda      |        |
| 12     | 178+380  | 0.5              | Open           | Limbkheda      |        |
| 13     | 192+950  | 0.5              | Open           | Dahod Town     |        |
| 14     | 193+950  | 0.5              | Open           | Dahod Town     |        |
| 15     | 195+030  | 0.5              | Open           | Dahod Town     |        |
| 16     | 196+700  | 1.5              | Open           | Dahod Rural    |        |
| 17     | 197+170  | 2                | Open           | Dahod Rural    |        |
| 18     | 198+430  | 5                | Open           | Katwara        |        |
| 19     | 198+570  | 8                | Open           | Katwara        |        |
| 20     | 199+000  | 10               | Closed         | Katwara        |        |
| 21     | 199+250  | 10               | Open           | Katwara        |        |
| 22     | 199+500  | 10               | Open           | Katwara        |        |
| 23     | 199+550  | 10               | Closed         | Katwara        |        |
| 24     | 200+950  | 8                | Open           | Katwara        |        |
| 25     | 213+350  | 4                | Open           | Katwara        |        |
| 26     | 212+900  | 4                | Open           | Katwara        |        |
| 27     | 212+780  | 0.5              | Open           | Katwara        |        |
| 28     | 212+300  | 0.5              | Open           | Katwara        |        |
| 29     | 210+300  | 8                | Open           | Katwara        |        |
| 30     | 209+500  | 4                | Open           | Katwara        |        |
| 31     | 209+180  | 0.5              | Open           | Katwara        |        |
| 32     | 207+500  | 4                | Open           | Katwara        |        |

Safety barriers have been provided along the project road at high embankments where embankment height is >3m at sharp curve locations, at approaches of grade separated and cross drainage Structures. Details of safety barriers provided along the corridor include the following:



**Table 14: Single pole single faced Metal Beam Crash Barrier Locations**

| Metal Beam Crash Barrier Locations |          |         |        |            |         |
|------------------------------------|----------|---------|--------|------------|---------|
| Sr. No.                            | Chainage |         | Length | Side       | Remarks |
|                                    | From     | To      |        |            |         |
| 1                                  | 128+450  | 128+620 | 170    | LHS        |         |
| 2                                  | 128+330  | 128+620 | 290    | LHS        |         |
| 3                                  | 129+360  | 129+430 | 70     | LHS        |         |
| 4                                  | 131+060  | 131+150 | 90     | LHS        |         |
| 5                                  | 131+060  | 131+170 | 110    | RHS        |         |
| 6                                  | 131+520  | 131+740 | 220    | RHS        |         |
| 7                                  | 131+540  | 131+750 | 190    | LHS        |         |
| 8                                  | 131+960  | 132+010 | 50     | RHS        |         |
| 9                                  | 132+110  | 132+250 | 140    | RHS        |         |
| 10                                 | 133+610  | 133+760 | 150    | RHS        |         |
| 11                                 | 134+350  | 134+490 | 140    | RHS        |         |
| 12                                 | 134+560  | 134+690 | 130    | RHS        |         |
| 13                                 | 134+800  | 134+870 | 70     | LHS        |         |
| 14                                 | 136+370  | 137+030 | 660    | RHS        |         |
| 15                                 | 136+460  | 137+030 | 570    | LHS        |         |
| 16                                 | 137+140  | 137+200 | 48     | LHS        |         |
| 17                                 | 137+140  | 137+410 | 270    | RHS        |         |
| 18                                 | 138+200  | 138+450 | 250    | LHS        |         |
| 19                                 | 138+370  | 138+420 | 50     | RHS        |         |
| 20                                 | 139+950  | 140+630 | 680    | RHS        |         |
| 21                                 | 140+010  | 140+290 | 280    | LHS        |         |
| 22                                 | 140+030  | 140+290 | 260    | LHS Median |         |
| 23                                 | 140+030  | 140+290 | 260    | RHS Median |         |
| 24                                 | 140+500  | 140+810 | 310    | LHS Median |         |
| 25                                 | 140+500  | 140+810 | 310    | RHS Median |         |
| 26                                 | 140+520  | 140+640 | 120    | LHS        |         |
| 27                                 | 141+150  | 141+360 | 210    | LHS        |         |
| 28                                 | 141+810  | 142+030 | 220    | LHS        |         |
| 29                                 | 141+920  | 142+100 | 180    | RHS        |         |
| 30                                 | 142+670  | 142+740 | 70     | LHS        |         |
| 31                                 | 142+970  | 143+050 | 80     | LHS        |         |
| 32                                 | 144+355  | 145+610 | 1255   | LHS        |         |
| 33                                 | 144+359  | 144+692 | 333    | RHS Median |         |
| 34                                 | 144+490  | 145+610 | 1120   | RHS        |         |
| 35                                 | 146+580  | 146+670 | 90     | RHS        |         |
| 36                                 | 147+030  | 147+200 | 170    | RHS        |         |
| 37                                 | 147+160  | 147+400 | 226    | LHS        |         |
| 38                                 | 148+170  | 148+220 | 50     | LHS        |         |
| 39                                 | 148+430  | 148+680 | 250    | RHS        |         |
| 40                                 | 148+620  | 148+670 | 50     | LHS        |         |
| 41                                 | 148+900  | 149+010 | 110    | LHS        |         |
| 42                                 | 148+910  | 149+040 | 130    | RHS        |         |
| 43                                 | 149+370  | 149+540 | 170    | RHS        |         |

| Metal Beam Crash Barrier Locations |          |         |        |            |         |
|------------------------------------|----------|---------|--------|------------|---------|
| Sr. No.                            | Chainage |         | Length | Side       | Remarks |
|                                    | From     | To      |        |            |         |
| 44                                 | 149+410  | 149+610 | 200    | LHS        |         |
| 45                                 | 149+990  | 150+410 | 420    | RHS        |         |
| 46                                 | 150+380  | 150+470 | 90     | LHS        |         |
| 47                                 | 152+070  | 152+140 | 70     | LHS        |         |
| 48                                 | 152+310  | 152+540 | 230    | LHS        |         |
| 49                                 | 152+760  | 152+840 | 80     | RHS        |         |
| 50                                 | 152+770  | 152+840 | 70     | LHS        |         |
| 51                                 | 153+060  | 153+370 | 310    | LHS        |         |
| 52                                 | 153+070  | 153+360 | 290    | RHS        |         |
| 53                                 | 153+910  | 154+020 | 110    | LHS        |         |
| 54                                 | 153+980  | 154+250 | 270    | RHS        |         |
| 55                                 | 154+100  | 154+250 | 150    | LHS        |         |
| 56                                 | 154+470  | 155+130 | 660    | RHS        |         |
| 57                                 | 155+290  | 155+620 | 330    | RHS        |         |
| 58                                 | 155+310  | 155+610 | 300    | LHS        |         |
| 59                                 | 156+990  | 157+090 | 100    | LHS        |         |
| 60                                 | 157+010  | 157+130 | 120    | RHS        |         |
| 61                                 | 157+440  | 157+520 | 80     | LHS        |         |
| 62                                 | 160+380  | 160+460 | 80     | LHS        |         |
| 63                                 | 160+420  | 160+470 | 50     | RHS        |         |
| 64                                 | 160+940  | 161+890 | 950    | RHS        |         |
| 65                                 | 160+960  | 161+900 | 940    | LHS        |         |
| 66                                 | 161+171  | 161+323 | 152    | RHS Median |         |
| 67                                 | 162+670  | 162+880 | 210    | LHS        |         |
| 68                                 | 162+750  | 163+000 | 250    | RHS        |         |
| 69                                 | 163+675  | 163+750 | 75     | RHS        |         |
| 70                                 | 164+700  | 164+780 | 80     | RHS        |         |
| 71                                 | 164+710  | 164+780 | 70     | LHS        |         |
| 72                                 | 165+030  | 165+380 | 350    | LHS        |         |
| 73                                 | 165+120  | 165+340 | 220    | RHS        |         |
| 74                                 | 165+520  | 165+680 | 160    | LHS        |         |
| 75                                 | 165+540  | 165+650 | 110    | RHS        |         |
| 76                                 | 166+180  | 166+430 | 250    | LHS        |         |
| 77                                 | 166+220  | 166+360 | 140    | RHS        |         |
| 78                                 | 166+900  | 167+390 | 490    | RHS        |         |
| 79                                 | 166+920  | 167+590 | 670    | LHS        |         |
| 80                                 | 168+250  | 168+380 | 130    | RHS        |         |
| 81                                 | 168+310  | 168+640 | 330    | LHS        |         |
| 82                                 | 169+370  | 169+490 | 120    | LHS        |         |
| 83                                 | 169+370  | 169+530 | 160    | RHS        |         |
| 84                                 | 170+360  | 171+560 | 1200   | LHS        |         |
| 85                                 | 170+380  | 170+440 | 60     | RHS        |         |
| 86                                 | 170+970  | 171+610 | 640    | RHS        |         |
| 87                                 | 171+050  | 171+163 | 113    | RHS Median |         |
| 88                                 | 171+429  | 171+501 | 72     | LHS Median |         |

| Metal Beam Crash Barrier Locations |          |         |        |            |         |
|------------------------------------|----------|---------|--------|------------|---------|
| Sr. No.                            | Chainage |         | Length | Side       | Remarks |
|                                    | From     | To      |        |            |         |
| 89                                 | 171+800  | 172+040 | 240    | LHS        |         |
| 90                                 | 171+870  | 172+300 | 430    | RHS        |         |
| 91                                 | 172+350  | 172+420 | 70     | RHS        |         |
| 92                                 | 172+700  | 172+770 | 70     | LHS        |         |
| 93                                 | 172+790  | 173+050 | 260    | RHS        |         |
| 94                                 | 173+200  | 173+290 | 90     | RHS        |         |
| 95                                 | 173+230  | 173+330 | 100    | LHS        |         |
| 96                                 | 173+540  | 173+620 | 80     | LHS        |         |
| 97                                 | 174+441  | 174+628 | 187    | RHS Median |         |
| 98                                 | 174+465  | 174+710 | 245    | LHS        |         |
| 99                                 | 174+740  | 174+970 | 230    | LHS        |         |
| 100                                | 174+800  | 174+940 | 140    | RHS        |         |
| 101                                | 175+040  | 175+300 | 260    | LHS        |         |
| 102                                | 175+160  | 175+320 | 160    | RHS        |         |
| 103                                | 175+440  | 175+660 | 220    | RHS        |         |
| 104                                | 175+452  | 175+770 | 318    | LHS        |         |
| 105                                | 175+452  | 175+539 | 87     | RHS Median |         |
| 106                                | 175+715  | 175+780 | 65     | RHS        |         |
| 107                                | 175+830  | 175+880 | 50     | RHS        |         |
| 108                                | 175+900  | 175+970 | 70     | LHS        |         |
| 109                                | 176+110  | 176+250 | 140    | RHS        |         |
| 110                                | 176+480  | 176+570 | 90     | LHS        |         |
| 111                                | 176+520  | 176+630 | 110    | RHS        |         |
| 112                                | 176+730  | 176+930 | 200    | LHS        |         |
| 113                                | 176+860  | 176+950 | 90     | RHS        |         |
| 114                                | 177+030  | 177+310 | 280    | LHS        |         |
| 115                                | 177+036  | 177+256 | 220    | RHS Median |         |
| 116                                | 177+050  | 177+420 | 370    | RHS        |         |
| 117                                | 177+490  | 177+600 | 110    | LHS        |         |
| 118                                | 177+500  | 177+600 | 100    | RHS        |         |
| 119                                | 177+850  | 177+910 | 60     | RHS        |         |
| 120                                | 177+860  | 178+000 | 140    | LHS        |         |
| 121                                | 178+190  | 178+450 | 260    | LHS        |         |
| 122                                | 178+240  | 178+410 | 170    | RHS        |         |
| 123                                | 178+240  | 178+411 | 171    | LHS Median |         |
| 124                                | 178+590  | 178+840 | 250    | RHS        |         |
| 125                                | 178+710  | 178+830 | 120    | LHS        |         |
| 126                                | 179+060  | 179+490 | 430    | RHS        |         |
| 127                                | 179+115  | 179+165 | 50     | LHS        |         |
| 128                                | 179+250  | 179+420 | 170    | LHS        |         |
| 129                                | 179+840  | 180+010 | 170    | RHS        |         |
| 130                                | 180+150  | 180+640 | 490    | LHS        |         |
| 131                                | 180+150  | 180+210 | 60     | RHS        |         |
| 132                                | 180+830  | 181+110 | 280    | LHS        |         |
| 133                                | 181+270  | 181+640 | 370    | LHS        |         |

| Metal Beam Crash Barrier Locations |          |         |        |            |         |
|------------------------------------|----------|---------|--------|------------|---------|
| Sr. No.                            | Chainage |         | Length | Side       | Remarks |
|                                    | From     | To      |        |            |         |
| 134                                | 181+320  | 182+050 | 730    | RHS        |         |
| 135                                | 181+920  | 182+050 | 130    | LHS        |         |
| 136                                | 181+922  | 182+049 | 127    | RHS Median |         |
| 137                                | 182+150  | 183+200 | 1050   | RHS        |         |
| 138                                | 182+290  | 182+440 | 150    | LHS        |         |
| 139                                | 182+293  | 182+375 | 82     | LHS Median |         |
| 140                                | 184+980  | 185+540 | 560    | LHS        |         |
| 141                                | 185+030  | 185+500 | 470    | RHS        |         |
| 142                                | 185+730  | 185+850 | 120    | LHS        |         |
| 143                                | 186+380  | 186+670 | 290    | RHS        |         |
| 144                                | 186+390  | 186+580 | 190    | LHS        |         |
| 145                                | 187+280  | 187+630 | 350    | LHS        |         |
| 146                                | 187+280  | 187+600 | 320    | RHS        |         |
| 147                                | 187+710  | 187+790 | 80     | LHS        |         |
| 148                                | 187+720  | 187+790 | 70     | RHS        |         |
| 149                                | 188+490  | 188+900 | 410    | RHS        |         |
| 150                                | 189+600  | 190+075 | 475    | RHS        |         |
| 151                                | 189+610  | 189+660 | 50     | LHS        |         |
| 152                                | 189+740  | 189+950 | 210    | LHS        |         |
| 153                                | 190+000  | 190+090 | 90     | LHS        |         |
| 154                                | 190+120  | 190+310 | 190    | RHS        |         |
| 155                                | 190+350  | 190+430 | 80     | LHS        |         |
| 156                                | 190+730  | 190+940 | 210    | RHS        |         |
| 157                                | 190+820  | 191+030 | 210    | LHS        |         |
| 158                                | 191+470  | 191+565 | 95     | RHS        |         |
| 159                                | 191+471  | 191+565 | 94     | LHS Median |         |
| 160                                | 191+600  | 191+660 | 60     | LHS        |         |
| 161                                | 191+850  | 192+140 | 290    | LHS Median |         |
| 162                                | 191+850  | 192+140 | 290    | RHS Median |         |
| 163                                | 191+865  | 191+970 | 105    | RHS        |         |
| 164                                | 192+240  | 192+530 | 290    | LHS Median |         |
| 165                                | 192+240  | 192+530 | 290    | RHS Median |         |
| 166                                | 192+380  | 192+470 | 90     | RHS        |         |
| 167                                | 193+300  | 193+520 | 220    | LHS        |         |
| 168                                | 193+370  | 193+490 | 120    | RHS        |         |
| 169                                | 193+665  | 193+780 | 115    | LHS        |         |
| 170                                | 194+000  | 194+200 | 200    | LHS Median |         |
| 171                                | 194+000  | 194+200 | 200    | RHS Median |         |
| 172                                | 196+010  | 196+230 | 220    | LHS        |         |
| 173                                | 197+240  | 197+415 | 175    | RHS        |         |
| 174                                | 197+243  | 197+415 | 172    | LHS Median |         |
| 175                                | 197+640  | 197+880 | 240    | LHS Median |         |
| 176                                | 197+640  | 197+880 | 240    | RHS Median |         |
| 177                                | 197+690  | 197+850 | 160    | LHS        |         |
| 178                                | 197+690  | 197+860 | 170    | RHS        |         |

| Metal Beam Crash Barrier Locations |          |         |        |            |         |
|------------------------------------|----------|---------|--------|------------|---------|
| Sr. No.                            | Chainage |         | Length | Side       | Remarks |
|                                    | From     | To      |        |            |         |
| 179                                | 197+990  | 198+300 | 310    | LHS Median |         |
| 180                                | 197+990  | 198+300 | 310    | RHS Median |         |
| 181                                | 199+010  | 199+080 | 70     | RHS        |         |
| 182                                | 199+108  | 199+179 | 71     | RHS Median |         |
| 183                                | 199+110  | 199+490 | 380    | LHS        |         |
| 184                                | 199+300  | 199+480 | 180    | RHS        |         |
| 185                                | 199+880  | 199+955 | 75     | LHS        |         |
| 186                                | 199+883  | 199+956 | 73     | RHS Median |         |
| 187                                | 200+270  | 200+470 | 200    | RHS        |         |
| 188                                | 201+125  | 201+245 | 120    | RHS        |         |
| 189                                | 201+570  | 201+600 | 30     | RHS        |         |
| 190                                | 201+710  | 202+390 | 680    | RHS        |         |
| 191                                | 201+740  | 202+390 | 650    | LHS        |         |
| 192                                | 201+881  | 202+016 | 135    | RHS Median |         |
| 193                                | 202+450  | 202+520 | 70     | RHS        |         |
| 194                                | 202+840  | 202+950 | 110    | LHS        |         |
| 195                                | 202+850  | 203+070 | 220    | RHS        |         |
| 196                                | 204+210  | 204+550 | 340    | LHS        |         |
| 197                                | 204+220  | 204+550 | 330    | RHS        |         |
| 198                                | 204+750  | 204+940 | 190    | LHS        |         |
| 199                                | 204+780  | 204+940 | 160    | RHS        |         |
| 200                                | 205+300  | 205+520 | 220    | LHS        |         |
| 201                                | 205+310  | 205+440 | 130    | RHS        |         |
| 202                                | 205+890  | 206+005 | 115    | LHS        |         |
| 203                                | 205+620  | 205+730 | 110    | RHS        |         |
| 204                                | 206+835  | 206+980 | 145    | RHS        |         |
| 205                                | 206+930  | 207+080 | 150    | LHS        |         |
| 206                                | 206+835  | 206+931 | 96     | LHS Median |         |
| 207                                | 207+240  | 207+420 | 180    | RHS        |         |
| 208                                | 207+270  | 207+340 | 70     | LHS        |         |
| 209                                | 207+830  | 207+880 | 50     | LHS        |         |
| 210                                | 207+950  | 208+115 | 165    | RHS        |         |
| 211                                | 207+953  | 208+115 | 162    | LHS Median |         |
| 212                                | 208+590  | 209+200 | 610    | LHS        |         |
| 213                                | 208+590  | 209+030 | 440    | RHS Median |         |
| 214                                | 209+030  | 209+260 | 230    | LHS Median |         |
| 215                                | 209+030  | 209+260 | 230    | RHS Median |         |
| 216                                | 209+070  | 209+240 | 170    | RHS        |         |
| 217                                | 209+350  | 209+730 | 380    | LHS Median |         |
| 218                                | 209+350  | 209+730 | 380    | RHS Median |         |
| 219                                | 209+426  | 209+600 | 174    | RHS        |         |
| 220                                | 209+440  | 209+600 | 160    | LHS        |         |
| 221                                | 210+050  | 210+210 | 160    | LHS        |         |
| 222                                | 210+050  | 210+165 | 115    | RHS        |         |
| 223                                | 210+260  | 210+530 | 270    | LHS        |         |

| Metal Beam Crash Barrier Locations |          |         |        |      |         |
|------------------------------------|----------|---------|--------|------|---------|
| Sr. No.                            | Chainage |         | Length | Side | Remarks |
|                                    | From     | To      |        |      |         |
| 224                                | 210+280  | 210+520 | 240    | RHS  |         |
| 225                                | 210+785  | 210+930 | 145    | RHS  |         |
| 226                                | 211+000  | 211+200 | 200    | RHS  |         |
| 227                                | 211+020  | 211+300 | 280    | LHS  |         |
| 228                                | 211+720  | 212+030 | 310    | RHS  |         |
| 229                                | 212+350  | 212+480 | 130    | LHS  |         |
| 230                                | 212+350  | 212+475 | 125    | RHS  |         |
| 231                                | 213+390  | 213+550 | 160    | RHS  |         |
| 232                                | 213+435  | 213+530 | 95     | LHS  |         |
| 233                                | 214+200  | 214+310 | 110    | LHS  |         |
| 234                                | 214+630  | 214+680 | 50     | LHS  |         |
| 235                                | 214+870  | 214+950 | 80     | RHS  |         |
| Total                              |          |         | 52848  |      |         |

Table 15: Single pole double faced Metal Beam Crash Barrier Locations

| Two Side Metal Beam Crash Barrier |          |         |        |        |         |
|-----------------------------------|----------|---------|--------|--------|---------|
| Sr. No.                           | Chainage |         | Length | Side   | Remarks |
|                                   | From     | To      |        |        |         |
| 1                                 | 138+970  | 139+420 | 450    | Median |         |
| 2                                 | 143+700  | 144+380 | 680    | Median |         |
| 3                                 | 153+835  | 154+095 | 260    | Median |         |
| 4                                 | 173+850  | 174+465 | 615    | Median |         |
| Total                             |          |         | 2005   |        |         |

Table 16: Concrete Crash Barrier Locations

| Details of Concrete Crash Barrier |          |            |           |      |                 |                             |
|-----------------------------------|----------|------------|-----------|------|-----------------|-----------------------------|
| Sr. No.                           | Chainage | Length (m) | Structure | Side | Total Length(m) | Remarks                     |
| 1                                 | 128.371  | 375.531    | VUP       | 2    | 751.062         | on LHS & RHS MCW Edge       |
| 2                                 | 128.371  | 24.365     | VUP       | 2    | 48.730          | on Median LHS & RHS EDGE    |
| 3                                 | 131.321  | 20.385     | PUP       | 2    | 40.770          | on LHS & RHS MCW Edge       |
| 4                                 | 131.321  | 15.100     | PUP       | 2    | 30.200          | on Median LHS & RHS EDGE    |
| 5                                 | 137.083  | 106.675    | ROB       | 4    | 426.700         | on LHS & RHS Bridge Portion |
| 6                                 | 137.083  | 378.000    | ROB       | 1    | 378.000         | on LHS MCW Edge Approaches  |
| 7                                 | 140.405  | 407.170    | MJB       | 1    | 407.170         | on LHS - MCW Edge           |
| 8                                 | 140.405  | 390.600    | MJB       | 1    | 390.600         | on RHS - MCW Edge           |
| 9                                 | 140.396  | 22.210     | PUP       | 2    | 44.420          | on LHS & RHS MCW Edge       |
| 10                                | 140.396  | 15.100     | PUP       | 2    | 30.200          | on Median LHS & RHS EDGE    |
| 11                                | 141.526  | 826.980    | FOB       | 2    | 1653.960        | on LHS & RHS MCW Edge       |
| 12                                | 144.251  | 23.600     | PUP       | 2    | 47.200          | on LHS & RHS MCW Edge       |
| 13                                | 144.251  | 15.100     | PUP       | 2    | 30.200          | on Median LHS & RHS EDGE    |

| Details of Concrete Crash Barrier |          |            |           |      |                 |  |
|-----------------------------------|----------|------------|-----------|------|-----------------|--|
| Sr. No.                           | Chainage | Length (m) | Structure | Side | Total Length(m) | Remarks  |
| 14                                | 144.827  | 595.120    | ROB       | 1    | 595.120         | on LHS & RHS Bridge Portion                      |
| 15                                | 144.944  | 23.180     | MNB       | 2    | 46.360          | on LHS & RHS MCW Edge                            |
| 16                                | 144.944  | 14.200     | MNB       | 2    | 28.400          | on Median LHS & RHS EDGE                         |
| 17                                | 146.750  | 840.000    | FOB       | 2    | 1680.000        | on LHS & RHS MCW Edge                            |
| 18                                | 146.944  | 26.502     | MNB       | 2    | 53.004          | on LHS & RHS MCW Edge                            |
| 19                                | 146.944  | 25.030     | MNB       | 2    | 50.060          | on Median LHS & RHS EDGE                         |
| 20                                | 152.026  | 467.385    | VUP       | 2    | 934.770         | on LHS & RHS MCW Edge                            |
| 21                                | 152.026  | 18.900     | VUP       | 2    | 37.800          | on Median LHS & RHS EDGE                         |
| 22                                | 153.966  | 722.310    | SH -FOB   | 2    | 1444.620        | on LHS & RHS MCW Edge                            |
| 23                                | 155.241  | 21.040     | PUP       | 2    | 42.080          | on LHS & RHS MCW Edge                            |
| 24                                | 155.241  | 15.100     | PUP       | 2    | 30.200          | on Median LHS & RHS EDGE                         |
| 25                                | 157.217  | 38.440     | MNB       | 2    | 76.880          | on LHS & RHS MCW Edge                            |
| 26                                | 157.217  | 30.400     | MNB       | 2    | 60.800          | on Median LHS & RHS EDGE                         |
| 27                                | 160.930  | 32.410     | VUP       | 2    | 64.820          | on LHS & RHS MCW Edge                            |
| 28                                | 160.930  | 18.900     | VUP       | 2    | 37.800          | on Median LHS & RHS EDGE                         |
| 29                                | 161.414  | 20.520     | PUP       | 2    | 41.040          | on LHS & RHS MCW Edge                            |
| 30                                | 161.414  | 15.100     | PUP       | 2    | 30.200          | on Median LHS & RHS EDGE                         |
| 31                                | 162.914  | 652.290    | VUP       | 2    | 1304.580        | on LHS & RHS MCW Edge                            |
| 32                                | 162.914  | 18.900     | VUP       | 2    | 37.800          | on Median LHS & RHS EDGE                         |
| 33                                | 163.400  | 22.220     | PUP       | 2    | 44.440          | on LHS & RHS MCW Edge                            |
| 34                                | 163.400  | 15.100     | PUP       | 2    | 30.200          | on Median LHS & RHS EDGE                         |
| 35                                | 163.970  | 188.160    | MJB       | 1    | 188.160         | on LHS MCW Edge & on Median LHS EDGE             |
| 36                                | 163.970  | 188.160    | MJB       | 1    | 188.160         | on RHS MCW Edge & on Median RHS EDGE             |
| 37                                | 164.116  | 41.966     | MNB       | 2    | 83.932          | on LHS & RHS MCW Edge                            |
| 38                                | 164.116  | 39.920     | MNB       | 2    | 79.840          | on Median LHS & RHS EDGE                         |
| 39                                | 166.024  | 30.300     | MNB       | 2    | 60.600          | on LHS & RHS MCW Edge                            |
| 40                                | 166.024  | 14.500     | MNB       | 2    | 29.000          | on Median LHS & RHS EDGE                         |
| 41                                | 167.324  | 254.560    | ROB       | 1    | 254.560         | on LHS & RHS MCW Edge & on Median LHS & RHS EDGE |
| 42                                | 171.300  | 103.690    | ROB       | 4    | 414.760         | on LHS & RHS MCW Edge & on Median LHS & RHS EDGE |
| 43                                | 170.639  | 22.440     | PUP       | 2    | 44.880          | on LHS & RHS MCW Edge                            |
| 44                                | 170.639  | 15.100     | PUP       | 2    | 30.200          | on Median LHS & RHS EDGE                         |
| 45                                | 173.365  | 21.850     | MNB       | 2    | 43.700          | on LHS & RHS MCW Edge                            |
| 46                                | 173.365  | 16.000     | MNB       | 2    | 32.000          | on Median LHS & RHS EDGE                         |
| 47                                | 178.872  | 23.100     | PUP       | 2    | 46.200          | on LHS & RHS MCW Edge                            |
| 48                                | 178.872  | 15.100     | PUP       | 2    | 30.200          | on Median LHS & RHS EDGE                         |
| 49                                | 179.547  | 180.780    | MJB       | 1    | 180.780         | on LHS MCW Edge & on Median LHS EDGE             |
| 50                                | 179.547  | 180.780    | MJB       | 1    | 180.780         | on RHS MCW Edge & on Median RHS EDGE             |
| 51                                | 181.137  | 20.920     | PUP       | 2    | 41.840          | on LHS & RHS MCW Edge                            |

| Details of Concrete Crash Barrier |          |            |           |      |                 |                                      |
|-----------------------------------|----------|------------|-----------|------|-----------------|--------------------------------------|
| Sr. No.                           | Chainage | Length (m) | Structure | Side | Total Length(m) | Remarks                              |
| 52                                | 181.137  | 15.100     | PUP       | 2    | 30.200          | on Median LHS & RHS EDGE             |
| 53                                | 181.401  | 35.070     | MNB       | 2    | 70.140          | on LHS & RHS MCW Edge                |
| 54                                | 181.401  | 28.220     | MNB       | 2    | 56.440          | on Median LHS & RHS EDGE             |
| 55                                | 182.881  | 17.153     | MNB       | 2    | 34.306          | on LHS & RHS MCW Edge                |
| 56                                | 182.881  | 14.500     | MNB       | 2    | 29.000          | on Median LHS & RHS EDGE             |
| 57                                | 184.900  | 22.895     | PUP       | 2    | 45.790          | on LHS & RHS MCW Edge                |
| 58                                | 184.900  | 15.100     | PUP       | 2    | 30.200          | on Median LHS & RHS EDGE             |
| 59                                | 186.971  | 17.730     | MNB       | 2    | 35.460          | on LHS & RHS MCW Edge                |
| 60                                | 186.971  | 17.730     | MNB       | 2    | 35.460          | on Median LHS & RHS EDGE             |
| 61                                | 192.186  | 196.400    | MJB       | 1    | 196.400         | on LHS MCW Edge & on Median LHS EDGE |
| 62                                | 192.186  | 205.800    | MJB       | 1    | 205.800         | on RHS MCW Edge & on Median RHS EDGE |
| 63                                | 194.098  | 539.600    | SH -FOB   | 2    | 1079.200        | on LHS & RHS MCW Edge                |
| 64                                | 195.880  | 52.310     | MNB       | 2    | 104.620         | on LHS & RHS MCW Edge                |
| 65                                | 195.880  | 42.630     | MNB       | 2    | 85.260          | on Median LHS & RHS EDGE             |
| 66                                | 197.933  | 237.870    | MJB       | 1    | 237.870         | on LHS MCW Edge & on Median LHS EDGE |
| 67                                | 197.933  | 248.550    | MJB       | 1    | 248.550         | on RHS MCW Edge & on Median RHS EDGE |
| 68                                | 198.818  | 16.205     | MNB       | 2    | 32.410          | on LHS & RHS MCW Edge                |
| 69                                | 198.818  | 14.510     | MNB       | 2    | 29.020          | on Median LHS & RHS EDGE             |
| 70                                | 199.099  | 20.380     | PUP       | 2    | 40.760          | on LHS & RHS MCW Edge                |
| 71                                | 199.099  | 15.100     | PUP       | 2    | 30.200          | on Median LHS & RHS EDGE             |
| 72                                | 201.985  | 21.010     | PUP       | 2    | 42.020          | on LHS & RHS MCW Edge                |
| 73                                | 201.985  | 15.100     | PUP       | 2    | 30.200          | on Median LHS & RHS EDGE             |
| 74                                | 203.979  | 20.610     | PUP       | 2    | 41.220          | on LHS & RHS MCW Edge                |
| 75                                | 203.979  | 15.100     | PUP       | 2    | 30.200          | on Median LHS & RHS EDGE             |
| 76                                | 209.298  | 151.000    | MJB       | 1    | 151.000         | on LHS MCW Edge & on Median LHS EDGE |
| 77                                | 209.298  | 150.600    | MJB       | 1    | 150.600         | on RHS MCW Edge & on Median RHS EDGE |
| 78                                | 212.471  | 11.800     | MNB       | 2    | 23.600          | on LHS & RHS MCW Edge                |
| 79                                | 212.471  | 7.200      | MNB       | 2    | 14.400          | on Median LHS & RHS EDGE             |
| 80                                | 213.525  | 24.570     | MNB       | 2    | 49.140          | on LHS & RHS MCW Edge                |
| 81                                | 213.525  | 19.190     | MNB       | 2    | 38.380          | on Median LHS & RHS EDGE             |
| Total Length                      |          |            |           |      | 16005.704       |                                      |

Pedestrian Guard Rails in a length of 4.226 Km are observed at service road and built-up area locations and are presented in Table below:

Table 17: Details of Pedestrian Guard Rails

| S.no | Chainage(km) |         | Length(km) | Side | Condition | Damage | Remarks |
|------|--------------|---------|------------|------|-----------|--------|---------|
|      | From         | To      |            |      |           |        |         |
| 1    | 131.570      | 132.110 | 0.540      | LHS  | Good      | -      |         |
| 2    | 138.650      | 139.180 | 0.530      | LHS  | Good      | -      |         |
| 3    | 153.765      | 153.870 | 0.105      | LHS  | Good      | -      |         |



| S.no                    | Chainage(km) |         | Length(km)   | Side | Condition | Damage   | Remarks          |
|-------------------------|--------------|---------|--------------|------|-----------|----------|------------------|
|                         | From         | To      |              |      |           |          |                  |
| 4                       | 153.520      | 153.600 | 0.080        | LHS  | Good      | -        | Paint Washed out |
| 5                       | 173.500      | 174.200 | 0.700        | LHS  | Good      | 4        |                  |
| 6                       | 193.982      | 194.020 | 0.038        | LHS  | Good      | -        |                  |
| 7                       | 194.100      | 194.140 | 0.040        | LHS  | Good      | -        |                  |
| 8                       | 131.620      | 132.370 | 0.750        | RHS  | Good      | -        |                  |
| 9                       | 138.650      | 139.180 | 0.530        | RHS  | Good      | -        |                  |
| 10                      | 153.765      | 153.870 | 0.105        | RHS  | Good      | -        |                  |
| 11                      | 153.520      | 153.600 | 0.080        | RHS  | Good      | -        |                  |
| 12                      | 173.500      | 174.150 | 0.650        | RHS  | Good      | -        |                  |
| 13                      | 193.982      | 194.020 | 0.038        | RHS  | Good      | -        |                  |
| 14                      | 194.100      | 194.140 | 0.040        | RHS  | Good      | -        |                  |
| <b>Total length(km)</b> |              |         | <b>4.226</b> |      |           | <b>4</b> |                  |

List of major and minor junctions developed are presented in table below:

**Table 18: List of Major Junctions**

| S. No. | Existing Chainage | Design Chainage | Side | Category of Road        | Type of Junction | Width of the access Road | Speed Breaker | Culvert | Sign boards                                   | Remarks                |
|--------|-------------------|-----------------|------|-------------------------|------------------|--------------------------|---------------|---------|---|------------------------|
| 1      | 152.100           | 152.050         | LHS  | Start of Piploid Bypass | Y                | 7.5                      | No            | No      | Give Way, Speed Breaker                       | At Under pass location |
| 2      | 156.700           | 156.420         | LHS  | Piplod Bypass End       | Y                | 7                        | No            | Yes     | Keep Left, Hazard, Signal Board, Give wayx2   |                        |
| 3      | 166.000           | 165.600         | LHS  | Limkheda Bypass End     | Y                | 7                        | Yes           | No      | Keep Left, , Hazard, Signal Board, Give wayx2 |                        |
| 4      | 189.630           | 189.450         | LHS  | Entry to Dahod Town     | Y                | 7                        | Yes           | No      | Keep Left, , Hazard, Signal Board             |                        |

**Table 19: List of Minor Junctions**

| S.No. | Existing Chainage | Side | Carriageway Width (m) | Category     | Sign Boards              |          | Remarks |
|-------|-------------------|------|-----------------------|--------------|--------------------------|----------|---------|
|       |                   |      |                       |              | Left                     | Right    |         |
| 1     | 129.05            | LHS  | 3                     | Village Road | Speed Breaker & Give Way |          |         |
| 2     | 129.07            | RHS  | 3                     | Village Road |                          | Give way |         |
| 3     | 132.359           | RHS  | 3.5                   | Village Road |                          | Give way |         |
| 4     | 132.937           | RHS  | 3.5                   | Village Road |                          |          |         |
| 5     | 133.429           | RHS  | 3.5                   | Village Road |                          | Give Way |         |
| 6     | 133.761           | LHS  | 4                     | Village Road | Give Way                 |          |         |
| 7     | 134.642           | RHS  | 3.5                   | Village Road |                          | Give way |         |
| 8     | 135.361           | LHS  | 3.5                   | Village Road | Give way                 |          |         |

| S.No. | Existing Chainage | Side | Carriageway Width (m) | Category     | Sign Boards              |                          | Remarks |
|-------|-------------------|------|-----------------------|--------------|--------------------------|--------------------------|---------|
|       |                   |      |                       |              | Left                     | Right                    |         |
| 9     | 137.222           | LHS  | 3                     | Village Road |                          |                          |         |
| 10    | 137.222           | RHS  | 3                     | Village Road |                          |                          |         |
| 11    | 137.631           | RHS  | 3.5                   | Village Road |                          |                          |         |
| 12    | 138.981           | RHS  | 5                     | Village Road |                          |                          |         |
| 13    | 139.033           | LHS  | 5                     | Village Road | Speed Breaker            |                          |         |
| 14    | 140.313           | LHS  | 5                     | Village Road |                          |                          |         |
| 15    | 141.531           | LHS  | 7.5                   | Village Road | Keep Left, Give way      |                          | At SR   |
| 16    | 141.612           | RHS  | 7.5                   | Village Road |                          |                          | At SR   |
| 17    | 143.541           | RHS  | 3                     | Village Road |                          |                          |         |
| 18    | 143.558           | LHS  | 5.5                   | Village Road |                          |                          |         |
| 19    | 146.556           | RHS  | 5                     | Village Road |                          |                          |         |
| 20    | 154.756           | RHS  | 3.5                   | Village Road |                          |                          |         |
| 21    | 154.784           | LHS  | 3.5                   | Village Road |                          |                          |         |
| 22    | 156.531           | LHS  | 5                     | Village Road |                          |                          |         |
| 23    | 159.545           | LHS  | 6                     | Village Road | Speed breaker & Give way |                          |         |
| 24    | 159.517           | RHS  | 4                     | Village Road |                          |                          |         |
| 25    | 160.289           | LHS  | 3.5                   | Village Road | Give way                 |                          |         |
| 26    | 163.061           | RHS  | 3.5                   | Village Road |                          |                          |         |
| 27    | 163.051           | LHS  | 3.5                   | Village Road |                          |                          |         |
| 28    | 163.321           | RHS  | 3.5                   | Village Road |                          | Give way, Speed Breaker  |         |
| 29    | 163.311           | LHS  | 7                     | Village Road | Give Way                 |                          |         |
| 30    | 168.704           | RHS  | 3                     | Village Road |                          |                          |         |
| 31    | 169.242           | LHS  | 3.5                   | Village Road | Give way                 |                          |         |
| 32    | 169.284           | RHS  | 3                     | Village Road |                          | Give way                 |         |
| 33    | 170.44            | LHS  | 3                     | Village Road |                          |                          |         |
| 34    | 172.066           | RHS  | 3.5                   | Village Road |                          | Give way                 | Damage  |
| 35    | 174.085           | RHS  | 3                     | Village Road |                          |                          |         |
| 36    | 174.783           | LHS  | 3.5                   | Village Road | Speed breaker & Give way |                          | Damage  |
| 37    | 175.197           | LHS  | 3.5                   | Village Road |                          |                          |         |
| 38    | 175.424           | RHS  | 3                     | Village Road |                          | Speed breaker & Give way |         |
| 39    | 178.199           | RHS  | 6                     | Village Road |                          | Speed breaker & Give way |         |
| 40    | 178.673           | LHS  | 7                     | Village Road | Speed breaker & Give way |                          |         |
| 41    | 179.391           | LHS  | 7                     | Village Road | Give Way                 |                          |         |
| 42    | 179.772           | RHS  | 3.5                   | Village Road |                          | Give Way                 |         |
| 43    | 179.782           | LHS  | 3.5                   | Village Road | Give Way                 |                          |         |

| S.No. | Existing Chainage | Side | Carriageway Width (m) | Category     | Sign Boards                   |                          | Remarks |
|-------|-------------------|------|-----------------------|--------------|-------------------------------|--------------------------|---------|
|       |                   |      |                       |              | Left                          | Right                    |         |
| 44    | 184.249           | LHS  | 3                     | Village Road | Give Way & Major Road ahead   |                          |         |
| 45    | 188.067           | LHS  | 7                     | NH-59        | Hazard, Give Way              |                          |         |
| 46    | 189.832           | RHS  | 4                     | Village Road |                               |                          |         |
| 47    | 190.194           | LHS  | 4                     | Village Road | Give way                      |                          |         |
| 48    | 190.194           | RHS  | 3.5                   | Village Road |                               |                          |         |
| 49    | 190.927           | LHS  | 6                     | Village Road | Give way, Speed Breaker & ADS |                          |         |
| 50    | 190.927           | RHS  | 3.5                   | Village Road |                               | Give way                 |         |
| 51    | 192.939           | LHS  | 4                     | Village Road | Give Way & Speed Breaker      |                          |         |
| 52    | 192.939           | RHS  | 4                     | Village Road |                               | Give way                 |         |
| 53    | 194.608           | LHS  | 7                     | Village Road | keep left, Hazard             |                          |         |
| 54    | 194.874           | LHS  | 6                     | Village Road |                               |                          |         |
| 55    | 196.693           | LHS  | 3.5                   | Village Road | Give Way & Speed Breaker      |                          |         |
| 56    | 197.953           | LHS  | 4                     | Village Road | Give Way & Speed Breaker      |                          |         |
| 57    | 198.393           | LHS  | 3                     | Village Road | Give Way                      |                          |         |
| 58    | 198.56            | RHS  | 4                     | Village Road |                               | Give Way & Speed Breaker |         |
| 59    | 199.237           | LHS  | 3.5                   | Village Road | Give Way & Speed Breaker      |                          |         |
| 60    | 199.246           | RHS  | 3.5                   | Village Road |                               | Give Way & Speed Breaker |         |
| 61    | 199.665           | LHS  | 3.5                   | Village Road | Give Way & Speed Breaker      |                          |         |
| 62    | 200.937           | LHS  | 3                     | Village Road |                               |                          |         |
| 63    | 201.281           | LHS  | 3                     | Village Road | Give way                      |                          |         |
| 64    | 201.563           | LHS  | 4                     | Village Road | Give Way & Speed Breaker      |                          |         |
| 65    | 203.07            | RHS  | 5.5                   | Village Road |                               | Give Way & Speed Breaker |         |
| 66    | 203.37            | LHS  | 3                     | Village Road |                               |                          |         |
| 67    | 203.391           | RHS  | 3                     | Village Road |                               |                          |         |
| 68    | 204.457           | RHS  | 7                     | Village Road |                               | Give Way & Speed Breaker |         |
| 69    | 204.8             | RHS  | 2.5                   | Village Road |                               | Stop & Speed breaker     |         |
| 70    | 207.583           | LHS  | 3                     | Village Road |                               |                          |         |
| 71    | 208.433           | LHS  | 3                     | Village Road |                               |                          |         |
| 72    | 209.138           | LHS  | 4                     | Village Road |                               |                          |         |
| 73    | 210.5             | LHS  | 4                     | Village Road |                               |                          |         |
| 74    | 212.304           | LHS  | 4                     | Village Road |                               |                          |         |
| 75    | 212.297           | RHS  | 4                     | Village Road |                               |                          |         |

| S.No. | Existing Chainage | Side | Carriageway Width (m) | Category     | Sign Boards              |                          | Remarks |
|-------|-------------------|------|-----------------------|--------------|--------------------------|--------------------------|---------|
|       |                   |      |                       |              | Left                     | Right                    |         |
| 76    | 212.789           | LHS  | 3                     | Village Road | Stop                     |                          |         |
| 77    | 212.903           | LHS  | 3                     | Village Road | Stop                     |                          |         |
| 78    | 212.951           | RHS  | 3                     | Village Road |                          |                          |         |
| 79    | 213.413           | RHS  | 3                     | Village Road |                          | Give way                 |         |
| 80    | 214.515           | LHS  | 3                     | Village Road | Give Way & Speed Breaker |                          |         |
| 81    | 214.527           | RHS  | 3.5                   | Village Road |                          | Give Way & Speed Breaker |         |

Road furniture in the form of Signs/Markings, Gantry signs and traffic safety blinkers, lighting, high mast lights have been provided along the project road at few locations and are presented in the Tables below:

**Table 20: Locations of High mast Lighting**

| S. No. | Chainage (km) | No of Poles | Side       | Location   | Condition | Remarks |
|--------|---------------|-------------|------------|------------|-----------|---------|
| 1      | 127.900       | 1           | Median     | Junction   | Good      |         |
| 2      | 141.200       | 1           | LHS        | Junction   | Good      |         |
| 3      | 146.200       | 4           | Both sides | TOLL PLAZA | Good      |         |
| 4      | 153.700       | 2           | Both sides | OVER PASS  | Good      |         |
| 5      | 194.200       | 2           | Both sides | OVER PASS  | Good      |         |

**Table 21: Locations of Highway Lighting along Main Carriageway**

| S.No. | Chainage(km) |        | Side   | No. of Light poles |            | Location         | Remarks   |
|-------|--------------|--------|--------|--------------------|------------|------------------|-----------|
|       | From         | To     |        | Single arm         | Double arm |                  |           |
| 1     | 127.848      | 128.15 |        | -                  | 7          | Median           |           |
| 2     | 131.6        | 131.9  | Median | -                  | 8          |                  |           |
| 3     | 131.61       | 132.11 | LHS    | -                  | 11         | Between MCW & SR |           |
| 4     | 131.61       | 132.11 | LHS    | 4                  | -          | On Service Road  |           |
| 5     | 131.61       | 132.36 | RHS    | -                  | 11         | Between MCW & SR | 1 Damaged |
| 6     | 131.61       | 132.36 | RHS    | 6                  | -          | SR edge          |           |
| 7     | 132          | 132.6  | Median | -                  | 18         |                  |           |
| 8     | 134.2        | 134.45 | LHS    | 11                 | -          | TRUCK LAY BAY    |           |
| 9     | 134.2        | 134.45 | RHS    | 11                 | -          | TRUCK LAY BAY    |           |
| 10    | 134.2        | 134.6  | Median | -                  | 16         |                  |           |
| 11    | 138.5        | 138.7  | Median | -                  | 5          |                  |           |
| 12    | 138.65       | 139.2  | LHS    | -                  | 13         | ON SEPARATOR     |           |
| 13    | 138.65       | 139.2  | RHS    | -                  | 13         | ON SEPARATOR     |           |
| 14    | 139          | 139.4  | Median | -                  | 5          |                  |           |

| S.No.                          | Chainage(km) |        | Side            | No. of Light poles |            | Location          | Remarks  |
|--------------------------------|--------------|--------|-----------------|--------------------|------------|-------------------|----------|
|                                | From         | To     |                 | Single arm         | Double arm |                   |          |
| 15                             | 140.6        | 140.8  | Median          | -                  | 11         |                   |          |
| 16                             | 140.8        | 141.6  | LHS             | -                  | 27         | B/W VUP&CW        |          |
| 17                             | 140.8        | 141.6  | RHS             | 24                 | -          | B/W VUP&MCW       |          |
| 18                             | 141.8        | 141.4  | Median          | -                  | 11         |                   |          |
| 19                             | 142          | 143.7  | Median          | -                  | 10         |                   |          |
| 20                             | 145          | 146    | at TP Median    | -                  | 15         |                   |          |
| 21                             | 146.2        | 146.4  | Median          | -                  | 4          |                   |          |
| 22                             | 146.6        | 147.6  | LHS             | 30                 |            | B/W VUP&MCW       |          |
| 23                             | 146.6        | 147.6  | RHS             | -                  | 33         | B/W VUP&SR        |          |
| 24                             | 147.6        | 147.8  | Median          | -                  | 4          |                   |          |
| 25                             | 153.3        | 153.4  | LHS             | 4                  | -          | SLIP ROAD         |          |
| 26                             | 153.3        | 153.4  | RHS             | 4                  | -          | SLIP ROAD         |          |
| 27                             | 153.6        | 154    | Median          | -                  | 14         |                   |          |
| 28                             | 153.765      | 153.87 | LHS             | 4                  | -          | SLIP ROAD         |          |
| 29                             | 153.765      | 153.87 | RHS             | 4                  | -          | SLIP ROAD         |          |
| 30                             | 153.765      |        | On SH Over Pass |                    | 10         | On SH OverPass    |          |
| 31                             | 157.56       | 158    | LHS             | 11                 | -          | TRUCK LAY BAY     |          |
| 32                             | 157.56       | 158    | RHS             | 11                 | -          | TRUCK LAY BAY     |          |
| 33                             | 157.8        | 158    | Median          | -                  | 13         |                   |          |
| 34                             | 173.5        | 174.15 | LHS             | -                  | 17         | ON SEPARATOR      |          |
| 35                             | 173.5        | 174.15 | RHS             | -                  | 17         | B/W MCW&SR        |          |
| 36                             | 173.5        | 174.2  | Median          | -                  | 13         |                   |          |
| 37                             | 190.3        | 190.7  | LHS             | 11                 | -          | TRUCK LAY BAY     |          |
| 38                             | 190.3        | 190.7  | RHS             | 10                 | -          | TRUCK LAY BAY     |          |
| 39                             | 190.3        | 190.7  | Median          | -                  | 15         |                   |          |
| 40                             | 193.4        | 194    | Median          | -                  | 7          |                   |          |
| 41                             | 193.8        | 194    | LHS             | 2                  | -          | On Slip Road Edge |          |
| 42                             | 193.8        | 194    | RHS             | 2                  | -          | On Slip Road Edge |          |
| 43                             | 194          | 194.2  | LHS             | 2                  | -          | On Slip Road Edge |          |
| 44                             | 194          | 194.2  | RHS             | 2                  | -          | On Slip Road Edge |          |
| 45                             | 194          | 194.6  | Median          | -                  | 7          |                   |          |
| 46                             | 194.1        |        | On SH Overpass  |                    | 14         | On SH Overpass    |          |
|                                |              |        |                 |                    |            |                   |          |
|                                |              |        |                 |                    |            |                   |          |
| <b>Total No of Light poles</b> |              |        |                 | <b>153</b>         | <b>349</b> |                   | <b>1</b> |

The project Road has 24 number of bus bays with bus shelters and it has forty (40nos) of only bus shelters without bus bays along the project Road. The details of the bus shelter are provided below

**Table 22: Details of Bus Shelters**

| S. No. | Chainage (km) | Side | As per Site          | Facilities Provided |                      | Remarks      |
|--------|---------------|------|----------------------|---------------------|----------------------|--------------|
|        |               |      |                      | PGR                 | Single arm Lightning |              |
| 1      | 129.300       | LHS  | Bus Bay with shelter | -                   | -                    |              |
| 2      | 129.500       | RHS  | Bus Bay with shelter | -                   | -                    |              |
| 3      | 131.780       | LHS  | Bus Shelter          | -                   | -                    | SERVICE ROAD |
| 4      | 131.780       | RHS  | Bus Shelter          | -                   | -                    | SERVICE ROAD |
| 5      | 137.550       | LHS  | Bus Shelter          | -                   | -                    |              |
| 6      | 137.550       | RHS  | Bus Shelter          | -                   | -                    |              |
| 7      | 138.900       | LHS  | Bus Shelter          | -                   | -                    | SERVICE ROAD |
| 8      | 138.900       | RHS  | Bus Shelter          | -                   | -                    | SERVICE ROAD |
| 9      | 140.550       | LHS  | Bus Bay with shelter | -                   | -                    |              |
| 10     | 140.750       | RHS  | Bus Bay with shelter | -                   | -                    |              |
| 11     | 141.850       | RHS  | Bus Bay with shelter | -                   | -                    |              |
| 12     | 142.000       | LHS  | Bus Bay with shelter | -                   | -                    |              |
| 13     | 145.380       | RHS  | Bus Bay with shelter | -                   | -                    |              |
| 14     | 145.600       | LHS  | Bus Bay with shelter | -                   | -                    |              |
| 15     | 147.500       | LHS  | Bus Shelter          | -                   | -                    |              |
| 16     | 147.430       | RHS  | Bus Shelter          | -                   | -                    | SERVICE ROAD |
| 17     | 151.150       | LHS  | Bus Bay with shelter | -                   | -                    |              |
| 18     | 151.300       | RHS  | Bus Bay with shelter | -                   | -                    |              |
| 19     | 156.900       | LHS  | Bus Bay with shelter | -                   | -                    |              |
| 20     | 157.080       | RHS  | Bus Bay with shelter | -                   | -                    |              |
| 21     | 158.430       | LHS  | Bus Shelter          | -                   | -                    |              |
| 22     | 158.430       | RHS  | Bus Shelter          | -                   | -                    |              |
| 23     | 159.680       | LHS  | Bus Shelter          | -                   | -                    |              |
| 24     | 159.680       | RHS  | Bus Shelter          | -                   | -                    |              |
| 25     | 160.080       | LHS  | Bus Bay with shelter | -                   | -                    |              |
| 26     | 160.230       | RHS  | Bus Bay with shelter | -                   | -                    |              |
| 27     | 166.450       | LHS  | Bus Bay with shelter | -                   | -                    |              |
| 28     | 166.600       | RHS  | Bus Bay with shelter | -                   | -                    |              |
| 29     | 169.150       | LHS  | Bus Shelter          | -                   | -                    |              |
| 30     | 169.150       | RHS  | Bus Shelter          | -                   | -                    |              |
| 31     | 170.300       | LHS  | Bus Shelter          | -                   | -                    |              |
| 32     | 170.300       | RHS  | Bus Shelter          | -                   | -                    |              |
| 33     | 172.100       | LHS  | Bus Shelter          | -                   | -                    |              |
| 34     | 172.100       | RHS  | Bus Shelter          | -                   | -                    |              |
| 35     | 173.130       | LHS  | Bus Shelter          | -                   | -                    |              |
| 36     | 173.130       | RHS  | Bus Shelter          | -                   | -                    |              |
| 37     | 175.500       | LHS  | Bus Shelter          | -                   | -                    |              |
| 38     | 175.500       | RHS  | Bus Shelter          | -                   | -                    |              |

| S. No. | Chainage (km) | Side | As per Site          | Facilities Provided |                      | Remarks |
|--------|---------------|------|----------------------|---------------------|----------------------|---------|
|        |               |      |                      | PGR                 | Single arm Lightning |         |
| 39     | 178.650       | LHS  | Bus Shelter          | -                   | -                    |         |
| 40     | 178.650       | RHS  | Bus Shelter          | -                   | -                    |         |
| 41     | 180.030       | LHS  | Bus Shelter          | -                   | -                    |         |
| 42     | 180.030       | RHS  | Bus Shelter          | -                   | -                    |         |
| 43     | 184.430       | LHS  | Bus Shelter          | -                   | -                    |         |
| 44     | 184.430       | RHS  | Bus Shelter          | -                   | -                    |         |
| 45     | 187.750       | LHS  | Bus Bay with shelter | -                   | -                    |         |
| 46     | 187.900       | RHS  | Bus Bay with shelter | -                   | -                    |         |
| 47     | 189.900       | LHS  | Bus Bay with shelter | -                   | -                    |         |
| 48     | 190.100       | RHS  | Bus Bay with shelter | -                   | -                    |         |
| 49     | 196.050       | LHS  | Bus Shelter          | -                   | -                    |         |
| 50     | 196.050       | RHS  | Bus Shelter          | -                   | -                    |         |
| 51     | 201.400       | LHS  | Bus Shelter          | -                   | -                    |         |
| 52     | 201.400       | RHS  | Bus Shelter          | -                   | -                    |         |
| 53     | 202.950       | LHS  | Bus Bay with shelter | -                   | -                    |         |
| 54     | 203.250       | RHS  | Bus Bay with shelter | -                   | -                    |         |
| 55     | 204.300       | LHS  | Bus Bay with shelter | -                   | -                    |         |
| 56     | 204.620       | RHS  | Bus Bay with shelter | -                   | -                    |         |
| 57     | 209.100       | LHS  | Old Bus Shelter      | -                   | -                    |         |
| 58     | 209.100       | RHS  | Bus Shelter          | -                   | -                    |         |
| 59     | 210.420       | LHS  | Bus Shelter          | -                   | -                    |         |
| 60     | 210.420       | RHS  | Bus Shelter          | -                   | -                    |         |
| 61     | 211.380       | LHS  | Bus Shelter          | -                   | -                    |         |
| 62     | 211.380       | RHS  | Bus Shelter          | -                   | -                    |         |
| 63     | 212.950       | LHS  | Bus Shelter          | -                   | -                    |         |
| 64     | 212.900       | RHS  | Bus Shelter          | -                   | -                    |         |

### 1.5.2 Bridge Works

List of Bridges found during the inventory surveys along the corridor are as follows:

**Table 23: Details of CD & Other Structures**

| S. No. | Chainage | Type of Structures | Side | Age of Structure | Span as per Schedule   | Span as per Site     | Deck width as per site | Structure in Schedule | Structure on Site | Skew angle |
|--------|----------|--------------------|------|------------------|------------------------|----------------------|------------------------|-----------------------|-------------------|------------|
| 1      | 128+371  | VUP                | BHS  | New              | 1 x 10.5 x 6           | 1 x 15 x 6           | 20.5                   | YES                   | YES               | 20         |
| 2      | 131+321  | PUP                | BHS  | New              | 1 x 7 x 3.5            | 1 x 7 x 3.5          | 20.5                   | YES                   | YES               | -          |
| 3      | 136+216  | MNB                | BHS  | New              | 1 x 12.2               | 2 x 6.8              | 34                     | YES                   | YES               | -          |
| 4      | 137+083  | ROB                | LHS  | New              | 2 x 20 +<br>2 x 28.791 | 2 x 28 +<br>1 x 30.5 | 10.25                  | YES                   | YES               | 30         |
| 5      | 137+083  | ROB                | RHS  | New              | 2 x 20 +<br>2 x 28.791 | 2 x 28 +<br>1 x 30.5 | 10.25                  | YES                   | YES               | 30         |

| S. No. | Chainage | Type of Structures | Side | Age of Structure | Span as per Schedule   | Span as per Site         | Deck width as per site | Structure in Schedule    | Structure on Site | Skew angle |
|--------|----------|--------------------|------|------------------|------------------------|--------------------------|------------------------|--------------------------|-------------------|------------|
| 6      | 140+405  | MJB                | LHS  | New              | 9 x 20.73              | 9 x 20.73                | 10.25                  | YES                      | YES               | -          |
| 7      | 140+405  | MJB                | RHS  | Old              | 9 x 20.73              | 9 x 20.73                | 8                      | YES                      | YES               | -          |
| 8      | 140+396  | PUP                | BHS  | New              | 1 x 7 x 3.5            | 1 x 7 x 3.5              | 20.5                   | YES                      | YES               | -          |
| 9      | 141+526  | Flyover            | LHS  | New              | 2 x 15                 | 2 x 15                   | 10.25                  | YES                      | YES               | -          |
| 10     | 144+251  | PUP                | BHS  | New              | 1 x 7 x 3.5            | 1 x 7 x 3.5              | 20.5                   | YES                      | YES               | -          |
| 11     | 144+827  | ROB                | LHS  | New              | 3 x 17.10 + 3 x 44.683 | 3 x 36 + 1 x 18          | 10.25                  | YES                      | YES               | 35         |
| 12     | 144+827  | ROB                | RHS  | New              | 3 x 17.10 + 3 x 44.683 | 3 x 36 + 1 x 18          | 10.25                  | YES                      | YES               | 35         |
| 13     | 145+944  | MNB                | BHS  | New              | 1 x 1.2                | 2 x 5.5                  | 67.5                   | YES (As per Schedule PC) | YES               | 40         |
| 14     | 145+305  | MNB                | BHS  | New              | 1 x 1.2                | 1 x 6                    | 20.5                   | YES (As per Schedule PC) | YES               | -          |
| 15     | 146+944  | MNB                | BHS  | New              | 2 x 6.8                | 2 x 6.8                  | 20.5                   | YES                      | YES               | 20         |
| 16     | 146+944  | MNB                | RHS  | New              | 2 x 6.8                | 2 x 6.8                  | 9                      | YES                      | YES               | 20         |
| 17     | 147+445  | Flyover            | RHS  | New              | 2 x 15                 | 2 x 15                   | 10.25                  | YES                      | YES               | -          |
| 18     | 152+026  | VUP                | BHS  | New              | -                      | 1 x 10.5 x 6             | 20.5                   | NO                       | YES               | -          |
| 19     | 153+966  | Overpass           | BHS  | New              | 2 x 10 + 2 x 15        | 2 x 10 + 2 x 15          | 12.5                   | YES                      | YES               | -          |
| 20     | 155+241  | PUP                | BHS  | New              | 1 x 7 x 3.5            | 1 x 7 x 3.5              | 20.5                   | YES                      | YES               | -          |
| 21     | 157+217  | MNB                | LHS  | New              | 3 x 7.6                | 2 x 11                   | 10.25                  | YES                      | YES               | -          |
| 22     | 157+217  | MNB                | RHS  | New              | 3 x 7.6                | 2 x 11                   | 10.25                  | YES                      | YES               | -          |
| 23     | 160+930  | VUP                | BHS  | New              | 1 x 10.5 x 6           | 1 x 10.5 x 6             | 20.5                   | YES                      | YES               | -          |
| 24     | 161+765  | PUP                | BHS  | New              | 1 x 7 x 3.5            | 1 x 7 x 3.5              | 20.5                   | YES                      | YES               | -          |
| 25     | 162+914  | VUP                | BHS  | New              | 1 x 10.5 x 6           | 1 x 10.5 x 6             | 20.5                   | YES                      | YES               | -          |
| 26     | 163+400  | PUP                | BHS  | New              | 1 x 7 x 3.5            | 1 x 7 x 3.5              | 20.5                   | YES                      | YES               | -          |
| 27     | 163+970  | MJB                | LHS  | New              | 4 x 20.2               | 4 x 20.2                 | 10.25                  | YES                      | YES               | -          |
| 28     | 163+970  | MJB                | RHS  | New              | 4 x 20.2               | 4 x 20.2                 | 10.25                  | YES                      | YES               | -          |
| 29     | 164+166  | MNB                | LHS  | New              | 3 x 10                 | 3 x 10                   | 10.25                  | YES                      | YES               | 20         |
| 30     | 164+116  | MNB                | RHS  | New              | 3 x 10                 | 3 x 10                   | 10.25                  | YES                      | YES               | 20         |
| 31     | 166+024  | MNB                | LHS  | New              | 1 x 6.85               | 1 x 6.85                 | 10.25                  | YES                      | YES               | -          |
| 32     | 166+024  | MNB                | RHS  | New              | 1 x 6.85               | 1 x 6.85                 | 10.25                  | YES                      | YES               | -          |
| 33     | 167+324  | ROB                | LHS  | New              | 2 x 11.75              | 1 x 54                   | 10.25                  | YES                      | YES               | 20         |
| 34     | 167+324  | ROB                | RHS  | New              | 2 x 11.75              | 1 x 54                   | 10.25                  | YES                      | YES               | 20         |
| 35     | 170+639  | PUP                | BHS  | New              | 1 x 7 x 3.5            | 1 x 7 x 3.5              | 20.5                   | YES                      | YES               | -          |
| 36     | 171+300  | ROB                | LHS  | New              | 2 x 15 + 2 x 15.68     | 1 x 36 + 1 x 37 + 1 x 19 | 10.25                  | YES                      | YES               | -          |
| 37     | 171+300  | ROB                | RHS  | New              | 2 x 15 + 2 x 15.68     | 1 x 36 + 1 x 37 + 1 x 19 | 10.25                  | YES                      | YES               | -          |
| 38     | 171+300  | ROB                | LHS  | -                | 2 x 15 + 2 x 15.68     | -                        | -                      | YES                      | NO                | -          |



| S. No. | Chainage | Type of Structures | Side | Age of Structure | Span as per Schedule              | Span as per Site                  | Deck width as per site | Structure in Schedule     | Structure on Site | Skew angle |
|--------|----------|--------------------|------|------------------|-----------------------------------|-----------------------------------|------------------------|---------------------------|-------------------|------------|
| 39     | 171+300  | ROB                | RHS  | -                | 2 x 15 + 2 x 15.68                | -                                 | -                      | YES                       | NO                | -          |
| 40     | 171+660  | MNB                | BHS  | New              | 3 x 7.6                           | 3 x 7.55                          | 39.5                   | YES (As per Schedule BC)  | YES               | -          |
| 41     | 173+365  | MNB                | LHS  | New              | 1 x 8.4                           | 1 x 8.4                           | 10.25                  | YES                       | YES               | -          |
| 42     | 173+365  | MNB                | RHS  | New              | 1 x 8.4                           | 1 x 8.4                           | 10.25                  | YES                       | YES               | -          |
| 43     | 178+872  | PUP                | BHS  | New              | 1 x 7 x 3.5                       | 1 x 7 x 3.5                       | 20.5                   | YES                       | YES               | -          |
| 44     | 179+547  | MJB                | LHS  | New              | 3 x 24.81                         | 4 x 20                            | 10.25                  | YES (As per Schedule MNB) | YES               | -          |
| 45     | 179+547  | MJB                | RHS  | New              | 3 x 24.81                         | 4 x 20                            | 10.25                  | YES (As per Schedule MNB) | YES               | -          |
| 46     | 181+137  | PUP                | BHS  | New              | 1 x 7 x 3.5                       | 1 x 7 x 3.5                       | 20.5                   | YES                       | YES               | -          |
| 47     | 181+401  | MNB                | LHS  | Old              | 2 x 10.3                          | 2 x 10.3                          | 10.25                  | YES                       | YES               | -          |
| 48     | 181+401  | MNB                | RHS  | New              | 2 x 10.3                          | 2 x 10.3                          | 10.25                  | YES                       | YES               | -          |
| 49     | 182+881  | MNB                | BHS  | New              | 1 x 6.3                           | 1 x 6.3                           | 20.5                   | YES                       | YES               | -          |
| 50     | 184+900  | PUP                | BHS  | New              | 1 x 7 x 3.5                       | 1 x 7 x 3.5                       | 20.5                   | YES                       | YES               | -          |
| 51     | 186+971  | MNB                | LHS  | Old              | 1 x 11.82                         | 2 x 4.3                           | 13.25                  | YES                       | YES               | -          |
| 52     | 186+971  | MNB                | RHS  | New              | 1 x 11.82                         | 1 x 11.82                         | 10.25                  | YES                       | YES               | -          |
| 53     | 192+186  | MJB                | LHS  | New              | 5 x 16                            | 5 x 16                            | 10.25                  | YES                       | YES               | -          |
| 54     | 192+186  | MJB                | RHS  | Old              | 5 x 16                            | 5 x 16                            | 8.2                    | YES                       | YES               | -          |
| 55     | 194+098  | Overpass           | BHS  | New              | 2 x 10 + 2 x 15                   | 2 x 10 + 2 x 15                   | 12.5                   | YES                       | YES               | -          |
| 56     | 195+880  | MNB                | LHS  | New              | 5 x 7                             | 3 x 11.7                          | 10.25                  | YES                       | YES               | -          |
| 57     | 195+880  | MNB                | RHS  | New              | 5 x 7                             | 3 x 11.7                          | 10.25                  | YES                       | YES               | -          |
| 58     | 197+933  | MJB                | LHS  | New              | 10.55 + 24.7 + 25.9 + 22.4 + 11.2 | 10.55 + 24.7 + 25.9 + 22.4 + 11.2 | 10.25                  | YES                       | YES               | -          |
| 59     | 197+933  | MJB                | RHS  | Old              | 10.55 + 24.7 + 25.9 + 22.4 + 11.2 | 10.55 + 24.7 + 25.9 + 22.4 + 11.2 | 8.5                    | YES                       | YES               | -          |
| 60     | 198+818  | MNB                | LHS  | New              | 1 x 6.7                           | 1 x 6.7                           | 10.25                  | YES                       | YES               | -          |
| 61     | 198+818  | MNB                | RHS  | Old              | 1 x 6.7                           | 1 x 6.7                           | 12.4                   | YES                       | YES               | -          |
| 62     | 199+099  | PUP                | BHS  | New              | 1 x 7 x 3.5                       | 1 x 7 x 3.5                       | 20.5                   | YES                       | YES               | -          |
| 63     | 201+985  | PUP                | BHS  | New              | 1 x 7 x 3.5                       | 1 x 7 x 3.5                       | 20.5                   | YES                       | YES               | -          |
| 64     | 203+979  | PUP                | BHS  | New              | 1 x 7 x 3.5                       | 1 x 7 x 3.5                       | 20.5                   | YES                       | YES               | -          |
| 65     | 208+780  | VUP                | BHS  | -                | 1 x 10.5 x 6                      | -                                 | -                      | YES                       | NO                | -          |
| 66     | 209+298  | MJB                | LHS  | Old              | 4 x 15.3                          | 4 x 15.3                          | 8                      | YES                       | YES               | -          |
| 67     | 209+298  | MJB                | RHS  | New              | 4 x 15.3                          | 4 x 15.3                          | 10.25                  | YES                       | YES               | -          |
| 68     | 212+471  | MNB                | LHS  | Old              | 1 x 6.1                           | 1 x 6.1                           | 12.1                   | YES                       | YES               | -          |

| S. No. | Chainage | Type of Structures | Side | Age of Structure | Span as per Schedule | Span as per Site | Deck width as per site | Structure in Schedule | Structure on Site | Skew angle |
|--------|----------|--------------------|------|------------------|----------------------|------------------|------------------------|-----------------------|-------------------|------------|
| 69     | 212+471  | MNB                | RHS  | New              | 1 x 6.1              | 1 x 6.1          | 10.25                  | YES                   | YES               | -          |
| 70     | 213+525  | MNB                | LHS  | Old              | 2 x 5.9              | 2 x 5.9          | 10.25                  | YES                   | YES               | -          |
| 71     | 213+525  | MNB                | RHS  | New              | 1 x 11.85            | 2 x 5.9          | 10.25                  | YES                   | YES               | -          |

## 1.6 QUALITY AUDIT

### 1.6.1 Embankment & Subgrade

The embankment soil appears to be clayey sand in nature and embankment appears to be in good condition over the entire length of project. No major settlements or depressions have been noted even at high embankment locations. There are no marshy/water logging areas along the length of project road.

The subgrade of the project road appears to be in good condition as revealed by test pit investigations. Laboratory results conducted on subgrade indicates that most of subgrade soils are of coarse-grained soils. Condition of subgrade appears to intact as no major evidence of subsidence of depressions exists along the corridor. CBR of subgrade soils for lab testing indicates a good value greater than 10% at all the locations. Results of Subgrade CBR are as follows:

**Table 24: Details of Soaked CBR values**

| Lab Sample No | Site Identification |       | Grain Size Analysis     |                  |                 |          |        | Atterberg Limits (%) |    |    | Soil Class | MDD (gm/cc) | OMC (%) | Soaked CBR 97% MDD | Free Swelling Index (%) |
|---------------|---------------------|-------|-------------------------|------------------|-----------------|----------|--------|----------------------|----|----|------------|-------------|---------|--------------------|-------------------------|
|               | Location (km)       | Up/Dn | Percentage passing from |                  |                 |          |        | LL                   | PL | PI |            |             |         |                    |                         |
|               |                     |       | 4.75 mm IS Sieve        | 425 mic IS Sieve | 75 mic IS Sieve | Gravel % | Sand % |                      |    |    |            |             |         |                    |                         |
| GMP-TP-1      | 130+000             | LHS   | 87                      | 41               | 21              | 13       | 66     | -                    | NP | NP | SM         | 2.07        | 8.20    | 15.09              | 8.00                    |
| GMP-TP-2      | 134+950             | RHS   | 84                      | 47               | 15              | 16       | 69     | -                    | NP | NP | SM         | 1.98        | 9.80    | 9.64               | 13.04                   |
| GMP-TP-3      | 139+400             | LHS   | 86                      | 76               | 33              | 14       | 53     | 25                   | 18 | 7  | SM-SC      | 2.06        | 8.80    | 15.32              | 25.00                   |
| GMP-TP-4      | 143+200             | RHS   | 95                      | 71               | 30              | 5        | 65     | -                    | NP | NP | SM         | 1.98        | 9.80    | 9.64               | 22.73                   |
| GMP-TP-5      | 150+000             | LHS   | 77                      | 49               | 22              | 23       | 55     | -                    | NP | NP | SM         | 2.02        | 9.80    | 15.09              | 20.00                   |
| GMP-TP-6      | 155+400             | RHS   | 75                      | 67               | 48              | 25       | 27     | 31                   | 18 | 13 | SC         | 1.85        | 12.00   | 9.63               | 20.00                   |
| GMP-TP-7      | 159+800             | LHS   | 89                      | 73               | 49              | 11       | 40     | 24                   | 19 | 5  | SM-SC      | 2.04        | 9.20    | 15.33              | 36.84                   |
| GMP-TP-8      | 165+150             | RHS   | 87                      | 71               | 48              | 13       | 39     | -                    | NP | NP | SM         | 1.94        | 10.60   | 11.19              | 14.29                   |
| GMP-TP-9      | 170+000             | LHS   | 58                      | 41               | 27              | 42       | 31     | 31                   | 24 | 7  | GM-GC      | 2.14        | 11.20   | 18.73              | 16.67                   |
| GMP-TP-10     | 174+400             | RHS   | 62                      | 42               | 34              | 38       | 28     | 27                   | 21 | 6  | GM-GC      | 2.09        | 10.40   | 18.73              | 20.00                   |
| GMP-TP-11     | 179+800             | LHS   | 16                      | 8                | 6               | 84       | 10     | 50                   | 30 | 20 | GP-GC      | 2.13        | 10.20   | 21.46              | 20.00                   |
| GMP-TP-12     | 185+400             | RHS   | 62                      | 19               | 15              | 38       | 47     | 39                   | 25 | 14 | SC         | 1.88        | 14.20   | 9.44               | 36.00                   |
| GMP-TP-13     | 190+000             | LHS   | 84                      | 66               | 52              | 16       | 32     | 30                   | 19 | 11 | CL         | 1.95        | 10.40   | 7.54               | 14.29                   |
| GMP-TP-14     | 194+600             | RHS   | 65                      | 33               | 27              | 35       | 38     | 37                   | 21 | 16 | SC         | 1.82        | 11.60   | 9.63               | 21.43                   |
| GMP-TP-15     | 200+000             | LHS   | 69                      | 40               | 31              | 31       | 38     | 31                   | 20 | 11 | SC         | 1.97        | 10.40   | 10.51              | 17.39                   |

| Lab Sample No | Site Identification |       | Grain Size Analysis     |                  |                 |          |        | Atterberg Limits (%) |    |    | Soil Class | MDD (gm/cc) | OMC (%) | Soaked CBR 97% MDD | Free Swelling Index (%) |
|---------------|---------------------|-------|-------------------------|------------------|-----------------|----------|--------|----------------------|----|----|------------|-------------|---------|--------------------|-------------------------|
|               | Location (km)       | Up/Dn | Percentage passing from |                  |                 |          |        | LL                   | PL | PI |            |             |         |                    |                         |
|               |                     |       | 4.75 mm IS Sieve        | 425 mic IS Sieve | 75 mic IS Sieve | Gravel % | Sand % |                      |    |    |            |             |         |                    |                         |
| GMP-TP-16     | 205+200             | RHS   | 73                      | 40               | 35              | 27       | 38     | 34                   | 20 | 14 | SC         | 1.91        | 12.20   | 10.51              | 15.38                   |
| GMP-TP-17     | 210+300             | LHS   | 76                      | 41               | 31              | 24       | 45     | 40                   | 27 | 13 | SC         | 2.04        | 6.80    | 15.28              | 12.00                   |
| GMP-TP-18     | 214+900             | RHS   | 69                      | 27               | 18              | 31       | 51     | 50                   | 32 | 18 | SC         | 1.59        | 23.60   | NA                 | 16.67                   |
| GMP-SR-TP-19  | 140+800             | LHS   | 80                      | 61               | 34              | 20       | 46     | 25                   | 18 | 7  | SM-SC      | 1.94        | 9.40    | 8.32               | 27.27                   |
| GMP-SR-TP-20  | 173+560             | RHS   | 83                      | 65               | 46              | 17       | 37     | 27                   | 18 | 9  | SC         | 2.03        | 9.00    | 15.28              | 30.43                   |

All the samples meeting the required limits for the subgrade criteria as per MORT&H Specification except 1 sample having MDD less than 1.75 gm/cc;

**On the whole, it can be concluded that the existing subgrade is in good condition.**

### 1.6.2 Pavement Condition

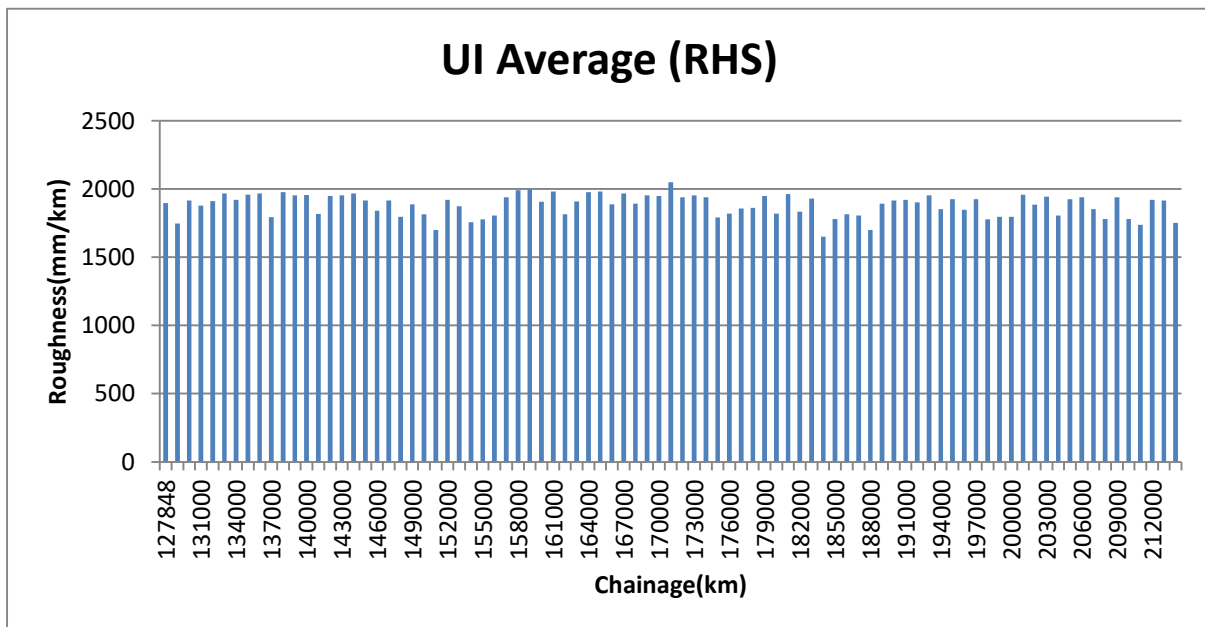
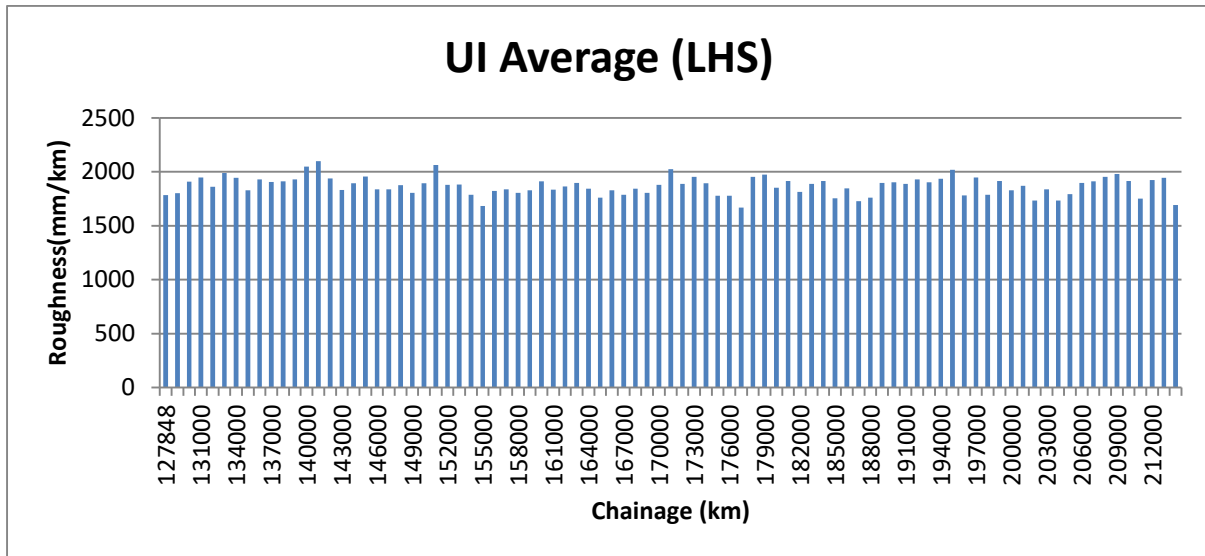
The condition of the Flexible Pavement is good as recent overly was done in the flexible pavement locations and kerb painting and road marking works were in progress.

The Condition of the Rigid Pavement is Good except at few locations, where the repair of few panels with epoxy patching over the raveled and cracked surface is done as part of major maintenance.

The Condition of the Service Road is good.

### 1.6.3 Roughness

The roughness surveys conducted along the corridor indicate good riding quality over the length of project corridor. Bar diagrams showing the Kilometer wise roughness along the project road are presented below:



Almost entire project road is having good riding quality. From the above charts, there is no Overlay requirement on Flexible Pavement (LHS & RHS carriageway) as the unevenness Index (UI) is less than 2500 mm/km. and the riding quality of Rigid pavement is good.

#### 1.6.4 Pavement Composition

Review of Pavement Design Report indicates that the Rigid Pavement has designed for 30 years period and TCS drawing shows crust composition for the main carriageway and service road is as:

| Main carriageway |     |
|------------------|-----|
| PQC, mm          | 300 |
| DLC, mm          | 150 |

| Main carriageway        |     |
|-------------------------|-----|
| GSB, mm                 | 150 |
| Total mm above Subgrade | 600 |

However, from the test pits dug eighteen locations along the main carriageway indicates that the average PQC thickness is 297mm.

### 1.6.5 CD Structures

The CD structures along the corridor are constructed appears to be as per the standards and specifications as no design calculations/ as-built drawings for structures made available to verify the same. Presently, all structures appear new and seem to be in good condition without major distress. The Summary of Major Structures and culverts are as listed below

**Table 25: Summary of Major Structures including COS**

| Item                 | As Per Schedule-B | As Per Site |
|----------------------|-------------------|-------------|
| Overpass             | 2                 | 2           |
| Flyover              | 2                 | 2           |
| Major Bridge         | 5                 | 6           |
| Minor Bridge         | 15                | 16          |
| Pedestrian Underpass | 13                | 13          |
| Railway Over Bridge  | 5                 | 4           |
| Vehicular Underpass  | 4                 | 4           |

**Table 26: Summary of culverts including COS**

| Item                   | As Per Schedule-B | As Per Site |
|------------------------|-------------------|-------------|
| Slab Culvert           | 24                | 0           |
| Box Culvert            | 7                 | 32          |
| Pipe Culvert           | 84                | 98          |
| Pipe Not Found at Site | -                 | 10          |

### Age of Structures:

| S.no | Structure | LHS |     | RHS |     | BHS |     | Total (Nos) |     | Total No. of Structures |
|------|-----------|-----|-----|-----|-----|-----|-----|-------------|-----|-------------------------|
|      |           | Old | New | Old | New | Old | New | Old         | New |                         |
| 1    | ROB       | 0   | 4   | 0   | 4   | 0   | 0   | 0           | 8   | 8                       |
| 2    | MJB       | 1   | 5   | 3   | 3   | 0   | 0   | 4           | 8   | 12                      |
| 3    | MNB       | 4   | 6   | 1   | 10  | 0   | 6   | 5           | 22  | 27                      |
| 4    | Flyover   | 0   | 1   | 0   | 1   | 0   | 0   | 0           | 2   | 2                       |
| 5    | VUP       | 0   | 0   | 0   | 0   | 0   | 4   | 0           | 4   | 4                       |

|               |          |          |           |          |           |          |           |          |           |           |
|---------------|----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|-----------|
| 6             | PUP      | 0        | 0         | 0        | 0         | 0        | 13        | 0        | 13        | 13        |
| 7             | Overpass | 0        | 0         | 0        | 0         | 0        | 2         | 0        | 2         | 2         |
| <b>Total:</b> |          | <b>5</b> | <b>16</b> | <b>4</b> | <b>18</b> | <b>0</b> | <b>25</b> | <b>9</b> | <b>59</b> | <b>68</b> |

**Summary of Expansion joints and Bearings:**

| S.no          | Structure | Expansion joints |           | Bearings |            |             |            |           |          |
|---------------|-----------|------------------|-----------|----------|------------|-------------|------------|-----------|----------|
|               |           |                  |           | Pot PTFE |            | Elastomeric |            | Metallic  |          |
|               |           | Old              | New       | Old      | New        | Old         | New        | Old       | New      |
| 1             | ROB       | 0                | 30        | 0        | 200        | 0           | 16         | 0         | 0        |
| 2             | MJB       | 29               | 41        | 0        | 0          | 108         | 266        | 24        | 0        |
| 3             | MNB       | 0                | 0         | 0        | 0          | 0           | 0          | 0         | 0        |
| 4             | Flyover   | 0                | 6         | 0        | 0          | 0           | 24         | 0         | 0        |
| 5             | Overpass  | 0                | 10        | 0        | 0          | 0           | 56         | 0         | 0        |
| <b>Total:</b> |           | <b>29</b>        | <b>87</b> | <b>0</b> | <b>200</b> | <b>108</b>  | <b>362</b> | <b>24</b> | <b>0</b> |

**Summary of Super Structures:**

| S.no          | Structure | RCC Precast Panels & RCC Solid Slab | RCC Precast Panels | Steel Comp. Girder | Steel Comp. Girder & RCC Girder | Balanced Cantilever | RCC solid slab | RCC Box   | RCC Girder | Total No. of Structures |
|---------------|-----------|-------------------------------------|--------------------|--------------------|---------------------------------|---------------------|----------------|-----------|------------|-------------------------|
| 1             | ROB       | 0                                   | 0                  | 6                  | 2                               | 0                   | 0              | 0         | 0          | 8                       |
| 2             | MJB       | 0                                   | 7                  | 0                  | 0                               | 2                   | 1              | 0         | 2          | 12                      |
| 3             | MNB       | 0                                   | 10                 | 0                  | 0                               | 0                   | 7              | 10        | 0          | 27                      |
| 4             | Flyover   | 0                                   | 2                  | 0                  | 0                               | 0                   | 0              | 0         | 0          | 2                       |
| 5             | VUP       | 0                                   | 0                  | 0                  | 0                               | 0                   | 0              | 4         | 0          | 4                       |
| 6             | PUP       | 0                                   | 0                  | 0                  | 0                               | 0                   | 0              | 13        | 0          | 13                      |
| 7             | Overpass  | 2                                   | 0                  | 0                  | 0                               | 0                   | 0              | 0         | 0          | 2                       |
| <b>Total:</b> |           | <b>2</b>                            | <b>19</b>          | <b>6</b>           | <b>2</b>                        | <b>2</b>            | <b>8</b>       | <b>27</b> | <b>2</b>   | <b>68</b>               |

**Deviations from Schedule:**

- MJB as per Schedule -B are 05 No's & as per Site are 06 No's.
- MNB as per Schedule -B are 15 No's & as per Site are 16 No's.
- Span deviations were observed in the following structure locations:

Concessionaire informed that the change in span arrangements were made as recommended by Authority/IE under COS works.

| S. No. | Chainage | Type of Structures | Span as per Schedule   | Span as per Site  |
|--------|----------|--------------------|------------------------|-------------------|
| 1      | 137+083  | ROB                | 2 x 20 + 2 x 28.791    | 2 x 28 + 1 x 30.5 |
| 2      | 144+827  | ROB                | 3 x 17.10 + 3 x 44.683 | 3 x 36 + 1 x 18   |
| 3      | 167+324  | ROB                | 2 x 11.75              | 1 x 54            |

| S. No. | Chainage | Type of Structures | Span as per Schedule | Span as per Site         |
|--------|----------|--------------------|----------------------|--------------------------|
| 4      | 171+300  | ROB                | 2 x 15 + 2 x 15.68   | 1 x 36 + 1 x 37 + 1 x 19 |
| 5      | 179+547  | MJB                | 3 x 24.81            | 4 x 20                   |
| 6      | 136+216  | MNB                | 1 x 12.2             | 2 x 6.8                  |
| 7      | 145+305  | MNB                | 1 x 1.2              | 2 x 5.5                  |
| 8      | 146+944  | MNB                | 1 x 1.2              | 1 x 6                    |
| 9      | 157+217  | MNB                | 3 x 7.6              | 2 x 11                   |
| 10     | 157+217  | MNB                | 3 x 7.6              | 2 x 11                   |
| 11     | 186+971  | MNB                | 1 x 11.82            | 2 x 4.3                  |
| 12     | 195+880  | MNB                | 5 x 7                | 3 x 11.7                 |
| 13     | 213+525  | MNB                | 1 x 11.85            | 2 x 5.9                  |

Structure wise conditions along the project corridor are presented below:

**BR. NO. 137+083 (ROB)**

**GENERAL DESCRIPTION**

|                               |   |                       |
|-------------------------------|---|-----------------------|
| • Name of bridge              | : | Nanda Pura            |
| • Chainage                    | : | Km 137+083            |
| • Type of bridge              | : | ROB                   |
| • Span Arrangement            | : | 2 x 28.0 + 1 x 30.5 m |
| • Total outer width of bridge | : | 2 x 10.25 m           |
| • Median Width                | : | 3.5 m                 |
| • Type of Foundation          | : | Not Visible           |
| • Type of substructure        | : | RCC Circular Type     |
| • Type of Superstructure      | : | Steel Comp. Girders   |
| • Type of Bearing             | : | POT PTFE bearing.     |
| • Type of Railing             | : | RCC Crash barrier.    |
| • Method of Inspection        | : | Visual                |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- The structure is in skew of nearly 30 degrees.
- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes is in good condition.

Refer the matter given at the end of the Document for Conclusions, Strategy for Renewals and Assumption for structure BOQ.







**BR. NO. 144+827 (ROB)**

**GENERAL DESCRIPTION**

|                               |   |                                     |
|-------------------------------|---|-------------------------------------|
| • Name of bridge              | : | Saliya                              |
| • Chainage                    | : | Km 144+827                          |
| • Type of bridge              | : | ROB                                 |
| • Span Arrangement            | : | 1 x 18 + 3 x 36 m                   |
| • Total outer width of bridge | : | 2 x 10.25 m                         |
| • Median Width                | : | 6.2 m                               |
| • Type of Foundation          | : | Not Visible                         |
| • Type of substructure        | : | RCC Circular Type                   |
| • Type of Superstructure      | : | Steel Comp. Girders and RCC Girders |
| • Type of Bearing             | : | POT PTFE and Elastomeric bearing.   |
| • Type of Railing             | : | RCC Crash barrier.                  |
| • Method of Inspection        | : | Visual                              |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- The bridge is in skew of nearly 35 degrees.
- Corrosion stains observed on pier cap and bottom of girders at BHS.
- RCC crash barrier is provided is in good condition.
- Fly wings provided on abutment location quadrant slopes are in good condition.

Refer the matter given at the end of the Document for Conclusions, Strategy for Renewals and Assumption for structure BOQ.





**BR. NO. 167+324 (ROB)**

**GENERAL DESCRIPTION**

|                               |   |                     |
|-------------------------------|---|---------------------|
| • Name of bridge              | : | Datiya              |
| • Chainage                    | : | Km 167+324          |
| • Type of bridge              | : | ROB                 |
| • Span Arrangement            | : | 1 x 54.0 m          |
| • Total outer width of bridge | : | 2 x 10.25 m         |
| • Median Width                | : | 2 m                 |
| • Type of Foundation          | : | Not Visible         |
| • Type of substructure        | : | RCC Wall type       |
| • Type of Superstructure      | : | Steel Comp. Girders |
| • Type of Bearing             | : | POT PTFE bearing.   |
| • Type of Railing             | : | RCC Crash Barrier   |
| • Method of Inspection        | : | Visual              |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- The bridge is in skew of nearly 20 degrees.
- Abutments are in good condition.
- Steel Girders are in good condition.
- Stone pitching is provided on abutment location quadrant slopes is in good condition

Refer the matter given at the end of the Document for Conclusions, Strategy for Renewals and Assumption for structure BOQ.





**BR. NO. 171+300 (ROB)**

**GENERAL DESCRIPTION**

|                               |   |                                  |
|-------------------------------|---|----------------------------------|
| • Name of bridge              | : | Mangal Mahudi                    |
| • Chainage                    | : | Km 171+300                       |
| • Type of bridge              | : | ROB                              |
| • Span Arrangement            | : | 1 x 36.0 + 1 x 37.0 + 1 x 19.0 m |
| • Total outer width of bridge | : | 2 x 10.25 m                      |
| • Median Width                | : | 3.5 m                            |
| • Type of Foundation          | : | Not Visible                      |
| • Type of substructure        | : | RCC Wall Type                    |
| • Type of Superstructure      | : | Steel Comp. Girders              |
| • Type of Bearing             | : | POT PTFE bearing.                |
| • Type of Railing             | : | RCC Crash barrier.               |
| • Method of Inspection        | : | Visual                           |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- As per Schedule 2 ROB's at chainage specific ch:- 171+320 & 171+430 but As per site observations we found only one ROB at ch:- 171+320 with spans deviation.
- Abutments and piers are in good condition.
- Top slab is in good condition.
- RCC crash barrier is provided is in good condition.
- Wing wall provided on abutment location quadrant slopes is in good condition
- Sealant damaged in Expansion joint at some locations.

Refer the matter given at the end of the Document for Conclusions, Strategy for Renewals and Assumption for structure BOQ.





**BR. NO. 141+526 (Flyover)**

**GENERAL DESCRIPTION**

|                               |   |                    |
|-------------------------------|---|--------------------|
| • Location of structure       | : | Santroad Village   |
| • Chainage                    | : | km 141+526 (LHS)   |
| • Type of structure           | : | Flyover            |
| • Span Arrangement            | : | 2 x 15.0 m         |
| • Total outer width of bridge | : | 10.25 m            |
| • Type of Foundation          | : | Not Visible        |
| • Type of substructure        | : | RCC Wall Type      |
| • Type of Superstructure      | : | RCC Precast Panels |
| • Type of Bearing             | : | Elastomeric        |
| • Type of Railing             | : | RCC Crash barrier  |
| • Method of Inspection        | : | Visual             |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- RE walls and side walls are in good condition.
- Damp spots observed on bottom of RCC Precast Panels.
- RCC crash barrier is provided is in good condition.

Refer the matter given at the end of the Document for Conclusions, Strategy for Renewals and Assumption for structure BOQ.







**BR. NO. 147+445 (Flyover)**

**GENERAL DESCRIPTION**

|                                  |   |                           |
|----------------------------------|---|---------------------------|
| • Location of structure          | : | Asayadi SH - 152 Crossing |
| • Chainage                       | : | Km 147+445 (RHS)          |
| • Type of structure              | : | Flyover                   |
| • Span Arrangement               | : | 2 x 15.0 m                |
| • Total outer width of structure | : | 10.25 m                   |
| • Type of Foundation             | : | Not Visible               |
| • Type of substructure           | : | RCC Wall Type             |
| • Type of Superstructure         | : | RCC Precast Panels        |
| • Type of Bearing                | : | Elastomeric               |
| • Type of Railing                | : | RCC Crash barrier         |
| • Method of Inspection           | : | Visual                    |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- RE walls and side walls are in good condition.
- Damp spots observed on bottom of RCC Precast Panels.
- Minor Honey combing observed on diaphragm.
- Strip seal damaged in Expansion joint at some locations.
- RCC crash barrier is provided is in good condition.

Refer the matter given at the end of the Document for Conclusions, Strategy for Renewals and Assumption for structure BOQ.





**BR. NO. 153+966 (Overpass)**

**GENERAL DESCRIPTION**

|                                  |   |                                    |
|----------------------------------|---|------------------------------------|
| • Location of structure          | : | Piploid SH - 62 Crossing           |
| • Chainage                       | : | Km 153+966                         |
| • Type of structure              | : | Overpass                           |
| • Span Arrangement               | : | 10.0 + 2 x 15.0 + 10.0 m           |
| • Total outer width of structure | : | 12.5 m                             |
| • Type of Foundation             | : | Not Visible                        |
| • Type of substructure           | : | RCC Wall Type                      |
| • Type of Superstructure         | : | RCC Precast Panels and Solid slabs |
| • Type of Bearing                | : | Elastomeric                        |
| • Type of Railing                | : | RCC Crash barrier                  |
| • Method of Inspection           | : | Visual                             |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- RE walls are in good condition.
- Pedestal and panel damaged at some locations observed at LHS & RHS.
- Damp spots observed on bottom of RCC Precast Panels.
- Honey combing observed on dirt wall, diaphragm and pier cap.
- RCC crash barrier is provided is in good condition.

Refer the matter given at the end of the Document for Conclusions, Strategy for Renewals and Assumption for structure BOQ.





**BR. NO. 194+098 (Overpass)**

**GENERAL DESCRIPTION**

|                                  |   |                                   |
|----------------------------------|---|-----------------------------------|
| • Location of structure          | : | Dahod Bypass SH - 58 Crossing     |
| • Chainage                       | : | Km 194+098                        |
| • Type of structure              | : | Overpass                          |
| • Span Arrangement               | : | 10.0 + 2 x 15.0 + 10.0 m          |
| • Total outer width of structure | : | 12.5 m                            |
| • Type of Foundation             | : | Not Visible                       |
| • Type of substructure           | : | RCC Wall Type                     |
| • Type of Superstructure         | : | RCC Precast Panels and Solid slab |
| • Type of Bearing                | : | Elastomeric                       |
| • Type of Railing                | : | RCC Crash barrier                 |
| • Method of Inspection           | : | Visual                            |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- RE walls are in fair condition.
- Minor Honey combing on median pier
- RCC Solid Girders are in good condition and minor damp spots are observed in RCC Precast Panels.
- RCC crash barrier is provided is in good condition.

Refer the matter given at the end of the Document for Conclusions, Strategy for Renewals and Assumption for structure BOQ.





**BR. NO. 140+405 (MJB)**

**GENERAL DESCRIPTION**

|                               |   |   |
|-------------------------------|---|---|
| • Location of bridge          | : | Panam   |
| • Chainage                    | : | Km 140+405  |
| • Type of bridge              | : | Major bridge  |
| • Span Arrangement            | : | 9 x 20.73 m   |
| • Total outer width of bridge | : | 1 x 10.25 m (LHS)<br>1 x 8 m (RHS)                    |
| • Median                      | : | 12.5 m  |
| • Type of Foundation          | : | Well (LCW)<br>Open (RCW)                              |
| • Type of substructure        | : | RCC Wall Type (LCW)<br>Masonry Wall Type (RCW)        |
| • Type of Superstructure      | : | RCC Precast Panels (LCW)<br>Balanced Cantilever (RCW) |
| • Type of Bearing             | : | Elastomeric<br>Rocker Roller                          |
| • Type of Railing             | : | RCC Crash barrier                                     |
| • Method of Inspection        | : | Visual  |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

**LHS Bridge (New):**

- Retaining wall and side walls are in good condition.
- Minor Damp spots observed on bottom of RCC Precast Panels.

**RHS Bridge (Old):**

- Reinforcement steel exposed in top slab and Girders at few locations. (Repair Work is in Progress)
- Honey combing observed on diaphragm. (Repair Work is in Progress)
- Retaining wall is in good condition.
- Side walls are in fair condition.
- Sealant damaged at some locations in Expansion joint. (Repair Work is in Progress)
- Stone pitching is provided on abutment location is in good condition.

Refer the matter given at the end of the Document for Conclusions, Strategy for Renewals and Assumption for structure BOQ.



**IMPORTANT NOTE:**

**MJB @ 140+331 (BALANCED CANTILEVER BRIDGE)**

In the absence of seismic arresters and high degradation levels shown, the performance of the bridge during seismic event is to be ascertained by appropriate inspection and testing activity.





**BR. NO. 163+970 (MJB)**

**GENERAL DESCRIPTION**

|                               |   |                    |
|-------------------------------|---|--------------------|
| • Name of bridge              | : | Hadaf              |
| • Chainage                    | : | km 163+970         |
| • Type of bridge              | : | Major bridge       |
| • Span Arrangement            | : | 4 x 20.2 m         |
| • Total outer width of bridge | : | 2 x 10.25 m        |
| • Type of Foundation          | : | Not Visible        |
| • Type of substructure        | : | RCC Wall Type      |
| • Type of Superstructure      | : | RCC Precast Panels |
| • Type of Bearing             | : | Elastomeric        |
| • Type of Railing             | : | RCC Crash barrier  |
| • Method of Inspection        | : | Visual             |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- RCC precast panels are in good condition.
- RCC crash barrier is provided is in good condition.
- Minor Honey combing observed on RCC precast panels.
- Stone pitching is provided on abutment location quadrant slopes is in good condition.
- Minor Damp spots observed on bottom of RCC Precast Panels at BHS.

Refer the matter given at the end of the Document for Conclusions, Strategy for Renewals and Assumption for structure BOQ.





**BR. NO. 179+547 (MJB)**

**GENERAL DESCRIPTION**

|                               |   |                    |
|-------------------------------|---|--------------------|
| • Name of bridge              | : | River Bridge       |
| • Chainage                    | : | Km 179+547         |
| • Type of bridge              | : | Major Bridge       |
| • Span Arrangement            | : | 4 x 20 m           |
| • Total outer width of bridge | : | 2 x 10.25 m        |
| • Type of Foundation          | : | Not Visible        |
| • Type of substructure        | : | RCC Wall Type      |
| • Type of Superstructure      | : | RCC Precast Panels |
| • Type of Bearing             | : | POT PTFE           |
| • Type of Railing             | : | RCC Crash barrier  |
| • Method of Inspection        | : | Visual             |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- As per site Major Bridge, in schedule mentioned as Minor Bridge.
- This Bridge is in skew of nearly 15 degrees.
- Damp spots observed on bottom of RCC Precast Panels at BHS.
- Panels damage and Honey combing observed on bottom of RCC Precast Panels at some locations on RHS.
- Corrosion stains observed on bottom of RCC Precast Panels at RHS.
- Steel Exposed on bottom of RCC Precast Panels at RHS.
- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes is in good condition.
- Rubber sealant is damaged in some expansion joint location.

Refer the matter given at the end of the Document for Conclusions, Strategy for Renewals and Assumption for structure BOQ.





**BR. NO. 192+186 (MJB)**

**GENERAL DESCRIPTION**

|                               |   |  |
|-------------------------------|---|--|
| • Name of bridge              | : | Dudhimati                                    |
| • Chainage                    | : | Km 192+186                                   |
| • Type of bridge              | : | Major Bridge                                 |
| • Span Arrangement            | : | 5 x 16.0 m                                   |
| • Total outer width of bridge | : | 1 x 10.25 (LCW)<br>1x 8.2(RCW)               |
| • Median                      | : | 12.5 m                                       |
| • Type of Foundation          | : | Open   |
| • Type of substructure        | : | RCC Wall Type                                |
| • Type of Superstructure      | : | RCC Precast Panels (LCW)<br>RCC girder (RCW) |
| • Type of Bearing             | : | Elastomeric                                  |
| • Type of Railing             | : | RCC Crash barrier                            |
| • Method of Inspection        | : | Visual                                       |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

**LHS bridge (New):**

- Damp spots observed on bottom of RCC Precast Panels.
- Rubber sealant is damaged in some expansion joint location.
- RCC crash barrier is in good condition except minor Reinforcement exposed.

**RHS bridge (Old):**

- Structure is in fair condition.
- Rubber sealant is damaged in some expansion joint location.

Refer the matter given at the end of the Document for Conclusions, Strategy for Renewals and Assumption for structure BOQ.







**BR. NO. 197+933 (MJB)**

**GENERAL DESCRIPTION**

|                               |   |   |
|-------------------------------|---|---|
| • Name of bridge              | : | Khan  |
| • Chainage                    | : | Km 197+933  |
| • Type of bridge              | : | Major Bridge                                      |
| • Span Arrangement            | : | 10.55 + 24.7 + 25.9 + 22.4 + 11.2 m               |
| • Total outer width of bridge | : | 1 x 10.25 m (LCW)<br>1 x 8.5 m (RCW)              |
| • Type of Foundation          | : | Well (LCW)<br>Open (RCW)                          |
| • Type of substructure        | : | RCC wall (LCW)<br>Masonry (RCW)                   |
| • Type of Superstructure      | : | RCC Solid slab (LCW)<br>Balanced Cantilever (RCW) |
| • Type of Bearing             | : | Elastomeric (LCW)<br>Metallic bearings (RCW)      |
| • Type of Railing             | : | RCC Crash barrier                                 |
| • Method of Inspection        | : | Visual  |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

**LHS bridge (New):**

- Honey combing observed on top slab.
- Rubber Sealant is damaged in some expansion joint locations.
- RCC crash barrier provided is in good condition.

**RHS bridge (Old):**

- Structure is in fair condition
- Rubber Sealant is damaged in some expansion joint locations.

Refer the matter given at the end of the Document for Conclusions, Strategy for Renewals and Assumption for structure BOQ.

**IMPORTANT NOTE:**

MJB @ 197+956 (BALANCED CANTILEVER BRIDGE)

Review of NDT Report pertaining to Major bridge at 197+956 supplied by Concessionaire, indicates the following

- Concrete quality - Good
- Carbonation depth - 0 to 20mm
- Probability of Corrosion risk 10%





**BR. NO. 209+298 (MJB)**

**GENERAL DESCRIPTION**

|                               |   |  |
|-------------------------------|---|--|
| • Name of bridge              | : | Kali Nadi                                    |
| • Chainage                    | : | Km 209+298                                   |
| • Type of bridge              | : | Major Bridge                                 |
| • Span Arrangement            | : | 4 x 15.3 m                                   |
| • Total outer width of bridge | : | 1 x 8 m(LCW)<br>1 x 10.25 m (RCW)            |
| • Median                      | : | 12.5 m                                       |
| • Type of Foundation          | : | Open   |
| • Type of substructure        | : | RCC wall type                                |
| • Type of Superstructure      | : | RCC girder (LCW)<br>RCC Precast Panels (RCW) |
| • Type of Bearing             | : | Elastomeric bearing (RCW)                    |
| • Type of Railing             | : | RCC Crash barrier                            |
| • Method of Inspection:       | : | Visual                                       |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

**LHS Bridge (Old):**

- Rubber Sealant is damaged in some expansion joint locations.

**RHS Bridge (New):**

- Rubber Sealant is damaged in some expansion joint locations.
- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes is in good condition.

Review of NDT Report pertaining to Major bridge at 209+361 supplied by Concessionaire, indicates the following

- Concrete quality -doubtful
- Carbonation depth - 0 to 20mm
- Probability of Corrosion risk 10%





**BR. NO. 136+216 (MNB)**

**GENERAL DESCRIPTION**

|                               |   |              |
|-------------------------------|---|--------------|
| • Location of bridge          | : | -            |
| • Chainage                    | : | Km 136+216   |
| • Type of bridge              | : | Minor bridge |
| • Span Arrangement            | : | 2 x 6.8m     |
| • Total outer width of bridge | : | 1 x 34 m     |
| • Median Width                | : | 3.5 m        |
| • Type of Foundation          | : | Raft         |
| • Type of substructure        | : | RCC Box      |
| • Type of Superstructure      | : | RCC Box      |
| • Method of Inspection        | : | Visual       |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- Overall condition is good but Hairline cracks observed on side walls.
- Leaching observed in construction joint at median location.
- Minor Corrosion stains observed on top slab.
- Stone pitching is provided on abutment location quadrant slopes is in good condition.



**BR. NO. 144+944 (MNB)**

**GENERAL DESCRIPTION**

|                               |   |              |
|-------------------------------|---|--------------|
| • Name of bridge              | : | -            |
| • Chainage                    | : | km 144+944   |
| • Type of bridge              | : | Minor bridge |
| • Span Arrangement            | : | 2 x 5.5 m    |
| • Total outer width of bridge | : | 1 x 67.5 m   |
| • Median Width                | : | 3.5 m        |
| • Type of Foundation          | : | Raft         |
| • Type of substructure        | : | RCC Box      |
| • Type of Superstructure      | : | RCC Box      |
| • Method of Inspection        | : | Visual       |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- As per site Minor Bridge, in schedule it is mentioned as Pipe Culvert.
- This Bridge is in skew of nearly 40 degrees.



**BR. NO. 145+305 (MNB)**

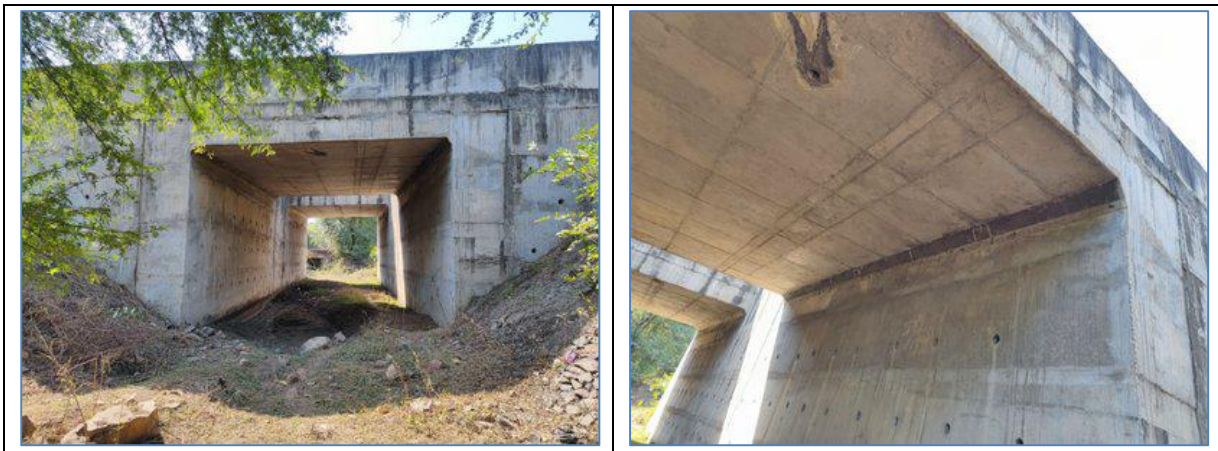
**GENERAL DESCRIPTION**

|                               |   |                   |
|-------------------------------|---|-------------------|
| • Name of bridge              | : | -                 |
| • Chainage                    | : | km 145+305        |
| • Type of bridge              | : | Minor bridge      |
| • Span Arrangement            | : | 1 x 6 m           |
| • Total outer width of bridge | : | 2 x 10.25 m       |
| • Median Width                | : | 3.5 m             |
| • Type of Foundation          | : | Raft              |
| • Type of substructure        | : | RCC Box           |
| • Type of Superstructure      | : | RCC Box           |
| • Type of Bearing             | : | NA                |
| • Type of Railing             | : | RCC Crash barrier |
| • Method of Inspection        | : | Visual            |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- As per site Minor Bridge, in schedule it is mentioned as Pipe Culvert.
- Side walls are in good condition.
- Top slab and RCC crash barrier is in good condition.
- Stone pitching is provided on abutment location quadrant slopes is in good condition.





**BR. NO. 146+944 (MNB)**

**GENERAL DESCRIPTION**

|                                     |   |  |
|-------------------------------------|---|--|
| • Location of bridge                | : | -  |
| • Chainage                          | : | km 146+944                               |
| • Type of bridge                    | : | Minor bridge                             |
| • Span Arrangement                  | : | 2 x 6.8 m                                |
| • Total outer width of bridge (RSR) | : | 1 x 10.25 (LCW) + 1 x 10.25 (RCW)+ 1 x 9 |
| • Median Width                      | : | 3.5 m                                    |
| • Type of Foundation                | : | Raft                                     |
| • Type of substructure              | : | RCC Box                                  |
| • Type of Superstructure            | : | RCC Box                                  |
| • Type of Bearing                   | : | NA                                       |
| • Type of Railing                   | : | RCC Crash barrier                        |
| • Method of Inspection              | : | Visual                                   |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- The bridge is in skew of nearly 20 degrees.
- Minor Honey combing observed on side walls.
- Top slab is in good condition.
- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes is in good condition.



**BR. NO. 157+217 (MNB)**

**GENERAL DESCRIPTION**

|                               |   |                    |
|-------------------------------|---|--------------------|
| • Name of bridge              | : | -                  |
| • Chainage                    | : | Km 157+217         |
| • Type of bridge              | : | Minor Bridge       |
| • Span Arrangement            | : | 2 x 11.0 m         |
| • Total outer width of bridge | : | 2 x 10.25 m        |
| • Median Width                | : | 3.5 m              |
| • Type of Foundation          | : | Open               |
| • Type of substructure        | : | RCC Wall Type      |
| • Type of Superstructure      | : | RCC Precast Panels |
| • Type of Bearing             | : | NA                 |
| • Type of Railing             | : | RCC Crash barrier  |
| • Method of Inspection        | : | Visual             |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- Minor damages observed on bottom of RCC precast panels and abutment cap.
- Honey combing observed on pier cap.
- Minor Corrosion stains observed on pier cap.
- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes is in good condition.





**BR. NO. 164+116 (MNB)**

**GENERAL DESCRIPTION**

|                               |   |                   |
|-------------------------------|---|-------------------|
| • Name of bridge              | : | -                 |
| • Chainage                    | : | Km 164+116        |
| • Type of bridge              | : | Minor Bridge      |
| • Span Arrangement            | : | 3 x 10 m          |
| • Total outer width of bridge | : | 2 x 10.25 m       |
| • Median Width                | : | 3.5 m             |
| • Type of Foundation          | : | Open              |
| • Type of substructure        | : | RCC wall          |
| • Type of Superstructure      | : | RCC Solid Slab    |
| • Type of Bearing             | : | NA                |
| • Type of Railing             | : | RCC Crash barrier |
| • Method of Inspection        | : | Visual            |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- The bridge is in skew of nearly 20 degrees.
- Minor Spalling observed on pier cap.
- RCC Solid slab is in good condition.
- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes is in good condition.



**BR. NO. 166+024 (MNB)**

**GENERAL DESCRIPTION**

|                               |   |                    |
|-------------------------------|---|--------------------|
| • Name of bridge              | : | -                  |
| • Chainage                    | : | Km 166+024         |
| • Type of bridge              | : | Minor Bridge       |
| • Span Arrangement            | : | 1x 6.85 m          |
| • Total outer width of bridge | : | 2 x 10.25 m        |
| • Median Width                | : | 3.5 m              |
| • Type of Foundation          | : | Open               |
| • Type of substructure        | : | RCC Wall Type      |
| • Type of Superstructure      | : | RCC Precast Panels |
| • Type of Bearing             | : | NA                 |
| • Type of Railing             | : | RCC Crash barrier  |
| • Method of Inspection        | : | Visual             |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- Minor Honey Combing observed on side walls.
- RCC precast panels is in good condition.
- Damp spots observed on bottom of RCC Precast Panels.
- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes is in good condition.



**BR. NO. 171+660 (MNB)**

**GENERAL DESCRIPTION**

|                               |   |               |
|-------------------------------|---|---------------|
| • Name of bridge              | : | -             |
| • Chainage                    | : | Km 171+660    |
| • Type of bridge              | : | Minor Bridge  |
| • Span Arrangement            | : | 3 x 7.55 m    |
| • Total outer width of bridge | : | 1 x 39.5 m    |
| • Median width                | : | 3.5           |
| • Type of Foundation          | : | Raft          |
| • Type of substructure        | : | RCC Box       |
| • Type of Superstructure      | : | RCC Box       |
| • Type of Bearing             | : | NA            |
| • Type of Railing             | : | Crash barrier |
| • Method of Inspection        | : | Visual        |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- Minor Honey combing observed on top slab.
- Metallic crash barrier provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes is in good condition.



**BR. NO. 173+365 (MNB)**

**GENERAL DESCRIPTION**

|                               |   |                    |
|-------------------------------|---|--------------------|
| • Name of bridge              | : | -                  |
| • Chainage                    | : | Km 173+365         |
| • Type of bridge              | : | Minor Bridge       |
| • Span Arrangement            | : | 1 x 8.4 m          |
| • Total outer width of bridge | : | 2 x 10.25 m        |
| • Median width                | : | 3.5                |
| • Type of Foundation          | : | Open               |
| • Type of substructure        | : | RCC Wall Type      |
| • Type of Superstructure      | : | RCC Precast Panels |
| • Type of Bearing             | : | NA                 |
| • Type of Railing             | : | RCC Crash barrier  |
| • Method of Inspection        | : | Visual             |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- Side walls are in good condition.
- Minor Spalling observed on abutment cap at LHS A1.
- Damp spots observed on bottom of RCC Precast Panels.
- RCC crash barrier is provided is in good condition.



**BR. NO. 181+401 (MNB)**

**GENERAL DESCRIPTION**

|                               |   |  |
|-------------------------------|---|--|
| • Name of bridge              | : | -  |
| • Chainage                    | : | Km 181+401                                       |
| • Type of bridge              | : | Minor Bridge                                     |
| • Span Arrangement            | : | 2 x 10.3 m                                       |
| • Total outer width of bridge | : | 2 x 10.25 m                                      |
| • Median width                | : | 3.5  |
| • Type of Foundation          | : | Open   |
| • Type of substructure        | : | RCC Wall Type                                    |
| • Type of Superstructure      | : | RCC Solid slab (LHS)<br>RCC Precast Panels (RHS) |
| • Type of Bearing             | : | NA   |
| • Type of Railing             | : | RCC Crash barrier                                |
| • Method of Inspection        | : | Visual   |

**OBSERVATIONS**

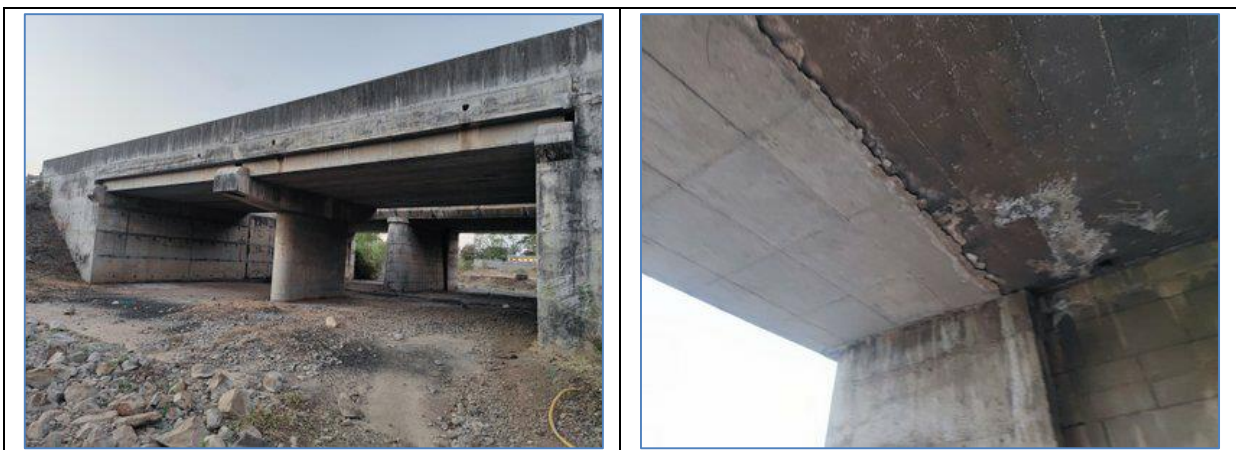
Visual Observations on condition of the bridge are as below:

**LHS Bridge (Old):**

- Old bridge of span 2 x 10.3 m is widened by 3 m on LHS and new two-lane bridge of span 2 x 10.3 m is constructed beside the old bridge.
- Leaching observed on top slab at construction joint.
- Minor Honey combing observed on top slab and side wall.
- Stone pitching is provided on abutment location quadrant slopes is in good condition.

**RHS Bridge (New):**

- RCC Precast Panels are in good condition.
- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes is in good condition.







**BR. NO. 182+881 (MNB)**

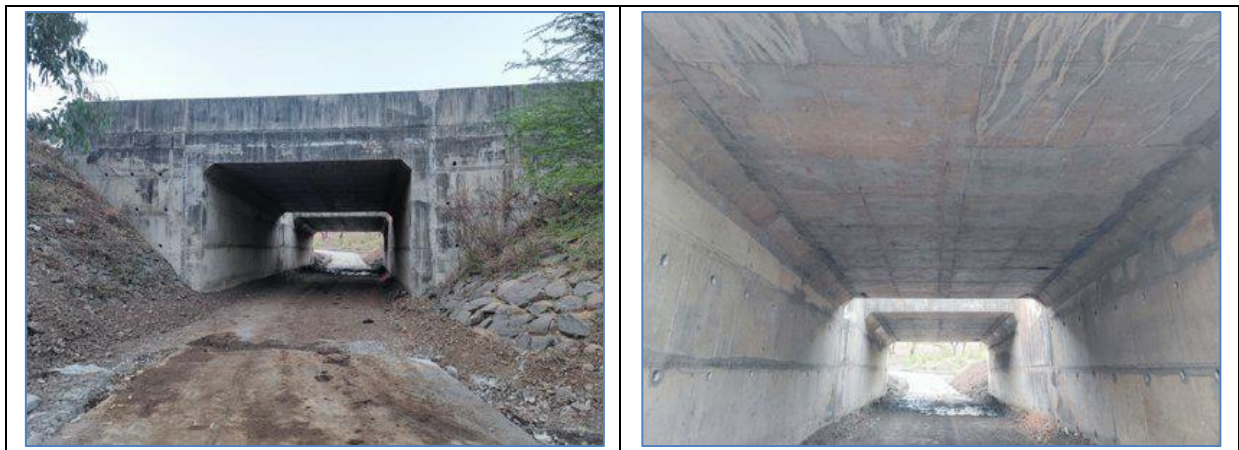
**GENERAL DESCRIPTION**

|                               |   |                   |
|-------------------------------|---|-------------------|
| • Name of bridge              | : | -                 |
| • Chainage                    | : | Km 182+881        |
| • Type of bridge              | : | Minor Bridge      |
| • Span Arrangement            | : | 1 x 6.3 m         |
| • Total outer width of bridge | : | 2 x 10.25 m       |
| • Median width                | : | 3.5 m             |
| • Type of Foundation          | : | Raft              |
| • Type of substructure        | : | RCC Box           |
| • Type of Superstructure      | : | RCC Box           |
| • Type of Railing             | : | RCC Crash barrier |
| • Method of Inspection        | : | Visual            |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- Structure is in good condition
- Stone pitching is provided on abutment location quadrant slopes is in good condition.



**BR. NO. 186+971 (MNB)**

**GENERAL DESCRIPTION**

|                               |   |  |
|-------------------------------|---|--|
| • Name of bridge              | : | -  |
| • Chainage                    | : | Km 186+971                                       |
| • Type of bridge              | : | Minor Bridge                                     |
| • Span Arrangement            | : | 2 x 4.3 (LHS)<br>1 x 11.82 (RHS)                 |
| • Total outer width of bridge | : | 1 x 13.25 m (LHS)<br>1 x 10.25 m (RHS)           |
| • Median width                | : | 3.5  |
| • Type of Foundation          | : | Open   |
| • Type of substructure        | : | Brick Wall Type (LHS)<br>RCC Wall Type (RHS)     |
| • Type of Superstructure      | : | RCC Solid slab (LHS)<br>RCC Precast Panels (RHS) |
| • Type of Railing             | : | RCC Crash barrier                                |
| • Method of Inspection        | : | Visual   |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

**LHS Bridge (Old):**

- Old bridge of span 6 x 1.4 m is widened with a span 2 x 3.0 m by 4.1 m on LCW and new two-lane Bridge of span 1 x 11.82 m is constructed beside the old bridge.
- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes is in good condition.

**RHS Bridge (New):**

- Structure is in fair condition.





**BR. NO. 195+880 (MNB)**

**GENERAL DESCRIPTION**

|                               |   |                    |
|-------------------------------|---|--------------------|
| • Name of bridge              | : | -                  |
| • Chainage                    | : | Km 195+880         |
| • Type of bridge              | : | Minor Bridge       |
| • Span Arrangement            | : | 3 x 11.7 m         |
| • Total outer width of bridge | : | 2 x 10.25 m        |
| • Median width                | : | 3.5                |
| • Type of Foundation          | : | Open               |
| • Type of substructure        | : | RCC wall type      |
| • Type of Superstructure      | : | RCC Precast Panels |
| • Type of Railing             | : | RCC Crash barrier  |
| • Method of Inspection        | : | Visual             |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- PSC Girders Solid slab are in good condition.
- Damp spots observed on bottom of RCC Precast Panels.
- RCC crash barrier is provided is in good condition.



**BR. NO. 198+818 (MNB)**

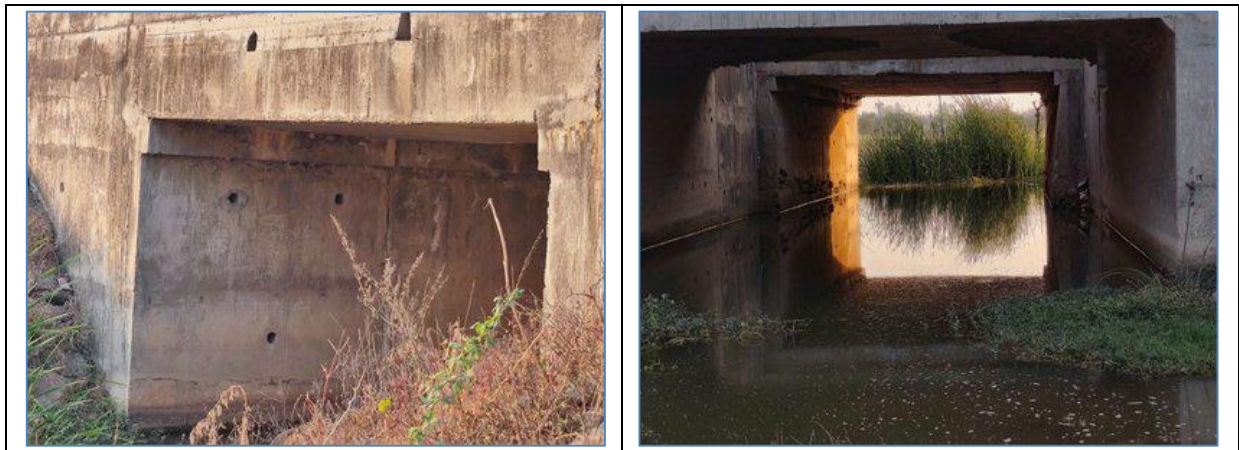
**GENERAL DESCRIPTION**

- Name of bridge : -
- Chainage : Km 198+818
- Type of bridge : Minor Bridge
- Span Arrangement : 1 x 6.7 m
- Total outer width of bridge : 1 x 10.25 (LHS)  
1 x 12.4 (RHS)
- Median : 3.5 m
- Type of Foundation : Raft (LHS)  
Open (RHS)
- Type of substructure : RCC wall Type
- Type of Superstructure : RCC Box (LHS)  
RCC Solid slab (RHS)
- Type of Railing : RCC Crash barrier
- Method of Inspection : Visual

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- Old bridge of span 1 x 6.7 m is widened by 2.6 m on RHS and new two-lane bridge of span 1 x 6.7 m is constructed beside the old bridge.
- Side walls are in good condition.
- Small portion of Median wall damaged.
- Top slab is in good condition.
- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes in good condition.
- Crash barrier damaged and Reinforcement exposed.



**BR. NO. 212+471 (MNB)**

**GENERAL DESCRIPTION**

|                               |   |                                       |
|-------------------------------|---|---------------------------------------|
| • Name of bridge              | : | -                                     |
| • Chainage                    | : | km 212+471                            |
| • Type of bridge              | : | Minor Bridge                          |
| • Span Arrangement            | : | 1 x 6.1 m                             |
| • Total outer width of bridge | : | 1 x 12.1 m (LHS)<br>1 x 10.25 m (RHS) |
| • Median                      | : | 3.5 m                                 |
| • Type of Foundation          | : | Open (LHS)<br>Raft (RHS)              |
| • Type of substructure        | : | Stone masonry (LHS)<br>RCC Box (RHS)  |
| • Type of Superstructure      | : | RCC Solid slab (LHS)<br>RCC Box (RHS) |
| • Type of Railing             | : | RCC Crash barrier                     |
| • Method of Inspection        | : | Visual                                |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

**LHS Bridge (Old):**

- R & R of existing bridge of span 1 x 6.1 m and New 2 Lane bridge beside old bridge of span 1 x 6.1 m.
- RCC crash barrier is provided is in good condition.

**RHS Bridge (New):**

- Top slab is in good condition.
- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes are in good condition.





**BR. NO. 213+525 (MNB)**

**GENERAL DESCRIPTION**

|                               |   |  |
|-------------------------------|---|--|
| • Name of bridge              | : | -  |
| • Chainage                    | : | Km 213+525                                 |
| • Type of bridge              | : | Minor Bridge                               |
| • Span Arrangement            | : | 2 x 5.9 m                                  |
| • Total outer width of bridge | : | 2 x 10.25 m                                |
| • Median                      | : | 3.5 m                                      |
| • Type of Foundation          | : | Open (LHS)<br>Raft (RHS)                   |
| • Type of substructure        | : | RCC Wall Type (LHS)<br>RCC Box Type (RHS)  |
| • Type of Superstructure      | : | RCC Solid slab (LHS)<br>RCC Box Type (RHS) |
| • Type of Railing             | : | RCC Crash barrier                          |
| • Method of Inspection        | : | Visual                                     |

**OBSERVATIONS**

Visual Observations on condition of the bridge are as below:

- Side walls are in good condition.
- Solid slab is in good condition.
- RCC crash barrier is provided is in good condition.



**BR. NO. 128+317 (VUP)**

**GENERAL DESCRIPTION**

|                               |   |                                      |
|-------------------------------|---|--------------------------------------|
| • Location of structure       | : | Existing NH-59 Entry and Exit Godhra |
| • Chainage                    | : | Km 128+317                           |
| • Type of structure           | : | VUP                                  |
| • Span Arrangement            | : | 1 x 15 x 6 m                         |
| • Total outer width of bridge | : | 2 x 10.25 m                          |
| • Median Width                | : | 3.5 m                                |
| • Type of Foundation          | : | Raft                                 |
| • Type of Substructure        | : | RCC Box Type                         |
| • Type of Superstructure      | : | RCC Box Type                         |
| • Type of Bearing             | : | NA                                   |
| • Type of Railing             | : | RCC Crash barrier                    |
| • Method of Inspection        | : | Visual                               |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- The span is observed as 1 x 15.0 m in skew.
- The structure is in skew of nearly 20 degrees.
- RE walls are in good condition.
- RCC crash barrier is provided is in good condition.



**BR. NO. 152+026 (VUP)**

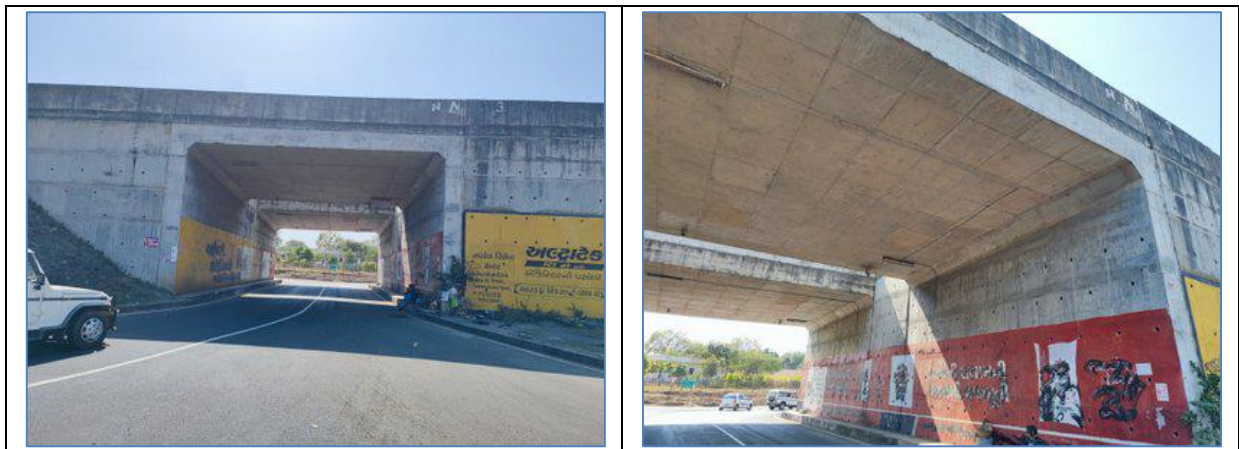
**GENERAL DESCRIPTION**

|                                  |   |                   |
|----------------------------------|---|-------------------|
| • Location of structure          | : | -                 |
| • Chainage                       | : | Km 152+026        |
| • Type of structure              | : | VUP               |
| • Span Arrangement               | : | 1 x 10.5 x 6.0 m  |
| • Total outer width of structure | : | 2 x 10.25 m       |
| • Median Width                   | : | 3.5 m             |
| • Type of Foundation             | : | Raft              |
| • Type of Substructure           | : | RCC Box Type      |
| • Type of Superstructure         | : | RCC Box Type      |
| • Type of Railing                | : | RCC Crash barrier |
| • Method of Inspection           | : | Visual            |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- Side walls are in good condition.
- The structure is box type with raft foundation and is in good condition.
- RE walls are in good condition.
- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes in good condition.



**BR. NO. 160+930 (VUP)**

**GENERAL DESCRIPTION**

|                                  |   |  |
|----------------------------------|---|--|
| • Location of structure          | : | Existing NH-59 Entry and Exit Limkheda |
| • Chainage                       | : | Km 160+930                             |
| • Type of structure              | : | VUP                                    |
| • Span Arrangement               | : | 1 x 10.5 x 6 m                         |
| • Total outer width of structure | : | 2 x 10.25 m                            |
| • Median Width                   | : | 3.5 m                                  |
| • Type of Foundation             | : | Raft                                   |
| • Type of substructure           | : | RCC Box Type                           |
| • Type of Superstructure         | : | RCC Box Type                           |
| • Type of Railing                | : | RCC Crash barrier                      |
| • Method of Inspection           | : | Visual                                 |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- The structure is box type with raft foundation and is in good condition.
- Side walls are in good condition.
- RE walls are in fair condition.
- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes in good condition.



**BR. NO. 162+914 (VUP)**

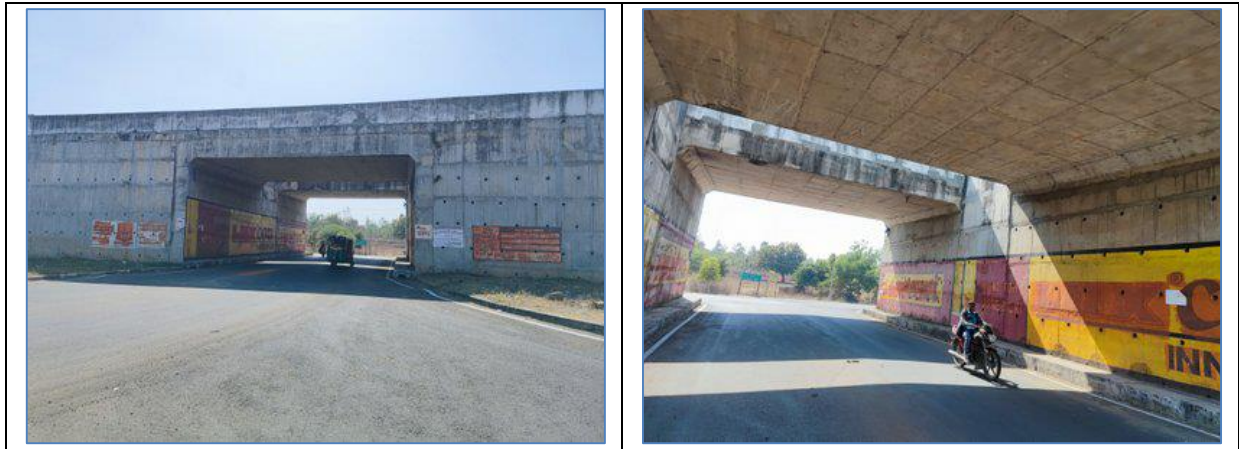
**GENERAL DESCRIPTION**

|                                  |   |                   |
|----------------------------------|---|-------------------|
| • Location of structure          | : | SH - 154          |
| • Chainage                       | : | Km 162+914        |
| • Type of structure              | : | VUP               |
| • Span Arrangement               | : | 1 x 10.5 x 6.0 m  |
| • Total outer width of structure | : | 2 x 10.25 m       |
| • Median Width                   | : | 3.5 m             |
| • Type of Foundation             | : | Raft              |
| • Type of substructure           | : | RCC Box Type      |
| • Type of Superstructure         | : | RCC Box Type      |
| • Type of Railing                | : | RCC Crash barrier |
| • Method of Inspection           | : | Visual            |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- Side walls are in fair condition.
- The structure is box type with raft foundation.
- RE walls are in good condition.
- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes in good condition.



**BR. NO. 131+321 (PUP)**

**GENERAL DESCRIPTION**

|                                  |   |                   |
|----------------------------------|---|-------------------|
| • Location of structure          | : | -                 |
| • Chainage                       | : | Km 131+321        |
| • Type of structure              | : | PUP               |
| • Span Arrangement               | : | 1.0 x 7.0 x 3.5 m |
| • Total outer width of structure | : | 2 x 10.25 m       |
| • Median Width                   | : | 3.5 m             |
| • Type of Foundation             | : | Raft              |
| • Type of substructure           | : | RCC Box Type      |
| • Type of Superstructure         | : | RCC Box Type      |
| • Type of Railing                | : | RCC Crash barrier |
| • Method of Inspection           | : | Visual            |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- Side walls are in good condition.
- Top slab is in good condition.
- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes is good.



**BR. NO. 140+396 (PUP)**

**GENERAL DESCRIPTION**

|                                  |   |                   |
|----------------------------------|---|-------------------|
| • Location of structure          | : | Panchela Village  |
| • Chainage                       | : | Km 140+396        |
| • Type of structure              | : | PUP               |
| • Span Arrangement               | : | 1.0 x 7.0 x 3.5 m |
| • Total outer width of structure | : | 2 x 10.25 m       |
| • Median Width                   | : | 12.5 m            |
| • Type of Foundation             | : | Raft              |
| • Type of substructure           | : | RCC               |
| • Type of Superstructure         | : | RCC box           |
| • Type of Bearing                | : | NA                |
| • Type of Railing                | : | RCC Crash barrier |
| • Method of Inspection           | : | Visual            |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- Side walls are in good condition.
- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes is in good condition



**BR. NO. 144+251 (PUP)**

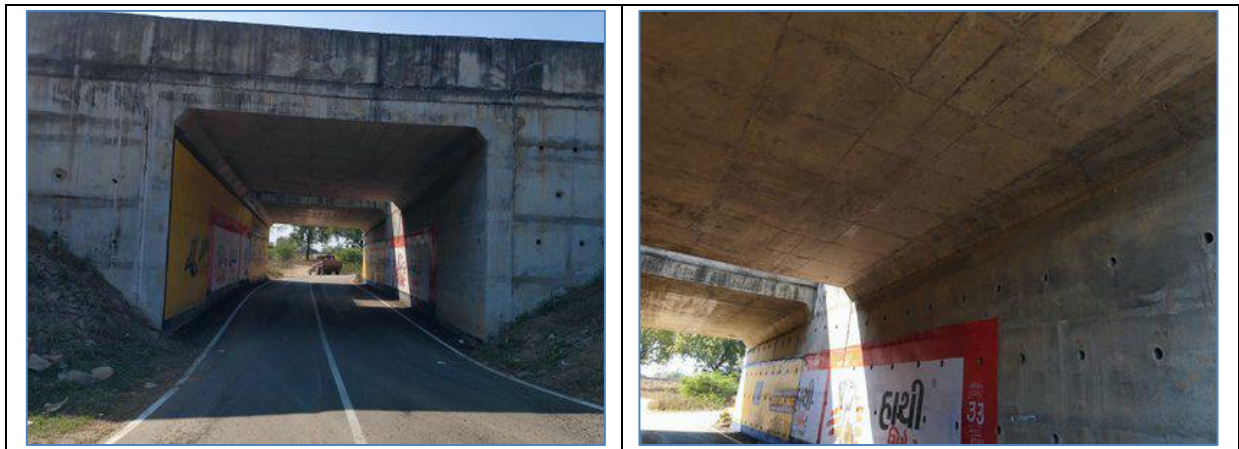
**GENERAL DESCRIPTION**

|                                  |   |                   |
|----------------------------------|---|-------------------|
| • Location of structure          | : | Panchela village  |
| • Chainage                       | : | km 144+251        |
| • Type of structure              | : | PUP               |
| • Span Arrangement               | : | 1.0 x 7.0 x 3.5 m |
| • Total outer width of structure | : | 2 x 10.25 m       |
| • Median Width                   | : | 3.5 m             |
| • Type of Foundation             | : | Raft              |
| • Type of substructure           | : | RCC Box Type      |
| • Type of Superstructure         | : | RCC Box Type      |
| • Type of Bearing                | : | NA                |
| • Type of Railing                | : | RCC Crash barrier |
| • Method of Inspection           | : | Visual            |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- Side walls are in good condition.
- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes is in good condition





**BR. NO. 155+241 (PUP)**

**GENERAL DESCRIPTION**

|                                  |   |                       |
|----------------------------------|---|-----------------------|
| • Location of structure          | : | Local road at Piploid |
| • Chainage                       | : | Km 155+241            |
| • Type of structure              | : | PUP                   |
| • Span Arrangement               | : | 1.0 x 7.0 x 3.5 m     |
| • Total outer width of structure | : | 2 x 10.25 m           |
| • Median Width                   | : | 3.5 m                 |
| • Type of Foundation             | : | Raft                  |
| • Type of substructure           | : | RCC Box Type          |
| • Type of Superstructure         | : | RCC Box Type          |
| • Type of Bearing                | : | NA                    |
| • Type of Railing                | : | RCC Crash barrier     |
| • Method of Inspection           | : | Visual                |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- Side walls are in good condition.
- RCC crash barrier is provided is in fair condition.
- Stone pitching is provided on abutment location quadrant slopes in fair condition.



**BR. NO. 161+414 (PUP)**

**GENERAL DESCRIPTION**

|                                  |   |                        |
|----------------------------------|---|------------------------|
| • Location of structure          | : | Local road at Limkheda |
| • Chainage                       | : | Km 161+414             |
| • Type of structure              | : | PUP                    |
| • Span Arrangement               | : | 1.0 x 7.0 x 3.5 m      |
| • Total outer width of structure | : | 2 x 10.25 m            |
| • Median Width                   | : | 3.5 m                  |
| • Type of Foundation             | : | Raft                   |
| • Type of substructure           | : | RCC Box Type           |
| • Type of Superstructure         | : | RCC Box Type           |
| • Type of Railing                | : | Crash barrier          |
| • Method of Inspection           | : | Visual                 |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- Side walls are in good condition.
- RCC crash barrier is provided is in good condition.
- Stone pitching partially damaged.



**BR. NO. 163+400 (PUP)**

**GENERAL DESCRIPTION**

|                                  |   |                   |
|----------------------------------|---|-------------------|
| • Location of structure          | : |                   |
| • Chainage                       | : | Km 163+400        |
| • Type of structure              | : | PUP               |
| • Span Arrangement               | : | 1.0 x 7.0 x 3.5 m |
| • Total outer width of structure | : | 2 x 10.25 m       |
| • Median Width                   | : | 3.5 m             |
| • Type of Foundation             | : | Raft              |
| • Type of substructure           | : | RCC Box Type      |
| • Type of Superstructure         | : | RCC Box Type      |
| • Type of Railing                | : | RCC Crash barrier |
| • Method of Inspection           | : | Visual            |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- Side walls are in good condition.
- Honey combing observed and steel exposed on side wall.
- RCC crash barrier is provided is in good condition.
- Stone pitching partially damaged.



**BR. NO. 170+639 (PUP)**

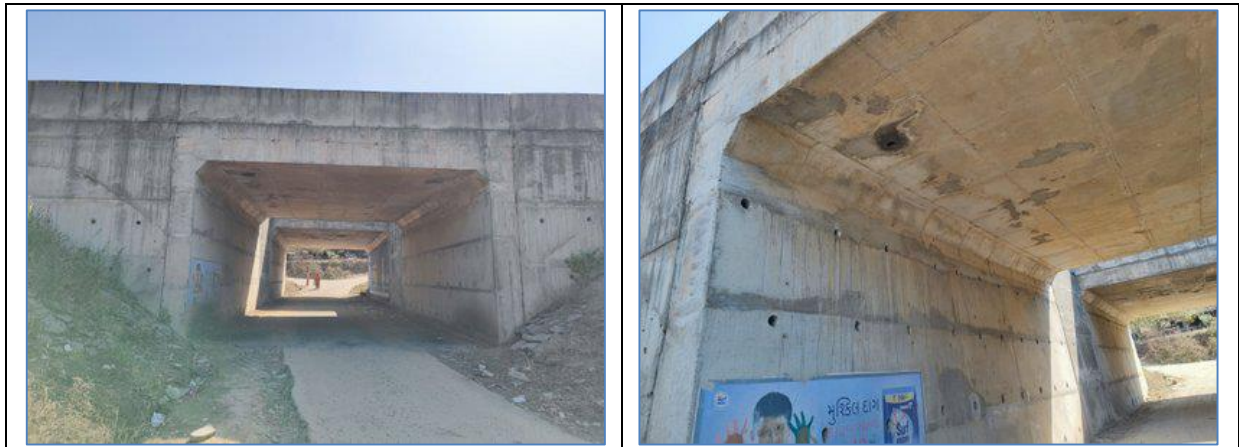
**GENERAL DESCRIPTION**

|                                  |   |                       |
|----------------------------------|---|-----------------------|
| • Location of structure          | : | Mangle Mahudi Village |
| • Chainage                       | : | km 170+639            |
| • Type of structure              | : | PUP                   |
| • Span Arrangement               | : | 1.0 x 7.0 x 3.5 m     |
| • Total outer width of structure | : | 2 x 10.25             |
| • Median Width                   | : | 3.5 m                 |
| • Type of Foundation             | : | Raft                  |
| • Type of substructure           | : | RCC Box Type          |
| • Type of Superstructure         | : | RCC Box Type          |
| • Type of Railing                | : | RCC Crash barrier     |
| • Method of Inspection           | : | Visual                |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- Side walls are in good condition.
- RCC crash barrier is provided is in good condition.
- Stone pitching is partially damaged.



**BR. NO. 178+872 (PUP)**

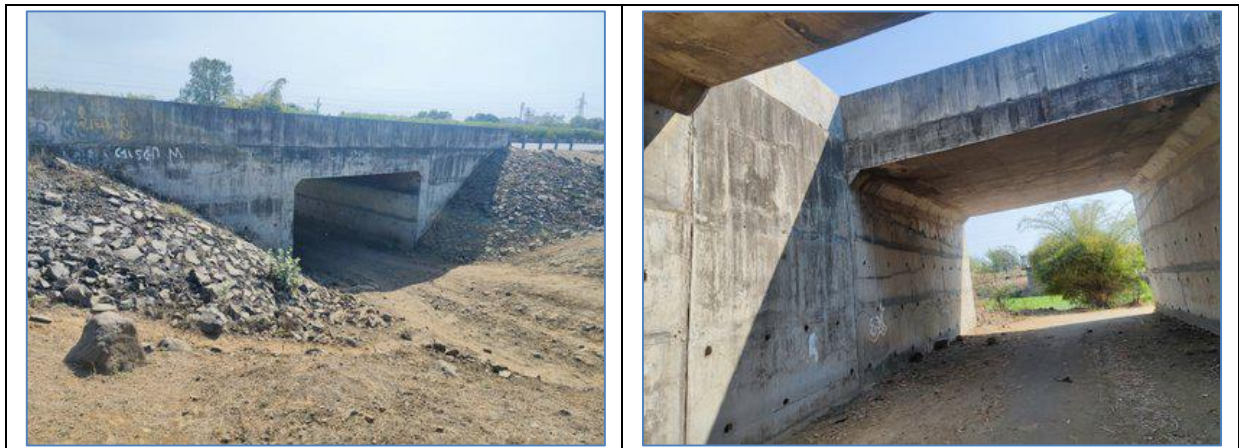
**GENERAL DESCRIPTION**

|                                  |   |                            |
|----------------------------------|---|----------------------------|
| • Location of structure          | : | Access to Major and Temple |
| • Chainage                       | : | Km 178+872                 |
| • Type of structure              | : | PUP                        |
| • Span Arrangement               | : | 1.0 x 7.0 x 3.5 m          |
| • Total outer width of structure | : | 2 x 10.25 m                |
| • Median Width                   | : | 3.5 m                      |
| • Type of Foundation             | : | Raft                       |
| • Type of substructure           | : | RCC Box Type               |
| • Type of Superstructure         | : | RCC Box Type               |
| • Type of Railing                | : | RCC Crash barrier          |
| • Method of Inspection           | : | Visual                     |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- Side walls are in good condition.
- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes is mostly good



**BR. NO. 181+137(PUP)**

**GENERAL DESCRIPTION**

|                                  |   |                   |
|----------------------------------|---|-------------------|
| • Location of structure          | : | -                 |
| • Chainage                       | : | Km 181+137        |
| • Type of structure              | : | PUP               |
| • Span Arrangement               | : | 1.0 x 7.0 x 3.5 m |
| • Total outer width of structure | : | 2 x 10.25 m       |
| • Median Width                   | : | 3.5 m             |
| • Type of Foundation             | : | Raft              |
| • Type of substructure           | : | RCC Box Type      |
| • Type of Superstructure         | : | RCC Box Type      |
| • Type of Railing                | : | RCC Crash barrier |
| • Method of Inspection           | : | Visual            |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- RCC crash barrier is provided is in good condition.
- Stone pitching partially damaged.



**BR. NO. 184+900 (PUP)**

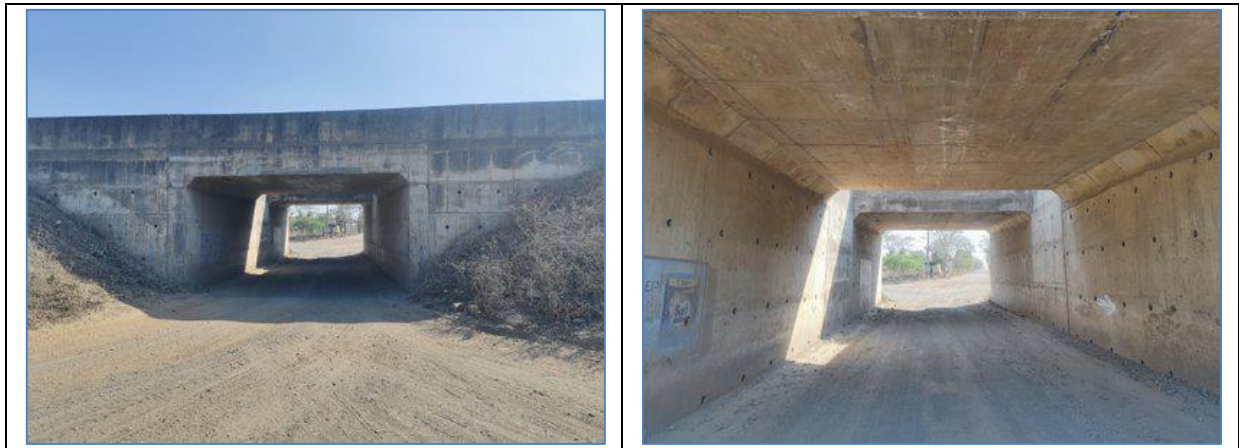
**GENERAL DESCRIPTION**

|                                  |   |                   |
|----------------------------------|---|-------------------|
| • Location of structure          | : | -                 |
| • Chainage                       | : | Km 184+900        |
| • Type of structure              | : | PUP               |
| • Span Arrangement               | : | 1.0 x 7.0 x 3.5 m |
| • Total outer width of structure | : | 2 x 10.25 m       |
| • Median Width                   | : | 3.5 m             |
| • Type of Foundation             | : | Raft              |
| • Type of substructure           | : | RCC Box Type      |
| • Type of Superstructure         | : | RCC Box Type      |
| • Type of Railing                | : | RCC Crash barrier |
| • Method of Inspection           | : | Visual            |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- RCC crash barrier is provided is in good condition.
- Stone pitching is provided on abutment location quadrant slopes is good.



**BR. NO. 199+099 (PUP)**

**GENERAL DESCRIPTION**

|                                  |   |                   |
|----------------------------------|---|-------------------|
| • Location of structure          | : | -                 |
| • Chainage                       | : | Km 199+099        |
| • Type of structure              | : | PUP               |
| • Span Arrangement               | : | 1.0 x 7.0 x 3.5 m |
| • Total outer width of structure | : | 2 x 10.25 m       |
| • Median Width                   | : | 3.5 m             |
| • Type of Foundation             | : | Raft              |
| • Type of substructure           | : | RCC Box Type      |
| • Type of Superstructure         | : | RCC Box Type      |
| • Type of Bearing                | : | NA                |
| • Type of Railing                | : | RCC Crash barrier |
| • Method of Inspection           | : | Visual            |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- Side walls are in good condition.
- RCC crash barrier is provided is in good condition.
- Stone pitching provided on abutment location quadrant slope is fair.





**BR. NO. 201+985 (PUP)**

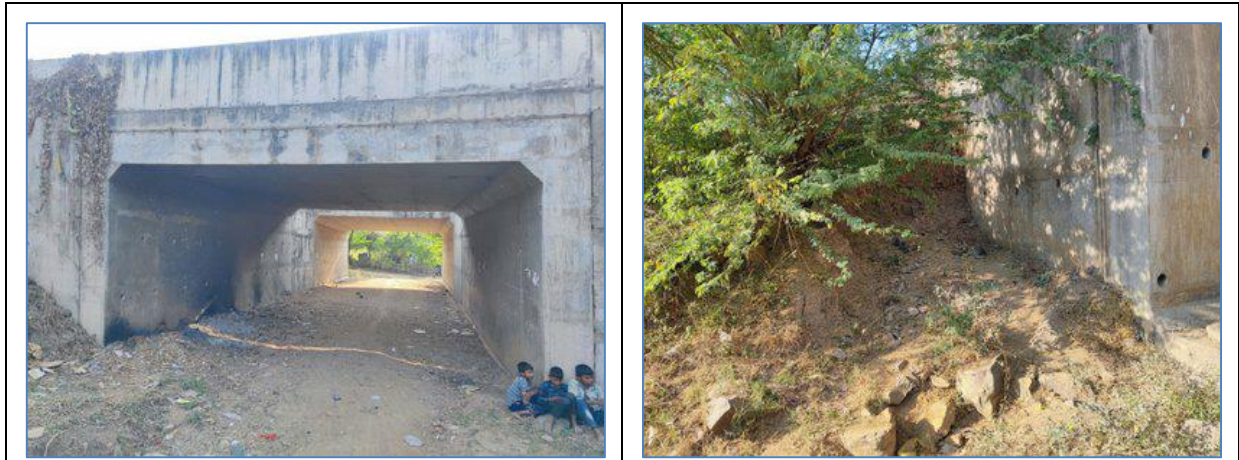
**GENERAL DESCRIPTION**

|                                  |   |                   |
|----------------------------------|---|-------------------|
| • Location of structure          | : | -                 |
| • Chainage                       | : | Km 201+985        |
| • Type of structure              | : | PUP               |
| • Span Arrangement               | : | 1.0 x 7.0 x 3.5 m |
| • Total outer width of structure | : | 2 x 10.25 m       |
| • Median Width                   | : | 3.5 m             |
| • Type of Foundation             | : | Raft              |
| • Type of substructure           | : | RCC Box Type      |
| • Type of Superstructure         | : | RCC Box Type      |
| • Type of Railing                | : | RCC Crash barrier |
| • Method of Inspection           | : | Visual            |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- Side walls are in good condition.
- RCC crash barrier is provided is in good condition.
- Stone pitching partially damaged.



**BR. NO. 203+979 (PUP)**

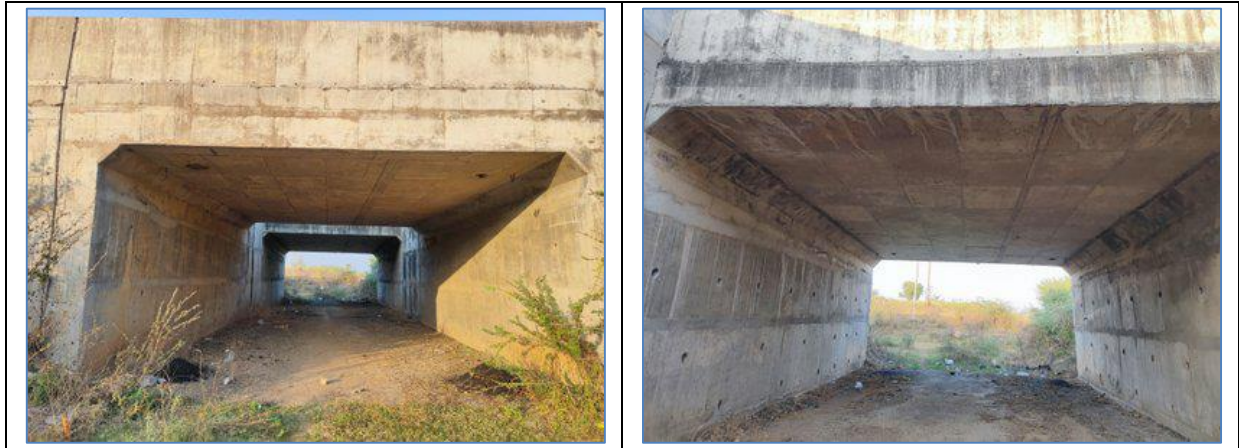
**GENERAL DESCRIPTION**

|                                  |   |                   |
|----------------------------------|---|-------------------|
| • Location of structure          | : | -                 |
| • Chainage                       | : | Km 203+979        |
| • Type of structure              | : | PUP               |
| • Span Arrangement               | : | 1.0 x 7.0 x 3.5 m |
| • Total outer width of structure | : | 2 x 10.25 m       |
| • Median Width                   | : | 3.5 m             |
| • Type of Foundation             | : | Raft              |
| • Type of substructure           | : | RCC Box Type      |
| • Type of Superstructure         | : | RCC Box Type      |
| • Type of Bearing                | : | NA                |
| • Type of Railing                | : | RCC Crash barrier |
| • Method of Inspection           | : | Visual            |

**OBSERVATIONS**

Visual Observations on condition of the structure are as below:

- Side walls are in good condition.
- RCC crash barrier is provided is in good condition.
- Minor damage on Stone pitching.



Photos of some culverts at site



Km 130+820



Km 152+541



Km 161+381



Km 174+267



Km 129+111



Km 142+800



Km 156+471



Km 179+553

Details of Culverts

| S. No | Type as per CA | Type as per site | Proposed chainage | Proposed chainage as per site | Proposed Span arrangement (No. x Length) (m) | Span as per site (No. x Length) (m) | Existing deck width as per site | Skew angle | Vertical Clearance (m) | Slab Thickness (m) | Remarks   |
|-------|----------------|------------------|-------------------|-------------------------------|--|-------------------------------------|---------------------------------|------------|------------------------|--------------------|---|
| 1     | -              | PIPE CULVERT     | -                 | 129+111                       | -  | 1 x 1.2                             | 32.5                            | -          | -                      | -                  | Partially buried with mud.  |
| 2     | PIPE           | PIPE CULVERT     | 129+965           | 129+777                       | 1 x 1.2                                      | 1 x 1.2                             | 32.5                            | -          | -                      | -                  | Stone pitching partially damaged.                                     |
| 3     | RCC Slab       | BOX CULVERT      | 131+009           | 130+820                       | 1 x 7  | 1 x 3 x 2.5                         | 32.5                            | -          | 2.5                    | 0.3                | Structure is in good condition.                                       |
| 4     | PIPE           | PIPE CULVERT     | 131+624           | 131+437                       | 2 x 0.9                                      | 2 x 0.9                             | 29.5                            | -          | -                      | -                  | Structure is in good condition.                                       |
| 5     | PIPE           | PIPE CULVERT     | 132+128           | 131+938                       | 1 x 1.2                                      | 1 x 1.2                             | 46                              | -          | -                      | -                  | Structure is in good condition.                                       |
| 6     | PIPE           | PIPE CULVERT     | 132+381           | 132+191                       | 1 x 0.9                                      | 2 x 0.9                             | 29.5                            | -          | -                      | -                  | Partially buried with debris.   |
| 7     | PIPE           | PIPE CULVERT     | 133+940           | 133+747                       | 2 x 1.2                                      | 2 x 1.2                             | 26.5                            | -          | -                      | -                  | Partially buried with mud.  |
| 8     | PIPE           | PIPE CULVERT     | 135+196           | 134+994                       | 1 x 1.2                                      | 1 x 1.2                             | 26.5                            | -          | -                      | -                  | Partially buried with mud.  |
| 9     | PIPE           | PIPE CULVERT     | 135+808           | 135+605                       | 1 x 1.2                                      | 1 x 1.2                             | 27.5                            | -          | -                      | -                  | Structure is in good condition.                                       |
| 10    | -              | PIPE CULVERT     | -                 | 137+076                       | -  | 1 x 1.2                             | 32.25                           | -          | -                      | -                  | Partially buried with mud.  |
| 11    | PIPE           | PIPE CULVERT     | 138+320           | 138+126                       | 2 x 0.9                                      | 2 x 1.2                             | 32.5                            | -          | -                      | -                  | Structure is in good condition.                                       |
| 12    | PIPE           | PIPE CULVERT     | 141+277           | 141+079                       | 1 x 0.9                                      | 1 x 1.2                             | 37.5                            | -          | -                      | -                  | Stone masonry head wall damaged at RHS.<br>Partially buried with mud. |
| 13    | RCC Slab       | BOX CULVERT      | 141+922           | 141+724                       | 1 x 1.2                                      | 1 x 3 x 3                           | 39.5                            | -          | 3                      | 0.3                | Structure is in good condition.                                       |
| 14    | PIPE           | PIPE CULVERT     | 143+002           | 142+800                       | 1 x 0.9                                      | 1 x 0.9                             | 39.5                            | -          | -                      | -                  | Structure is in good condition.                                       |
| 15    | PIPE           | PIPE CULVERT     | 143+750           | 143+176                       | 1 x 1.2                                      | 1 x 1.2                             | 39.5                            | -          | -                      | -                  | Stone pitching partially damaged.                                     |
| 16    | PIPE           | PIPE CULVERT     | 144+150           | 143+791                       | 1 x 1.2                                      | 1 x 1.2                             | 29.5                            | -          | -                      | -                  | Stone pitching partially damaged.<br>Partially buried with debris.    |
| 17    | PIPE           | -                | 145+260           | 144+944                       | 1 x 1.2                                      | -                                   | -                               | -          | -                      | -                  | AS PER SITE MNB   |
| 18    | PIPE           | -                | 145+540           | 145+305                       | 1 x 1.2                                      | -                                   | -                               | -          | -                      | -                  | AS PER SITE MNB   |

| S. No | Type as per CA | Type as per site | Proposed chainage | Proposed chainage as per site | Proposed Span arrangement (No. x Length) (m) | Span as per site (No. x Length) (m) | Existing deck width as per site | Skew angle | Vertical Clearance (m) | Slab Thickness (m) | Remarks   |
|-------|----------------|------------------|-------------------|-------------------------------|--|-------------------------------------|---------------------------------|------------|------------------------|--------------------|---|
| 19    | PIPE           | PIPE CULVERT     | 146+095           | 145+913                       | 2 x 1  | 2 x 1.2                             | 31                              | -          | -                      | -                  | Stone pitching partially damaged.                               |
| 20    | RCC Slab       | BOX CULVERT      | 146+547           | 146+382                       | 1 x 5  | 1 x 3 x 2.5                         | 34.5                            | -          | 2.5                    | 0.3                | Structure is in good condition.                                 |
| 21    | PIPE           | PIPE CULVERT     | 147+543           | 147+359                       | 1 x 1.2                                      | 1 x 1.2                             | 36                              | -          | -                      | -                  | Stone pitching partially damaged.                               |
| 22    | PIPE           | PIPE CULVERT     | 148+108           | 147+922                       | 1 x 1.2                                      | 1 x 1.2                             | 31                              | -          | -                      | -                  | Stone pitching partially damaged.<br>RHS buried.                |
| 23    | PIPE           | PIPE CULVERT     | 148+821           | 148+681                       | 1 x 1.2                                      | 1 x 1.2                             | 33.5                            | -          | -                      | -                  | Partially covered with bushes.<br>Partially buried with debris. |
| 24    | PIPE           | PIPE CULVERT     | 149+815           | 149+630                       | 1 x 0.9                                      | 1 x 0.9                             | 31                              | -          | -                      | -                  | Stone pitching partially damaged.                               |
| 25    | PIPE           | PIPE CULVERT     | 150+011           | 149+825                       | 1 x 1  | 1 x 0.9                             | 36                              | -          | -                      | -                  | Stone pitching partially damaged.                               |
| 26    | PIPE           | PIPE CULVERT     | 150+210           | 150+020                       | 1 x 0.9                                      | 1 x 1.2                             | 37.3                            | -          | -                      | -                  | Structure is in good condition.                                 |
| 27    | RCC Slab       | BOX CULVERT      | 150+398           | 150+209                       | 1 x 2.5                                      | 1 x 3 x 2.5                         | 27.5                            | -          | 2.5                    | 0.35               | Structure is in good condition.                                 |
| 28    | PIPE           | PIPE CULVERT     | 150+918           | 150+734                       | 2 x 1.2                                      | 2 x 1.2                             | 39                              | -          | -                      | -                  | Stone pitching partially damaged.                               |
| 29    | PIPE           | PIPE CULVERT     | 151+752           | 151+571                       | 2 x 1.2                                      | 2 x 1.2                             | 30.5                            | -          | -                      | -                  | Stone pitching partially damaged.                               |
| 30    | RCC BOX        | BOX CULVERT      | 152+730           | 152+541                       | 1 x 3 x 3                                    | 1 x 3 x 3                           | 34                              | -          | 3                      | 0.3                | Stone pitching partially damaged at LHS.                        |
| 31    | RCC BOX        | BOX CULVERT      | 153+115           | 152+941                       | 1 x 3 x 3                                    | 1 x 3 x 3                           | 37                              | -          | 3                      | 0.3                | Stone pitching partially damaged at RHS.                        |
| 32    | -              | BOX CULVERT      | -                 | 153+061                       | -  | 1 x 3 x 3                           | 37.2                            | -          | 3                      | 0.35               | Partially buried with mud.                                      |
| 33    | -              | PIPE CULVERT     | -                 | 153+491                       | -  | 2 x 1.2                             | 37                              | -          | -                      | -                  | Partially buried with mud.                                      |
| 34    | -              | -                | -                 | 153+791                       | -  | -                                   | -                               | -          | -                      | -                  | NOT FOUND AT SITE   |

| S. No | Type as per CA | Type as per site | Proposed chainage | Proposed chainage as per site | Proposed Span arrangement (No. x Length) (m) | Span as per site (No. x Length) (m) | Existing deck width as per site | Skew angle | Vertical Clearance (m) | Slab Thickness (m) | Remarks  |
|-------|----------------|------------------|-------------------|-------------------------------|--|-------------------------------------|---------------------------------|------------|------------------------|--------------------|--|
| 35    | -              | PIPE CULVERT     | -                 | 154+431                       | -  | 1 x 1.2                             | 29.2                            | -          | -                      | -                  | Partially buried with mud.                                   |
| 36    | PIPE           | PIPE CULVERT     | 155+900           | 155+640                       | 1 x 1.2                                      | 1 x 1.2                             | 31                              | -          | -                      | -                  | Partially covered with bushes.                               |
| 37    | PIPE           | PIPE CULVERT     | 156+780           | 156+471                       | 1 x 1.2                                      | 1 x 1.2                             | 26.5                            | -          | -                      | -                  | LHS Pipe not found. Stone pitching partially damaged at RHS. |
| 38    | PIPE           | PIPE CULVERT     | 158+782           | 158+595                       | 1 x 1.2                                      | 1 x 1.2                             | 34.3                            | -          | -                      | -                  | Partially buried with mud.                                   |
| 39    | RCC Slab       | BOX CULVERT      | 159+300           | 159+112                       | 2 x 5  | 1 x 5 x 3                           | 30.3                            | -          | 3                      | 0.5                | Spalling observed on side walls.                             |
| 40    | RCC Slab       | BOX CULVERT      | 160+342           | 160+155                       | 2 x 3  | 1 x 3 x 2.5                         | 30.5                            | -          | 2.5                    | 0.25               | Stone pitching partially damaged.                            |
| 41    | RCC BOX        | BOX CULVERT      | 161+550           | 161+381                       | 1 x 3 x 3                                    | 1 x 3 x 3                           | 38.5                            | -          | 3                      | 0.35               | Stone pitching partially damaged.                            |
| 42    | -              | PIPE CULVERT     | -                 | 161+584                       | -  | 3 x 1.2                             | 38.2                            | -          | -                      | -                  | Partially buried with mud.                                   |
| 43    | RCC BOX        | BOX CULVERT      | 162+410           | 162+225                       | 1 x 3 x 2                                    | 1 x 3 x 2                           | 32.5                            | -          | 2                      | 0.35               | Stone pitching partially damaged.                            |
| 44    | RCC BOX        | BOX CULVERT      | 162+610           | 162+492                       | 1 x 3 x 3                                    | 1 x 3 x 3                           | 58.4                            | -          | 3                      | 0.35               | Stone pitching partially damaged.                            |
| 45    | -              | PIPE CULVERT     | -                 | 163+257                       | -  | 2 x 1.2                             | 33                              | -          | -                      | -                  | Partially buried with mud.                                   |
| 46    | RCC BOX        | BOX CULVERT      | 164+680           | 164+472                       | 1 x 3 x 2                                    | 1 x 3 x 3                           | 32.5                            | -          | 3                      | 0.35               | Partially buried with bushes.                                |
| 47    | PIPE           | PIPE CULVERT     | 165+120           | 164+942                       | 3 x 1.2                                      | 3 x 1.2                             | 44.5                            | -          | -                      | -                  | Partially covered with bushes at LHS.                        |
| 48    | PIPE           | PIPE CULVERT     | 165+470           | 165+312                       | 3 x 1.2                                      | 3 x 1.2                             | 40.5                            | -          | -                      | -                  | Stone pitching partially damaged.                            |
| 49    | -              | PIPE CULVERT     | -                 | 165+639                       | -  | 3 x 1.2                             | 42                              | -          | -                      | -                  | Partially buried with mud.                                   |
| 50    | RCC Slab       | BOX CULVERT      | 166+902           | 166+713                       | 2 x 5  | 1 x 3 x 2.5                         | 34.5                            | -          | 2.5                    | 0.3                | Stone pitching partially damaged.                            |
| 51    | PIPE           | PIPE CULVERT     | 167+450           | 167+260                       | 1 x 0.9                                      | 1 x 1.2                             | 38.5                            | -          | -                      | -                  | Stone pitching partially damaged.                            |
| 52    | RCC            | BOX CULVERT      | 168+267           | 168+079                       | 2 x 3.5                                      | 1 x 3 x 2.5                         | 40.5                            | -          | 2.5                    | 0.35               | Structure is in good condition.                              |

| S. No | Type as per CA | Type as per site | Proposed chainage | Proposed chainage as per site | Proposed Span arrangement (No. x Length) (m) | Span as per site (No. x Length) (m) | Existing deck width as per site | Skew angle | Vertical Clearance (m) | Slab Thickness (m) | Remarks  |
|-------|----------------|------------------|-------------------|-------------------------------|--|-------------------------------------|---------------------------------|------------|------------------------|--------------------|--|
|       | Slab           |                  |                   |                               |  |                                     |                                 |            |                        |                    |  |
| 53    | RCC Slab       | BOX CULVERT      | 169+325           | 169+135                       | 1 x 3  | 1 x 2 x 2                           | 32.5                            | -          | 2                      | 0.25               | LHS partially covered with bushes.                               |
| 54    | RCC Slab       | BOX CULVERT      | 169+742           | 169+557                       | 2 x 2.5                                      | 1 x 3 x 2.5                         | 34.5                            | -          | 2.5                    | 0.35               | Structure is in good condition.                                  |
| 55    | PIPE           | -                | 171+878           | 171+308                       | 2 x 1.2                                      | -                                   | -                               | -          | -                      | -                  | NOT FOUND AT SITE  |
| 56    | RCC BOX        | -                | 171+740           | 171+664                       | 3 x 7.6                                      | -                                   | -                               | -          | -                      | -                  | AS PER SITE MNB  |
| 57    | RCC Slab       | BOX CULVERT      | 173+825           | 173+561                       | 1 x 1  | 1 x 2 x 2                           | 42                              | -          | 2                      | 0.3                | Stone pitching partially damaged.                                |
| 58    | RCC Slab       | BOX CULVERT      | 174+053           | 173+791                       | 1 x 1  | 1 x 2 x 2                           | 44.9                            | -          | 2                      | 0.3                | Structure is in good condition.                                  |
| 59    | RCC Slab       | BOX CULVERT      | 174+353           | 174+144                       | 1 x 1  | 1 x 2 x 2                           | 44.9                            | -          | 2                      | 0.35               | Stone pitching partially damaged.                                |
| 60    | RCC Slab       | BOX CULVERT      | 174+530           | 174+267                       | 1 x 1.5                                      | 1 x 3 x 3                           | 44.5                            | -          | 3                      | 0.3                | Structure is in good condition.                                  |
| 61    | RCC Slab       | BOX CULVERT      | 174+670           | 174+407                       | 1 x 1  | 1 x 2 x 2                           | 32.5                            | -          | 2                      | 0.35               | Cracks observed on top slab.                                     |
| 62    | RCC Slab       | BOX CULVERT      | 174+774           | 174+511                       | 1 x 2.5                                      | 1 x 3 x 3                           | 38.5                            | -          | 3                      | 0.3                | Stone pitching partially damaged.                                |
| 63    | PIPE           | PIPE CULVERT     | 175+134           | 174+869                       | 1 x 1.2                                      | 1 x 1.20                            | 36.5                            | -          | -                      | -                  | Stone pitching partially damaged.                                |
| 64    | PIPE           | PIPE CULVERT     | 177+087           | 176+803                       | 1 x 1.2                                      | 1 x 1.20                            | 36.5                            | -          | -                      | -                  | Partially buried with bushes.                                    |
| 65    | RCC Slab       | BOX CULVERT      | 177+534           | 177+264                       | 1 x 2  | 1 x 2 x 2                           | 32.5                            | -          | 2                      | 0.35               | Stone pitching partially damaged.                                |
| 66    | PIPE           | PIPE CULVERT     | 178+427           | 178+158                       | 1 x 1.2                                      | 1 x 1.20                            | 33.5                            | -          | -                      | -                  | Partially covered with bushes. Stone pitching partially damaged. |
| 67    | PIPE           | PIPE CULVERT     | 178+774           | 178+506                       | 1 x 1.2                                      | 1 x 1.20                            | 39.5                            | -          | -                      | -                  | partially covered with bushes. Stone pitching partially damaged. |

| S. No | Type as per CA | Type as per site | Proposed chainage | Proposed chainage as per site | Proposed Span arrangement (No. x Length) (m) | Span as per site (No. x Length) (m) | Existing deck width as per site | Skew angle | Vertical Clearance (m) | Slab Thickness (m) | Remarks   |
|-------|----------------|------------------|-------------------|-------------------------------|--|-------------------------------------|---------------------------------|------------|------------------------|--------------------|---|
| 68    | -              | BOX CULVERT      | -                 | 179+143                       | -  | 1 x 4 x 4                           | 37.9                            | -          | 4                      | -                  | Partially buried with mud.  |
| 69    | PIPE           | PIPE CULVERT     | 179+819           | 179+553                       | 1 x 0.9                                      | 1 x 1.20                            | 32.5                            | -          | -                      | -                  | Stone pitching partially damaged.                                       |
| 70    | PIPE           | PIPE CULVERT     | 180+130           | 179+863                       | 1 x 1  | 1 x 1.20                            | 38.5                            | -          | -                      | -                  | Stone pitching partially damaged.                                       |
| 71    | PIPE           | PIPE CULVERT     | 180+664           | 180+398                       | 1 x 1.2                                      | 1 x 1.20                            | 32.5                            | -          | -                      | -                  | Stone pitching partially damaged.                                       |
| 72    | PIPE           | PIPE CULVERT     | 180+898           | 180+631                       | 1 x 1.2                                      | 1 x 1.20                            | 32.5                            | -          | -                      | -                  | Stone pitching partially damaged at RHS.                                |
| 73    | RCC Slab       | BOX CULVERT      | 181+057           | 180+790                       | 1 x 1.5                                      | 1 x 3 x 3                           | 32.5                            | -          | 3                      | 0.35               | Stone pitching partially damaged.                                       |
| 74    | -              | PIPE CULVERT     | -                 | 181+212                       | -  | 2 x 1.2                             | 32.75                           | -          | -                      | -                  | Partially buried with mud.  |
| 75    | PIPE           | PIPE CULVERT     | 182+392           | 182+122                       | 1 x 1  | 1 x 1.20                            | 38.5                            | -          | -                      | -                  | Partially covered with bushes. Stone pitching partially damaged at RHS. |
| 76    | PIPE           | PIPE CULVERT     | 182+576           | 182+306                       | 1 x 1  | 1 x 0.9                             | 32.5                            | -          | -                      | -                  | Stone pitching partially damaged.                                       |
| 77    | PIPE           | PIPE CULVERT     | 182+800           | 182+531                       | 1 x 1.2                                      | 1 x 0.9                             | 32.5                            | -          | -                      | -                  | Partially covered with bushes. Stone pitching partially damaged at RHS. |
| 78    | PIPE           | PIPE CULVERT     | 183+001           | 182+731                       | 1 x 0.9                                      | 1 x 0.9                             | 35.5                            | -          | -                      | -                  | Stone pitching partially damaged.                                       |
| 79    | RCC Slab       | BOX CULVERT      | 188+477           | 188+201                       | 1 x 1.2                                      | 1 x 3 x 3                           | 29.5                            | -          | 3                      | 0.35               | Structure is in good condition.   |
| 80    | RCC Slab       | BOX CULVERT      | 188+577           | 188+301                       | 1 x 1.5                                      | 1 x 2 x 2                           | 29.5                            | -          | 2                      | 0.3                | Stone pitching partially damaged at LHS.                                |
| 81    | RCC Slab       | BOX CULVERT      | 188+870           | 188+592                       | 1 x 1.5                                      | 1 x 2 x 2                           | 31.5                            | -          | 2                      | 0.3                | Damaged observed at top slab  |
| 82    | -              | PIPE CULVERT     | -                 | 189+874                       | -  | 1 x 1.2                             | 31.5                            | -          | -                      | -                  | Partially buried with mud.  |
| 83    | PIPE           | PIPE CULVERT     | 190+496           | 190+214                       | 1 x 0.9                                      | 1 x 0.90                            | 38.5                            | -          | -                      | -                  | Partially covered with bushes at LHS. Pipe buried at RHS                |



| S. No | Type as per CA | Type as per site | Proposed chainage | Proposed chainage as per site | Proposed Span arrangement (No. x Length) (m) | Span as per site (No. x Length) (m) | Existing deck width as per site | Skew angle | Vertical Clearance (m) | Slab Thickness (m) | Remarks  |
|-------|----------------|------------------|-------------------|-------------------------------|--|-------------------------------------|---------------------------------|------------|------------------------|--------------------|--|
| 84    | PIPE           | PIPE CULVERT     | 190+520           | 190+238                       | 1 x 0.9                                      | 1 x 0.90                            | 39.5                            | YES        | -                      | -                  | Partially buried with debris.                        |
| 85    | PIPE           | -                | 190+879           | 190+595                       | 1 x 0.9                                      | -                                   |                                 | -          | -                      | -                  | NOT FOUND AT SITE                                    |
| 86    | PIPE           | -                | 190+976           | 190+692                       | 1 x 0.9                                      | -                                   |                                 | -          | -                      | -                  | NOT FOUND AT SITE                                    |
| 87    | PIPE           | PIPE CULVERT     | 191+351           | 191+066                       | 1 x 1  | 2 x 0.9                             | 34                              | -          | -                      | -                  | Stone pitching partially damaged.                    |
| 88    | -              | PIPE CULVERT     | -                 | 191+367                       | -  | 1 x 1.2                             | 32.5                            | -          | -                      | -                  | Partially buried with mud.                           |
| 89    | PIPE           | PIPE CULVERT     | 191+866           | 191+582                       | 1 x 1  | 1 x 0.90                            | 41                              | YES        | -                      | -                  | Stone pitching partially damaged.                    |
| 90    | -              | PIPE CULVERT     | -                 | 192+066                       | -  | 1 x 1.2                             | 39.5                            | -          | -                      | -                  | Partially buried with mud.                           |
| 91    | -              | PIPE CULVERT     | -                 | 192+093                       | -  | 1 x 1.2                             | 39.5                            | -          | -                      | -                  | Partially buried with mud.                           |
| 92    | PIPE           | PIPE CULVERT     | 192+481           | 192+199                       | 1 x 1.2                                      | 1 x 1.2                             | 28.5                            | -          | -                      | -                  | Structure is in good condition.                      |
| 93    | PIPE           | SYPHON           | 192+605           | 192+324                       | 1 x 0.9                                      | 1 x 0.9                             | 27.5                            | -          | -                      | -                  | Structure is in good condition.                      |
| 94    | PIPE           | SYPHON           | 192+735           | 192+454                       | 1 x 0.9                                      | 1 x 0.9                             | 32.5                            | -          | -                      | -                  | Structure is in good condition.                      |
| 95    | PIPE           | PIPE CULVERT     | 192+870           | 192+589                       | 1 x 0.9                                      | 1 x 0.9                             | 36.5                            | -          | -                      | -                  | Pipe buried at LHS.<br>Partially buried with debris. |
| 96    | PIPE           | SYPHON           | 193+032           | 192+750                       | 1 x 1.2                                      | 1 x 0.6                             | 29.5                            | -          | -                      | -                  | Structure is in good condition.                      |
| 97    | PIPE           | PIPE CULVERT     | 193+214           | 192+934                       | 1 x 0.9                                      | 1 x 0.9                             | 36.5                            | -          | -                      | -                  | Structure is in good condition.                      |
| 98    | PIPE           | PIPE CULVERT     | 193+230           | 192+950                       | 1 x 1.2                                      | 1 x 1.2                             | 30                              | -          | -                      | -                  | Stone pitching partially damaged.                    |
| 99    | PIPE           | PIPE CULVERT     | 193+284           | 193+004                       | 1 x 0.9                                      | 1 x 1.2                             | 29.5                            | YES        | -                      | -                  | Structure is in good condition.                      |
| 100   | PIPE           | PIPE CULVERT     | 193+420           | 193+139                       | 1 x 0.9                                      | 1 x 0.9                             | 38                              | -          | -                      | -                  | Structure is in good condition.                      |
| 101   | -              | PIPE CULVERT     | -                 | 193+281                       | -  | 1 x 1.2                             | 37.5                            | -          | -                      | -                  | Partially buried with mud.                           |
| 102   | PIPE           | PIPE CULVERT     | 193+661           | 193+382                       | 1 x 0.9                                      | 1 x 1.2                             | 37.5                            | -          | -                      | -                  | Structure is in good condition.                      |
| 103   | PIPE           | -                | 193+825           | 193+544                       | 2 x 0.9                                      | -                                   | -                               | -          | -                      | -                  |  |
| 104   | PIPE           | -                | 193+892           | 193+611                       | 2 x 0.9                                      | -                                   | -                               | -          | -                      | -                  |  |

| S. No | Type as per CA | Type as per site | Proposed chainage | Proposed chainage as per site | Proposed Span arrangement (No. x Length) (m) | Span as per site (No. x Length) (m) | Existing deck width as per site | Skew angle | Vertical Clearance (m) | Slab Thickness (m) | Remarks                                  |
|-------|----------------|------------------|-------------------|-------------------------------|--|-------------------------------------|---------------------------------|------------|------------------------|--------------------|--|
| 105   | PIPE           | -                | 194+125           | 193+845                       | 2 x 0.9                                      | -                                   | -                               | -          | -                      | -                  |  |
| 106   | PIPE           | -                | 194+637           | 194+357                       | 1 x 1.2                                      | -                                   | -                               | -          | -                      | -                  |  |
| 107   | PIPE           | PIPE CULVERT     | 194+844           | 194+562                       | 1 x 0.9                                      | 1 x 0.9                             | 31.5                            | YES        | -                      | -                  | Structure is in good condition.          |
| 108   | -              | -                | -                 | 194+637                       | -  | -                                   | -                               | -          | -                      | -                  |  |
| 109   | -              | -                | -                 | 194+969                       | -  | -                                   | -                               | -          | -                      | -                  |  |
| 110   | PIPE           | PIPE CULVERT     | 196+961           | 196+673                       | 1 x 0.9                                      | 1 x 0.9                             | 32.5                            | -          | -                      | -                  | Stone pitching partially damaged.        |
| 111   | PIPE           | PIPE CULVERT     | 197+591           | 197+301                       | 2 x 1.2                                      | 2 x 1.2                             | 36.5                            | -          | -                      | -                  | Stone pitching partially damaged at LHS. |
| 112   | PIPE           | PIPE CULVERT     | 198+143           | 197+852                       | 1 x 0.9                                      | 1 x 0.9                             | 32.5                            | YES        | -                      | -                  | Stone pitching partially damaged.        |
| 113   | PIPE           | PIPE CULVERT     | 198+298           | 198+009                       | 1 x 1.2                                      | 1 x 0.9                             | 29.5                            | -          | -                      | -                  | Structure is in good condition.          |
| 114   | -              | SYPHON           | -                 | 198+142                       | -  | 1 x 0.6                             | 29.5                            | -          | -                      | -                  | Partially buried with mud.               |
| 115   | PIPE           | PIPE CULVERT     | 199+444           | 199+148                       | 1 x 0.9                                      | 1 x 1.2                             | 46.5                            | -          | -                      | -                  | Structure is in good condition.          |
| 116   | -              | SYPHON           | -                 | 199+536                       | -  | 1 x 0.6                             | 29                              | -          | -                      | -                  | Partially buried with mud.               |
| 117   | PIPE           | PIPE CULVERT     | 200+331           | 200+038                       | 1 x 0.9                                      | 1 x 0.9                             | 31.5                            | -          | -                      | -                  | Structure is in good condition.          |
| 118   | -              | SYPHON           | -                 | 200+161                       | -  | 1 x 0.6                             | 29.5                            | -          | -                      | -                  | Partially buried with mud.               |
| 119   | RCC Slab       | BOX CULVERT      | 201+131           | 200+838                       | 1 x 2.65                                     | 1 x 3 x 2.5                         | 29.5                            | YES        | 2.5                    | 0.3                | Canal crossing                           |
| 120   | PIPE           | PIPE CULVERT     | 201+287           | 200+993                       | 3 x 0.9                                      | 3 x 0.9                             | 29                              | -          | -                      | -                  | Structure is in good condition.          |
| 121   | RCC Slab       | BOX CULVERT      | 201+878           | 201+583                       | 3 x 1  | 1 x 3 x 2.5                         | 34.5                            | -          | 2.5                    | 0.3                | Structure is in good condition.          |
| 122   | PIPE           | PIPE CULVERT     | 203+130           | 202+829                       | 1 x 0.9                                      | 1 x 0.9                             | 28.5                            | -          | -                      | -                  | Stone pitching partially damaged.        |
| 123   | -              | PIPE CULVERT     | -                 | 204+183                       | -  | 2 x 1.2                             | 38.5                            | -          | -                      | -                  | Partially buried with mud.               |
| 124   | PIPE           | PIPE CULVERT     | 204+860           | 204+557                       | 1 x 0.9                                      | 1 x 0.9                             | 38.5                            | -          | -                      | -                  | Stone pitching partially damaged.        |

| S. No | Type as per CA | Type as per site | Proposed chainage | Proposed chainage as per site | Proposed Span arrangement (No. x Length) (m) | Span as per site (No. x Length) (m) | Existing deck width as per site | Skew angle | Vertical Clearance (m) | Slab Thickness (m) | Remarks  |
|-------|----------------|------------------|-------------------|-------------------------------|--|-------------------------------------|---------------------------------|------------|------------------------|--------------------|--|
| 125   | PIPE           | PIPE CULVERT     | 205+430           | 205+124                       | 1 x 0.9                                      | 1 x 1.2                             | 38.5                            | -          | -                      | -                  | Structure is in good condition.  |
| 126   | PIPE           | PIPE CULVERT     | 206+063           | 205+755                       | 1 x 0.9                                      | 1 x 0.9                             | 32.5                            | -          | -                      | -                  | Stone pitching partially damaged.  |
| 127   | PIPE           | PIPE CULVERT     | 206+656           | 206+346                       | 1 x 0.9                                      | 1 x 1.2                             | 36.5                            | -          | -                      | -                  | Partially buried with mud at RHS.  |
| 128   | PIPE           | PIPE CULVERT     | 207+584           | 207+270                       | 1 x 1.2                                      | 1 x 1.2                             | 28.5                            | YES        | -                      | -                  | Partially buried with mud at RHS.  |
| 129   | PIPE           | PIPE CULVERT     | 207+937           | 207+622                       | 1 x 0.9                                      | 1 x 0.9                             | 28.5                            | -          | -                      | -                  | Stone pitching partially damaged.  |
| 130   | PIPE           | PIPE CULVERT     | 208+758           | 208+071                       | 1 x 0.9                                      | 1 x 1.2                             | 33.5                            | -          | -                      | -                  | Structure is in good condition.  |
| 131   | -              | PIPE CULVERT     | -                 | 209+916                       | -  | 1 x 1.2                             | 32.5                            | -          | -                      | -                  | Partially buried with mud.   |
| 132   | PIPE           | PIPE CULVERT     | 210+830           | 210+503                       | 1 x 0.9                                      | 1 x 1.2                             | 32.5                            | -          | -                      | -                  | Partially covered with bushes at LHS.<br>Stone pitching partially damaged. |
| 133   | PIPE           | PIPE CULVERT     | 211+234           | 210+903                       | 2 x 0.9                                      | 2 x 1.2                             | 38.5                            | -          | -                      | -                  | Stone pitching partially damaged.  |
| 134   | PIPE           | PIPE CULVERT     | 211+625           | 211+293                       | 1 x 0.9                                      | 1 x 1.2                             | 30.5                            | -          | -                      | -                  | Partially covered with bushes.   |
| 135   | -              | PIPE CULVERT     | -                 | 211+592                       | -  | 1 x 1.2                             | 30.5                            | -          | -                      | -                  | Partially buried with mud.   |
| 136   | PIPE           | PIPE CULVERT     | 212+556           | 212+223                       | 1 x 0.9                                      | 1 x 1.2                             | 36.5                            | -          | -                      | -                  | Partially covered with bushes.   |
| 137   | RCC Slab       | BOX CULVERT      | 213+487           | 213+153                       | 1 x 5  | 1 x 5 x 4                           | 35.5                            | -          | 4                      | 0.5                | Structure is in good condition.  |
| 138   | PIPE           | PIPE CULVERT     | 214+978           | 214+644                       | 1 x 1.2                                      | 1 x 1.2                             | 34.5                            | -          | -                      | -                  | Stone pitching partially damaged.  |
| 139   | PIPE           | PIPE CULVERT     | 215+145           | 214+810                       | 1 x 0.9                                      | 1 x 0.9                             | 32.5                            | -          | -                      | -                  | Stone pitching partially damaged.  |

The common matter pertaining to the bridges is given below indicating Conclusions, Strategy for Renewals, and Assumptions for structure Repair BOQ:

**Conclusions:**

- It is well known that it would be costly and ineffective to repair corrosion damaged structure. Since the structure remained unprotected against environmental impact some deterioration to place and rate of which is required to slow down by standard techniques and material. This has to be planned during the concession period depending upon the regular inspections for corrosion induced cracks.

**Strategy for Renewals**

**Expansion joints:**

- Visual inspection is carried out to check for seal breakages, Armor angle, Weld failures, cracks between deck & Expansion joints concrete and Joints filled with debris. Such joints replaced immediately.
- Joint buried with debris shall be inspected for any distress, if any distress is shown it shall be replaced immediately.
- During visual inspection it is seen that some Expansion joints are bad whereas some are not showing any defects.
- Due to this it is considered provedent to change the Expansion joints which are visibly damaged in initial stage.
- In the absence of records pertaining to Expansion joint replacements it is highly difficult to predict the date of replacement needed for compliance to IRC codal requirements. Balance joints which are not replaced initially will be replaced as on when defects are shown in the joints. This aspect is considered in BOQ.

**Bearings:**

- In order to identify the bearings requiring immediate replacement, the following strategy is adopted.
- Girder Bridges showing diagonal cracks at support, distress in the Pedestals and any form of distress in support location is regarded as a candidate for replacement. By visual inspection there are only a handful of such situations.
- Wherever pedestals are damaged either by cracking or spalling Poison's confinement is proposed by Jacketing/MS plate bonding such procedure is very effective and common.
- All Metallic Bearings need to be taken up for servicing.

**Wearing Coat:**

Since there is a very weak component of the bridge structure which is subjected to severe deterioration due to Loading, Environment etc. It is necessary to replace the Wearing coat at 15years frequency. As of now we have considered sealing of cracks by Fog Seal which is other does not show any distress than cracking by viz. Pot holes, abrading etc. based on this aspect BOQ is formed.

**ASSUMPTION FOR STRUCTURE BOQ****Immediate Cost**

1. For Bridges requiring durability makeup measures "PMM, Epoxy putty" considered. This is one-time repair in till end of CA years, if executed with proper QC/QA adherence.
2. Wearing course having minor pot holes repair has been envisaged with bitumen and for having cracks in wearing course he cracks are envisaged with Fog seal emulsion with fine chips.
3. Protective works for box culverts/Box type minor Bridges are either missing/damaged for majority of structures. This cost has been taken in immediate cost.
4. Immediate repairs for structural defects.
5. Cleaning of Bearings, Expansion Joints, Drainage spouts, vegetation and others.
6. Repair of Damaged portions.
7. Structural tests if required.

**Routine Cost**

1. Wearing coat comprising of 30 mm thick BC.
2. Cleaning and adding rubber sealant near expansion joints.
3. Modular Expansion joints.
4. Replacement of Damaged Concrete Railing all complete as per Technical specifications and as directed by the Engineer
5. Provision of an RCC crash barrier (0.35sqm cross sectional area) constructed with M-40 grade concrete including reinforcement
6. Cleaning of rocker & roller bearing using high pressure water jet, free from rust scales, re-setting & greasing the bearings using graphite grease including cost of materials, labour etc., complete.
7. POT PTF Bearings greasing and maintaining (sand plastering).
8. Elastomeric Bearings and maintaining.
9. Cutting of groove of 15 mm x 15 mm along crack and sealing the same with epoxy putty including cost of material, labour etc.
10. Carrying out 50 to 60 mm thick shortsheeting using a mix proportion of 1:2:2 (cement: sand:6 mm down aggregate) added with Polypropylene fibers at a dosage rate of 125 gms/bag of cement including cost of labour, material, scaffolding, equipment etc. complete.
11. Repair of Floor Aprons, pitching and other protection works

12. Cleaning of Drainage Spouts
13. M-25 Concrete
14. Providing and filling joint sealing compound as per drawings of pourable grade, (Bitumastic sealant in the gap b/w Abutment & Approach slab. As per Technical specifications
15. Providing and laying Filter material underneath pitching in slopes.
16. Providing and laying Pitching on slopes laid over prepared filter media including boulder apron laid dry in front of toe of embankments.
17. Tests UPV, RHT and Load test for span 15m and above as per Schedule I.
18. Vegetation cleaning before and after monsoon.
19. Repair of damaged structure portion due accidents and any others.
20. Level of Service if applicable.

#### **Periodic Cost**

1. Replacement of Bearings with super structure lifting.
2. Replacement of Expansion joints.
3. Replacement of Wearing course.
4. Level of Service if applicable.
5. Structural tests if applicable.

#### **1.6.6 Drainage and Slope Protection**

Lined Covered drains observed only at service road Locations along the corridor. Open unlined drains at few locations are not functioning properly and require some attention.

Median chutes at curve locations are in good condition except for few locations where they need cleaning. No major distress is observed on the carriageway on downstream side at median drain locations. It may be prudent to consider a longitudinal drain in median to avoid water from one carriageway to flow on the other. It is necessary to see the possibility of draining of median drain to nearest culvert/outfall. This will help preventing distress on carriageway in the long run.

Slope protection in the form of Stone pitching, Green Blanketing, RE walls have been provided along the corridor. Most of the locations the slope protection is good condition.

#### **1.6.7 Traffic Safety and Road Furniture**

Metal beam crash barriers provided along the project road appear to be intact over entire length except for few locations where it got damaged.

Pedestrian guard rails installed at service road locations and appear to be in good condition.

Traffic blinkers are provided at median opening locations along the corridor and few of them are not working. Street lighting and high mast lighting provided, are all functioning well.

### 1.6.8 Road User Facilities

The bus stops and bus bay, Truck lay bye provided along the corridor appear to be good condition.

## 1.7 REHABILITATION PLANS AND DESIGNS

### 1.7.1 Pavement Rehabilitation and Strengthening

Overlay work on Flexible pavement of main carriageway and Service Roads is Completed. Crack sealing and patching works on raveled surfaces, most importantly, repair of severely damaged concrete panel work is in progress.

By looking at the present nature and severity of distress type immediate as well as periodic Pavement Rehabilitation is suggested. Details are presented in BOQ sheet.

### 1.7.2 Structural Rehabilitation

Out of 6 Structures, minor surface defect repair work of 5 nos Structure (Ch. 209.028 LHS, 212.471 LHS, 191.915 RHS, 186.917 LHS, 197.669 LHS) has been completed and 1 no structure (140.135 RHS - Panam Bridge) is in progress.

## 1.8 OPERATION AND MAINTENANCE

### 1.8.1 Introduction

Initially the threshold value of Roughness to be maintained during the operation period was 2500mm/Km as per Schedule K but since the pavement type is changed from Flexible to Rigid, subsequently the threshold roughness value is increased from 2500 mm/Km to 3000mm/Km.

In the Present Case only small portion of length is Flexible and remaining all other length is rigid pavement, HDM Model was not used. The Major Maintenance Cost of Rigid Pavement is estimated by assuming appropriate maintenance criteria.

### 1.8.2 CA specifications for Major Maintenance

- Schedule K of CA species that Roughness values exceeds 2500 mm/km in a length of KM, needs to be corrected within 180 days. But since the pavement type is changed from Flexible to Rigid, subsequently the threshold roughness value is increased from 2500 mm/Km to 3000mm/Km in approved O&M Manual
- Roughness in each lane for full length shall be measured bi-annually using

### 1.8.3 O&M schedule

- For Flexible Pavement Overlay thickness of 40mm BC is considered on Main carriageway in FY2029, FY2036, FY2043 and apart from this Micro Surfacing of total flexible

pavement in Main Carriageway is considered in FY 2040 apart from the regular routine maintenance which is to be done on every year.

- 25mm BC considered on Service Road Pavement in FY2029, FY2035, FY2043 apart from the regular routine maintenance which is to be done on every year.
- For Rigid Pavement about 1% of panel repair/replacement and 1% of epoxy patching, 25% of pavement retexturing and 2 to 3 % replacement of joints at every 7<sup>th</sup> Year apart from the regular routine maintenance which is to be done on every year.
- Kerb painting and Pavement Marking for entire Project Length (Flexible and Rigid Pavement Portion) is Considered at the time of overlay on Flexible pavement.

## 1.9 COST

Cost Component for various items and activities have been worked out by considering the Best Industry practice and most appropriate methods. The gist of the cost components considered are presented below

- Immediate Repair's Cost
- Routine Maintenance Cost
  - Routine Maintenance of Road
  - Repair and Replacement of various road items
  - Tolling system and HTMS maintenance AMC cost
  - Incident management
  - Routine Maintenance for Structures
  - Electricity bill of lighting areas near cities, I/C and other areas & Fuel expenditure
- Periodic Maintenance Cost
  - Functional +Structural overlay MCW of Flexible Pavement
  - Major Maintenance of Rigid Pavement
  - Major Maintenance of structures (replacement of bearing and expansion joints etc.)
  - Replacement of Toll Hardware and software & HTMS at later date
- Toll Plaza Operation cost and Highway Patrolling and maintenance supervision staff cost
- Maintenance of utilities and public amenities
- Operation and management costs of rest areas and lay byes
- Safety audit and other inspection costs @Rs15 Lacs per annum
- Insurance
- I.C for O&M period
- Administrative Cost
- Additional cost Required for capacity augmentation
- Grand Total Cost



Table 27: Abstract of Cost Estimates

| S. No | FY     | Abstract of Cost Without escalation<br>(in Crores)    |                           |               |
|-------|--------|---|---------------------------|---------------|
|       |        | Immediate Repair's Cost +Routine and Operational Cost | Periodic Maintenance Cost | Total Cost    |
| 1     | 2023   | 13.83   | 1.02                      | 14.85         |
| 2     | 2024   | 13.83   | -                         | 13.83         |
| 3     | 2025   | 13.83   | -                         | 13.83         |
| 4     | 2026   | 13.83   | -                         | 13.83         |
| 5     | 2027   | 13.83   | -                         | 13.83         |
| 6     | 2028   | 13.83   | -                         | 13.83         |
| 7     | 2029   | 13.83   | 18.52                     | 32.34         |
| 8     | 2030   | 13.83   | 15.09                     | 28.92         |
| 9     | 2031   | 13.83   | -                         | 13.83         |
| 10    | 2032   | 13.83   | -                         | 13.83         |
| 11    | 2033   | 13.83   | -                         | 13.83         |
| 12    | 2034   | 13.83   | -                         | 13.83         |
| 13    | 2035   | 13.83   | -                         | 13.83         |
| 14    | 2036   | 13.83   | 18.52                     | 32.34         |
| 15    | 2037   | 13.83   | 10.76                     | 24.59         |
| 16    | 2038   | 13.83   | -                         | 13.83         |
| 17    | 2039   | 13.83   | -                         | 13.83         |
| 18    | 2040   | 13.83   | -                         | 13.83         |
| 19    | 2041   | 13.83   | -                         | 13.83         |
| 20    | 2042   | 13.83   | -                         | 13.83         |
| 21    | 2043   | 13.83   | 20.53                     | 34.36         |
| 22    | 2044   | 4.44  | 8.71                      | 13.15         |
|       | Total: | <b>294.77</b>   | <b>93.15</b>              | <b>387.92</b> |

- Base Cost are arrived for FY2023
- All the material rates are February 2022 Rates
- All labour rates are taken from Central minimum wages (October'2021 cycle) and 2.5% escalation applied on the same to arrive FY2023 Rates
- All the costs are without any Escalation.
- All the Cost presented in the above table are excluding Head Office (HQ) Expenses
- End of Concession is taken as 23.07.2043 (Revised Date)

**Table 28: Cost Summary Without Escalation (Amount in Crores)**

| FY   | Routine Maintenance |                   |                        |                     |                   |                              | Periodic Maintenance                   |                                     |  |                             | Toll Plaza Operation cost | SPV Cost | Survey Costs | Insurance & Audit charges | IE Fee | Administrative Cost | Total Recurring cost |
|------|---------------------|-------------------|------------------------|---------------------|-------------------|------------------------------|--|-------------------------------------|--|-----------------------------|---------------------------|----------|--------------|---------------------------|--------|---------------------|----------------------|
|      | Routine Maintenance | R&R of Road items | Toll and HTMS AMC cost | Incident management | R&R of Structures | Electricity bill of lighting | Functional +Structural overlay MCW+S/R | Major Maintenance of Rigid Pavement | Replacement of Toll Hardware and software & HTMS at later date | Structure specified repairs |                           |          |              |                           |        |                     |                      |
| 2023 | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 0.00                                   | -                                   | 1.02   | -                           | 1.91                      | 1.70     | 0.13         | 1.52                      | 0.62   | 0.10                | <b>14.85</b>         |
| 2024 | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 0.00                                   | -                                   |  | -                           | 1.91                      | 1.70     | 0.13         | 1.52                      | 0.62   | 0.10                | <b>13.83</b>         |
| 2025 | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 0.00                                   | -                                   |  | -                           | 1.91                      | 1.70     | 0.13         | 1.52                      | 0.62   | 0.10                | <b>13.83</b>         |
| 2026 | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 0.00                                   | -                                   |  | -                           | 1.91                      | 1.70     | 0.13         | 1.52                      | 0.62   | 0.10                | <b>13.83</b>         |
| 2027 | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 0.00                                   | -                                   |  | -                           | 1.91                      | 1.70     | 0.13         | 1.52                      | 0.62   | 0.10                | <b>13.83</b>         |
| 2028 | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 0.00                                   | -                                   |  | -                           | 1.91                      | 1.70     | 0.13         | 1.52                      | 0.62   | 0.10                | <b>13.83</b>         |
| 2029 | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 18.52                                  | -                                   |  | -                           | 1.91                      | 1.70     | 0.13         | 1.52                      | 0.62   | 0.10                | <b>32.34</b>         |
| 2030 | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 0.00                                   | 7.24                                | 4.92   | 2.93                        | 1.91                      | 1.70     | 0.13         | 1.52                      | 0.62   | 0.10                | <b>28.92</b>         |
| 2031 | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 0.00                                   | -                                   |  | -                           | 1.91                      | 1.70     | 0.13         | 1.52                      | 0.62   | 0.10                | <b>13.83</b>         |
| 2032 | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 0.00                                   | -                                   |  | -                           | 1.91                      | 1.70     | 0.13         | 1.52                      | 0.62   | 0.10                | <b>13.83</b>         |
| 2033 | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 0.00                                   | -                                   |  | -                           | 1.91                      | 1.70     | 0.13         | 1.52                      | 0.62   | 0.10                | <b>13.83</b>         |
| 2034 | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 0.00                                   | -                                   |  | -                           | 1.91                      | 1.70     | 0.13         | 1.52                      | 0.62   | 0.10                | <b>13.83</b>         |
| 2035 | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 0.00                                   | -                                   |  | -                           | 1.91                      | 1.70     | 0.13         | 1.52                      | 0.62   | 0.10                | <b>13.83</b>         |
| 2036 | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 18.52                                  | -                                   |  | -                           | 1.91                      | 1.70     | 0.13         | 1.52                      | 0.62   | 0.10                | <b>32.34</b>         |
| 2037 | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 0.00                                   | 7.24                                | 2.25   | 1.27                        | 1.91                      | 1.70     | 0.13         | 1.52                      | 0.62   | 0.10                | <b>24.59</b>         |
| 2038 | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 0.00                                   | -                                   |  | -                           | 1.91                      | 1.70     | 0.13         | 1.52                      | 0.62   | 0.10                | <b>13.83</b>         |

| FY            | Routine Maintenance |                   |                        |                     |                   |                              | Periodic Maintenance                   |                                     |  |                             | Toll Plaza Operation cost | SPV Cost     | Survey Costs | Insurance & Audit charges | IE Fee       | Administrative Cost | Total Recurring cost |
|---------------|---------------------|-------------------|------------------------|---------------------|-------------------|------------------------------|--|-------------------------------------|--|-----------------------------|---------------------------|--------------|--------------|---------------------------|--------------|---------------------|----------------------|
|               | Routine Maintenance | R&R of Road items | Toll and HTMS AMC cost | Incident management | R&R of Structures | Electricity bill of lighting | Functional +Structural overlay MCW+S/R | Major Maintenance of Rigid Pavement | Replacement of Toll Hardware and software & HTMS at later date | Structure specified repairs |                           |              |              |                           |              |                     |                      |
| 2039          | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 0.00                                   | -                                   | -  | -                           | 1.91                      | 1.70         | 0.13         | 1.52                      | 0.62         | 0.10                | <b>13.83</b>         |
| 2040          | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 0.00                                   | -                                   | -  | -                           | 1.91                      | 1.70         | 0.13         | 1.52                      | 0.62         | 0.10                | <b>13.83</b>         |
| 2041          | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 0.00                                   | -                                   | -  | -                           | 1.91                      | 1.70         | 0.13         | 1.52                      | 0.62         | 0.10                | <b>13.83</b>         |
| 2042          | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 0.00                                   | -                                   | -  | -                           | 1.91                      | 1.70         | 0.13         | 1.52                      | 0.62         | 0.10                | <b>13.83</b>         |
| 2043          | 2.01                | 2.64              | 0.47                   | 1.52                | 0.29              | 0.92                         | 20.53                                  | -                                   | -  | -                           | 1.91                      | 1.70         | 0.13         | 1.52                      | 0.62         | 0.10                | <b>34.36</b>         |
| 2044          | 0.62                | 0.82              | 0.15                   | 0.47                | 0.09              | 0.28                         | 0.00                                   | 7.24                                | -  | 1.46                        | 0.59                      | 0.53         | 0.13         | 0.47                      | 0.19         | 0.10                | <b>13.15</b>         |
| <b>Total:</b> | <b>42.86</b>        | <b>56.15</b>      | <b>10.06</b>           | <b>32.37</b>        | <b>6.15</b>       | <b>19.54</b>                 | <b>57.57</b>                           | <b>21.73</b>                        | <b>8.19</b>  | <b>5.67</b>                 | <b>40.65</b>              | <b>36.18</b> | <b>2.86</b>  | <b>32.48</b>              | <b>13.28</b> | <b>2.20</b>         | <b>387.92</b>        |

Note:

1. Base Cost are arrived for FY2023
2. All the material rates are February 2022 Rates
3. All labour rates are taken from Central minimum wages (October'2021 cycle) and 2.5% escalation applied on the same to arrive FY2023 Rates
4. All the costs are without any Escalation.
5. All the Cost presented in the above table are excluding Head Office (HQ) Expenses

## 1.10 CONCLUSIONS

Foregoing discussions on various elements of project highway concludes the following:

1. The Project Corridor starts on the outskirts of Godhra town at Km 129.300 and traverses towards Madhya Pradesh Border and ends before the Gujarat/Madhya Pradesh Border Check post at Km 215.900. The Total Project Road length is 87.102 Km and the Project road is having four lane divided carriageway configuration.
2. The project corridor has rigid pavement in the entire length, with 7.0m wide carriageway flanked by 1.5m paved shoulder plus 1.5m to 2.0m earthen shoulder on each side except at approaches to grade separators and underpasses.
3. In general, the median width is 4.5m all along the project road except at median openings associated with storage lane (median width is 1.5m) and at some of the bridge locations and at underpass locations median width is varying between 4.5m to 12.5m
4. The Project Road has four major junctions and these are at Bypass termini points of Piploid, Limkheda and Dahod. Further, the project road has about 81 minor junctions along its length.
5. Altogether, the Project road has about Twenty-four (24) Bus shelters on Main Carriageway with Bus Bays and at remaining forty (40) locations it has only bus shelters.
6. The Project Road has six Truck lay byes, two each at km 134.400, km 157.800 & km 190.500. These truck lay byes have been provided with rigid Pavement and the condition appears to be good
7. The Project Road has one Toll Plaza at km 146.150. Rigid pavement exists in the toll plaza as well as in tapering portions. The condition of toll plaza appears to be good. There are three normal lanes and one extra wide lane in each direction. One more extra lane is observed for 2-wheeler & 3-wheeler on both sides
8. Originally the Pavement envisaged was Flexible for main carriageway; however, the Concessionaire changed the pavement type from flexible to Rigid; however, for small portion of about 7.5 km carriageway length is having flexible pavement.
9. The Project received LOA on 01.01.2010 and the agreement was signed on 25.02.2010.
10. Appointed date was declared on 01.03.2011 and the Project received First Provisional Certificate on 31.10.2013 for a length of 75.0% of project and the Commercial Operation started from 31.10.2013.
11. The Project received PCOD-2 on 25.09.2015 for a length of 98.12% of project, (except 1.635 Km approach of Km 171+300 ROB) and the Toll rates were revised for the PCOD-2 and the rates are effective from 30.09.2015.
12. Due to delay in Land acquisition at Dahod Kasba, Change of Scope of 4 ROBs and the waiver of maintenance charge issues by the Railway had delayed the project completion. The project was completed 100% and got Final Completion Certificate on 29.06.2016.

13. As per CA, the Concession Period for the project is 27 Years from appointment date, subject to extension as per Concession Agreement. Original Concession end date is 28.02.2038 However, IE has recommended for extension in concession period by 5.4 years based on traffic variation. Accordingly revised end date of concession i.e. 23.07.2043 has been considered for costing purpose.
14. The project road has good pavement condition except very little surface related distress. Predominantly few locations raveling, longitudinal and transverse cracks/ Full depth cracks are noticed at very few locations. At Km 181.800 in LHS direction, Panel repair work is going on, this is the one location where major distress observed in Rigid Pavement along the Project Road.
15. Roughness surveys along corridor indicates that entire Project length is having Roughness values less than 2200mm/Km.
16. Review of Pavement Design Report and As-built drawings indicates that the rigid pavement is design for 40 years design period and the adopted composition is 300mm PQC+150mm DLC+150mm GSB.
17. Test pit surveys indicated average PQC thickness of 297mm, average DLC thickness of 140mm and average thickness of granular layers is 165 mm over subgrade.
18. The subgrade quality of the corridor appears to be good with high CBR above 10% at most of locations.
19. Crack sealing and Epoxy patching has been seen at isolated locations indicating the routine maintenance works are taken care to avoid further cracking and raveling.
20. As of now there is no HTMS but as per Schedule 12.12.1 of IRC: SP: 84-2009 (referred in Annex-1 of D) of CA, HTMS shall be considered when PCU>40,000. Accordingly, the Concessionaire is required to provide HTMS once traffic on project road crosses 40,000 PCU.
21. As informed by the Concessionaire, the project road will reach 40,000 PCU in the year 2030/31 and accordingly the cost of HTMS is considered.
22. As per clause 12.7 of Concession Agreement, after 8<sup>th</sup> Anniversary from COD if Authority Constructs Service Road, the same shall be maintained by Concessionaire.
23. Overall, there are 21 number grade separated structures exist along the project Road. 2 numbers flyovers, 2 numbers Overpasses, 4 numbers Vehicular underpasses and 13 numbers Pedestrian Underpasses.
24. Overall, there are 22 Bridges exist along the project road. Six out of Twenty-two are Major bridges and remaining sixteen are Minor bridges.
25. All structures are in good condition expect few, wherever Minor distresses observed; presently Concessionaire carrying out rectification works for the same.
26. There is one toll Plaza along the project Road and all Project Facilities such Traffic aid post, medical aid post and Vehicle rescue posts are located near this Toll Plaza.
27. There are total six lay byes exist, three on each side and 24 number of Bus Bays with shelter and another 40 locations only bus shelter exists. Condition of all these is good.

28. Schedule K of CA species that Roughness values exceeds 2500 mm/km in a length of KM, needs to be corrected within 180 days. But since the pavement type is changed from Flexible to Rigid, subsequently the threshold roughness value is increased from 2500 mm/Km to 3000mm/Km
29. For Flexible Pavement Overlay thickness of 40mm BC is considered on Main carriageway in FY2029, FY2035, FY2043 and apart from this Micro Surfacing of total flexible pavement in Main Carriageway is considered in FY 2040 apart from the regular routine maintenance which is to be done on every year.
30. 25mm BC considered on Service Road Pavement in FY2029, FY2035, FY2043 apart from the regular routine maintenance which is to be done on every year.
31. For Rigid Pavement about 1% of panel repair/replacement and 1% of epoxy patching, 25% of pavement retexturing and 2 to 3 % replacement of joints at every 7<sup>th</sup> Year apart from the regular routine maintenance which is to be done on every year.
32. All the lands required from the Forest department has been acquired and the project has been completed and there is no issue pending regarding this
33. As per IE MPR, there is no Compensation disbursement pending against land acquisition.
34. Demolishing of unauthorized the Government Structures have been completed except Post Office at Saliya (Sant road) at Ch. 141+350, and it is understood that correspondences is being done between NHAI and Superintendent of Post Office, Panchmahal for demolishing this structure and shifting of Temple at Km 129+400 is in progress.