



0. EXECUTIVE SUMMARY

0.1 BACKGROUND

Public Works Department Government of Rajasthan, engaged in the up-gradation & widening of State Highways/ MDR's & Mining roads across the state, intends to come across the services of technically expert consultancy firms to prepare detailed feasibility report, detailed financial analysis & detailed traffic survey for development of roads including project design, planning and project preparation, surveys, devise suitable financing model and contract award structure for making the project viable under Private Sector Participation, bid management and preparation of tender documents, to perform detail engineering for the project including detailed cost estimates and land acquisition plans etc. Public Works Department, Government of Rajasthan intends to develop the roads. So, the above department invites offers from reputed firms to provide services for the above assignments for preparation of Detailed Feasibility Report including detailed financial analysis and detailed traffic survey of the following roads -

PACKAGE No. - 14				
Sr. No.	Road No.	Name of Road	District	Length (as per TOR) km
1	Highway-I	Uniara - Indergarh Road (SH-29)	Tonk/Bundi	25
2	Highway-II	Lakheri - Bijoliya Road (SH-29)	Bundi/Bhilwara	115
3	Highway-III	Sawai Madhopur to Palighat up to State Border Road (SH-34)	Sawai Madhopur	34
4	Highway-IV	Tonk - Nainwa - Keshoraipatan Road (SH-34)	Tonk/Bundi	113
5	Highway-V	Mines Roads of Mandalgarh	Bhilwara	51
a.)		Berisal to Sukhpura Road (Mining Road)		
b.)		Karangarh to Amadala Road (Mining Road)		
c.)		Khakharmala to Aasuna Road (Mining Road)		
d.)		Marewada to Bhanas Via Pandroo Road (Mining Road)		
e.)		Tilaswan to Salwatiya Road (Mining Road)		
6	Highway-VI	NH-12 - Laxmipura - Dora - Dabi - RanajiKaGuda Road	Bundi	50
7	Highway-VII	Bundi - Silor - Gararda - Bhopatpura Road (SH-29)	Bundi	48
8	Highway-VIII	MalarnaDungar to ChakBiloli Road	Sawai Madhopur	15
		Total		451
9	Additional Bypass	Sawai Madhopur Bypass (Kota Road to Lalsot Road)	Sawai Madhopur	15

In order to access the financial and technical feasibility, M/s L.N. Malviya Infra Project Pvt. Ltd. has been entrusted by Public Works Department, Government of Rajasthan for the task of carrying out the Detailed Feasibility Report for above said project sections.



0.2 Objectives

The objective of this consultancy is to undertake feasibility studies and prepare Final Feasibility Reports for all Highways comprising the Project for the purpose of firming up the Authority's requirements in respect of development and construction of the Project and Project Facilities and enabling the prospective bidders to assess the Authority's requirements in a clear and predictable manner with a view to ensuring:

- enhanced safety and level of service for the road users;
- superior operation and maintenance enabling enhanced operational efficiency of the Project;
- minimal adverse impact on the local population and road users due to road construction;
- minimal adverse impact on environment;
- minimal additional acquisition of land; and

0.2.1 Scope of Services

The scope of services for each of the Highways of the Project shall comprise:

- Traffic surveys and demand assessment
- Engineering surveys and investigations
- Location and layout of toll plazas
- Location and layout of truck lay byes
- Location and layout of bus bays and bus shelters
- Wayside amenities
- Safety
- Social impact assessment
- Environment impact assessment
- Preliminary Designs of road, bridges, structures, etc.
- Preparation of Land Plan Schedules and Utility Relocation Plans
- Preparation of indicative BOQ and rough Cost Estimates
- Preparation of Schedules A, B, C, D and H of the Concession Agreement.

0.3 PROJECT ALIGNMENT DESCRIPTION

The Project, **NH 12-Laxmipura-Dora-Dabi-Ranaji ka Gudha Road** starts from T-junction with NH-12 (Kota-Bundi Section) at Moheepura & terminates at 3-legged junction near Ranaji ka Gudha. The project road overlaps with NH-76 for 3.195 km and diverges to left from Dabi town.

The Project Road as described in the terms of References is 50 Km. Actual design length is 49.600 Km.

There are a number of junctions very important. T-junction with NH-12 at km 0+000 (Kota-Bundi Section) in Moheepura & Y-Junction with NH-76 (Kota-Chittorgarh Section) at km 36+370, & T-junction with NH-76 at Dabi.

The index map depicting the project road is presented in Fig. 0.1-

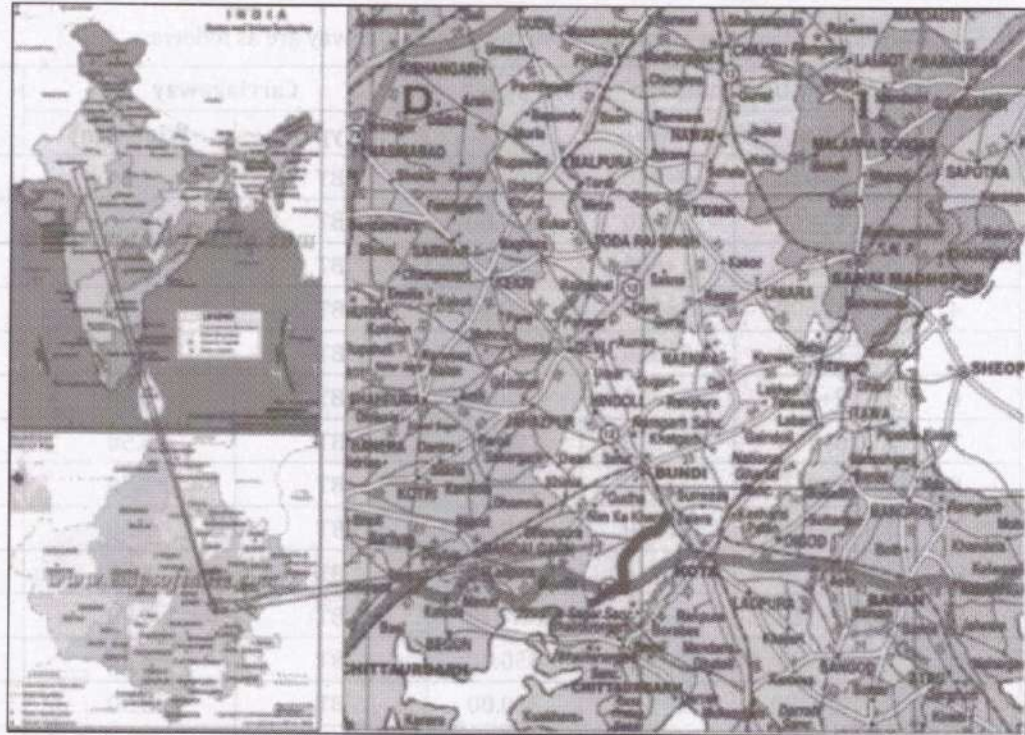


Figure 0.1 Index Map showing Project Road

The consultancy services for the same is to include design of best possible alignment and pavement composition, design of bridges, culverts and other structures in addition to analysis of costs, determining project feasibility, preparation of Land Acquisition Plan, if any, and obtaining of all requisite clearances.

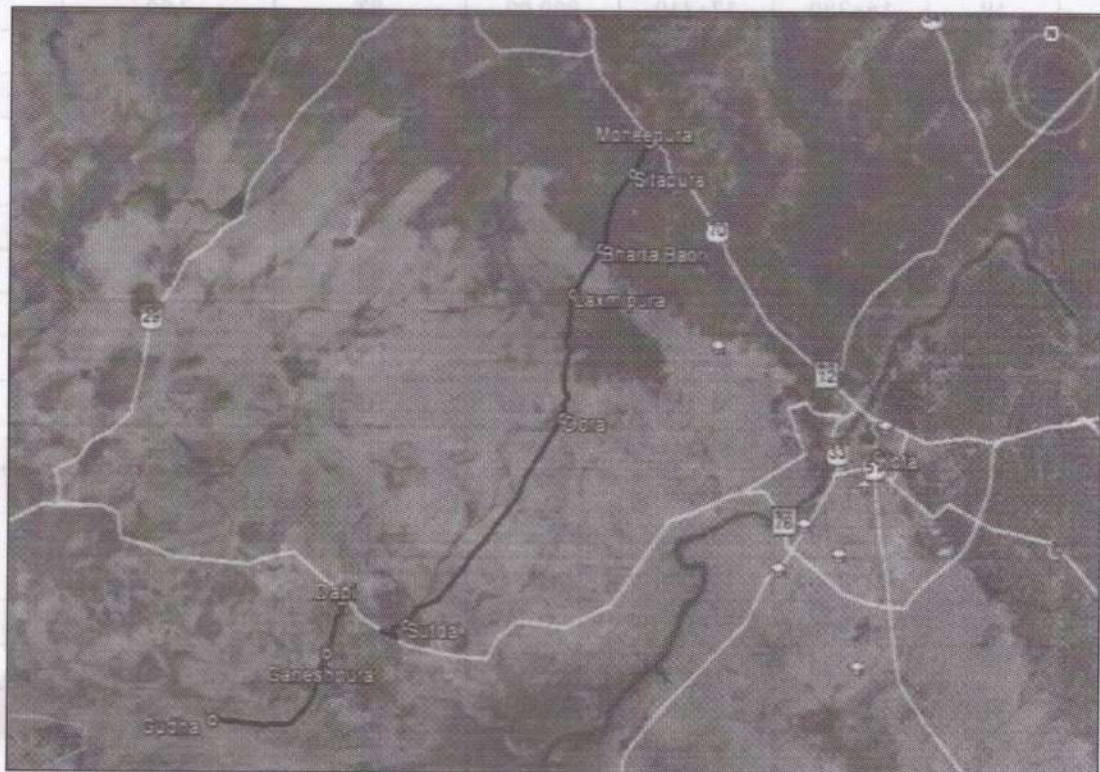


Figure 0.2:-Project Alignment of NH 12-Laxmipura-Dora-Dabi-Ranaji ka Gudha Road



The details of existing carriageway of the project highway are as follows:

S. No.	Existing Chainage		Length (m)	Carriageway		Width of Ex. shoulders (m)
	Km	Km		Type	Width (m)	
1	0+000	0+950	950.00	BT	5.50	1.5-2.0
2	0+950	1+320	370.00	BT	5.50	1.5-2.0
3	1+320	1+600	280.00	BT	5.50	1.5-2.0
4	1+600	1+950	350.00	BT	5.50	1.5-2.0
5	1+950	2+450	500.00	BT	5.50	1.5-2.0
6	2+450	6+750	4300.00	BT	5.50	1.5-2.0
7	6+750	7+010	260.00	BT	5.50	1.5-2.0
8	7+010	7+310	300.00	BT	5.50	2.00
9	7+310	7+710	400.00	BT	5.50	1.5-2.0
10	7+710	8+110	400.00	BT	5.50	1.5-2.0
11	8+110	9+980	1870.00	BT	3.00	1.2-1.5
12	9+980	10+430	450.00	BT	3.00	1.2-1.5
13	10+430	10+730	300.00	BT	5.50	
14	10+730	13+730	3000.00	BT	3.00	1.2-1.5
15	13+730	14+230	500.00	BT	3.00	1.2-1.5
16	14+230	15+810	1580.00	BT	3.00	1.2-1.5
17	15+810	16+330	520.00	BT	3.00	1.2-1.5
18	16+330	17+210	880.00	BT	3.00	1.2-1.5
19	17+210	17+500	290.00	BT	3.00	1.2-1.5
20	17+500	17+630	130.00	BT	5.50	
21	17+630	17+890	260.00	BT	3.00	1.2-1.5
22	17+890	22+440	4550.00	BT	3.00	1.2-1.5
23	22+440	23+840	1400.00	BT	3.00	1.2-1.5
24	23+840	26+240	2400.00	BT	3.00	1.2-1.5
25	26+240	30+410	4170.00	BT	3.00	1.2-1.5
26	30+410	31+040	630.00	BT	3.00	1.2-1.5
27	31+040	36+145	5105.00	BT	3.00	1.2-1.5
28	39+340	40+290	950.00	CC	7.00	1.5-20
29	40+290	40+640	350.00	BT	3.00	1.2-1.5
30	40+640	40+890	250.00	BT	5.50	1.5-2.0
31	40+890	42+500	1610.00	BT	5.50	1.5-2.0
32	42+500	42+900	400.00	BT	5.50	1.5-2.0
33	42+900	47+330	4430.00	BT	5.50	1.5-2
34	47+330	47+500	170.00	BT	5.50	1.5-2
35	47+500	52+200	4700.00	BT	5.50	1.5-2
36	52+200	52+600	400.00	BT	5.50	1.5-2.0
Total Length			49405.00			



O.4 CHAINAGE REFERENCES (EXISTING v/s DESIGN)

Table 0.1:- Chainage References (NH 12-Laxmipura-Dora-Dabi-Ranaji ka Gudha Road)

S No.	Existing Chainage	Design Chainage	Remark
1	0+000	0+000	Start Point
2	1+000	1+000	
3	2+000	2+000	
4	3+000	3+000	
5	4+000	4+000	
6	5+000	5+000	
7	6+000	6+000	
8	7+000	6+996	
9	8+000	7+995	
10	9+000	8+983	
11	10+000	9+982	
12	11+000	10+977	
13	12+000	11+977	
14	13+000	12+975	
15	14+000	13+973	
16	15+000	14+972	
17	16+000	15+969	
18	17+000	16+966	
19	18+000	17+965	
20	19+000	18+964	
21	20+000	19+964	
22	21+000	20+964	
23	22+000	21+964	
24	23+000	22+963	
25	24+000	23+963	
26	25+000	24+963	
27	26+000	25+963	
28	27+000	26+963	
29	28+000	27+963	
30	29+000	28+963	
31	30+000	29+962	
32	31+000	30+961	
33	32+000	31+961	
34	33+000	32+961	
35	34+000	33+961	
36	35+000	34+946	



S No.	Existing Chainage	Design Chainage	Remark
37 (a)	36+000	35+943	Service Road of NH-76(Right side)
37 (b)	36+000	36+208	Service Road of NH-76(Left side)
38	36+145	36+350	
3.195 km Overlap with NH-76 (Excluded)			
39	39+340	36+350	
40	40+000	37+014	
41	41+000	38+008	
42	42+000	39+008	
43	43+000	40+007	
44	44+000	41+005	
45	45+000	42+005	
46	46+000	43+003	
47	47+000	44+003	
48	48+000	45+002	
49	49+000	46+002	
50	50+000	47+002	
51	51+000	48+002	
52	52+000	49+002	
53	52+600	49+600	End Point

0.5 RIGHT OF WAY [ROW]

The available ROW is found to be 8m-20m varying at different locations. Existing Road pavement width varies from 3.0m to 7.0m. At some locations, it becomes 25-30 m. Minimum available RoW has been shown in table below :-

S. No.	Existing Chainage		Length (m)	Available ROW (m)
	From	To		
1.	0+000	0+950	950	12
2.	0+950	1+320	370	20
3.	1+320	1+600	280	20
4.	1+600	1+950	350	20
5.	1+950	2+450	500	20
6.	2+450	6+754	4304	18
7.	6+754	7+004	250	10
8.	7+004	7+305	301	10
9.	7+305	8+107	802	16
10.	8+107	9+968	1861	16
11.	9+968	10+422	454	12
12.	10+422	10+723	301	12
13.	10+723	17+214	6491	16

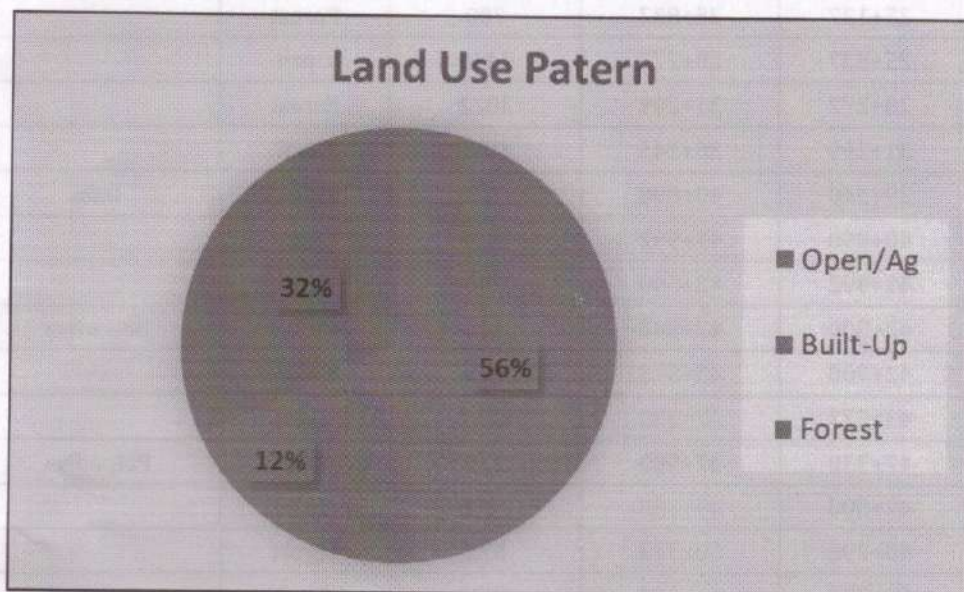


S. No.	Existing Chainage		Length (m)	Available ROW (m)
	From	To		
14.	17+214	17+484	270	12
15.	17+484	17+635	151	12
16.	17+635	17+885	250	12
17.	17+885	31+000	13115	16
18.	31+000	36+145	5145	8-10
3.195 km portion overlapping with NH-76, then take left turn from Dabi				
19.	39340	40290	950	12
20.	40290	40643	353	12
21.	40643	40893	250	12
22.	40893	42493	1600	16
23.	42493	42893	400	12
24.	42893	47327	4434	16
25.	47327	47498	171	12
26.	47498	52600	5102	16

0.6 ABUTTING LAND USE PATTERN

The existing alignment is a link between Moheepura, Alkodiya, Sitapura, Bharta Baodi, Laxmipura, Dora, Dabi, Bewadiya, Patpadiya & Ranaji ka Gudha. The pattern on both side of road is agricultural, open land/mining & built-up. The details of land use pattern along the project road are-

Open/Barren/Forest	-	56%
Built-up	-	12%
Forest	-	32%



The details of land use pattern for project road is as under-



Table 0.2: - Existing Land Use Pattern (NH 12-Laxmipura-Dora-Dabi-Ranaji ka Gudha Road)

S. No.	Existing Chainage		Length (m)	Land Use	Name of Village (if Any)	Remarks
	From	To				
1	0+000	0+950	950	Builtup	Moheepura	
2	0+950	1+320	370	Open		
3	1+320	1+600	280	Builtup	Alkodiya	
4	1+600	1+950	350	Open		
5	1+950	2+450	500	Builtup	Sitapura	
6	2+450	6+750	4300	Open		
7	6+750	7+310	560	Builtup	Bharta Baodi	
8	7+310	7+975	665	Open		
9	7+975	9+448	1473	Forest		
10	9+448	9+980	532	Open		
11	9+980	10+730	750	Builtup	Laxmipura	
12	10+730	14+087	3357	Open		
13	14+087	16+900	2813	Forest		
14	16+900	17+210	310	Open		
15	17+210	17+890	680	Builtup	Dora	
16	17+890	18+850	960	Open		
17	18+850	22+436	3586	Forest		
18	22+436	23+136	700	Forest		
19	23+136	24+337	1201	Forest		
20	24+337	25+137	800	Open		
21	25+137	25+837	700	Forest		
22	25+837	28+277	2440	Open		
23	28+277	31+299	3022	Forest		
24	31+299	36+145	4846	Open		
25	39+340	40+890	1550	Builtup	Dabi	
26	40+890	41+992	1102	Forest		
27	41+992	42+500	508	Open		
28	42+500	42+900	400	Builtup	Bewadiya	
30	42+900	43+573	673	Forest		
31	43+573	47+330	3757	Open		
32	47+330	47+500	170	Builtup	Patpadiya	
33	47+500	49+798	2298	Open		
34	49+798	50+373	575	Forest		
35	50+373	52+600	2227	Open		

0.7 TERRAIN

The terrain along this road is plane/ rolling.





0.8 FOREST

Forest land is found in 15.845 Km length along the road.

Table 0.3- Details of Forest

S. No	Name of the Forest Area	Existing Chainage (km)		Side	Length (km)
		From	To	(Left, Right, both)	
1	Bharta Baodi	7+975	9+448	Both Side	1473
2	Kachalia	14+087	16+900	Both Side	2813
3	Kachalia	18+850	22+436	Both Side	3586
4	Amlat Anarkhoh	22+436	23+136	Both Side	700
5	Kachalia	23+136	24+337	Both Side	1201
6	Kachalia	25+137	25+837	Both Side	700
7	Dhaneshwar	28+277	31+299	Both Side	3022
8	Dasalia	40+890	41+992	Both Side	1102
9	Dasalia	42+900	43+573	Both Side	673
10	Lambakhoh	49+798	50+373	Both Side	575
Total Length					15845

*(Chainages based on kmz files available on Rajasthan Forest Department website www.forest.rajasthan.gov.in)

0.9 ARCHAEOLOGICAL/ANCIENT STRUCTURES

No such type of structure found along the road.

0.10 TRAFFIC

In this chapter, the report is concerned about NH 12-Laxmipura-Dora-Dabi-Ranaji ka Gudha Road. Traffic Survey Locations and Schedules were, as given below: -

Table 0.4 - Different Traffic surveys and their dates of commencement

Location	Date of I Traffic Survey		Date of II Traffic Survey		Duration
	From	To	From	To	
Classified Traffic Volume Count					
0+500	21/11/2014	27/11/2014	16/03/2015	22/03/2015	7 Days/24 Hours
19+000	21/11/2014	27/11/2014	16/03/2015	22/03/2015	7 Days/24 Hours
37+400	21/11/2014	27/11/2014	16/03/2015	22/03/2015	7 Days/24 Hours
Axle load Survey					
0+500	24/11/2014	25/11/2014	17/03/2015	18/03/2015	24 Hours
37+400	24/11/2014	25/11/2014	17/03/2015	18/03/2015	24 Hours

The following ADT and PCU were observed on project road -



Table 0.5- Total ADT & PCU (Survey I & II)

Vehicle Category	Average of All Locations	
	ADT	PCU
Two Wheeler	1451	726
Three Wheeler	10	5
Car/Jeep	202	202
Mini Bus	4	6
Bus	6	18
Mini LCV	45	67
LCV	29	44
2 Axle	55	166
3 Axle	7	21
M Axle	2	10
Tractors	56	83
Tractor with Trailer	115	516
Cycle	34	17
Cycle Rickshaw	1	2
Animal Drawn	0	0
Horse Drawn	0	1
Hand Cart	2	5
Total	2019	1889

The projected traffic growth rate is taken as 5%.

Table 0.6-Projected traffic in different years

Year	ADT	PCU
2015 (Present Year)	2019	1889
2018 (Base Year)	2337	2187
2023	2983	2791
2028	3807	3562
2033	4859	4546
2038	6201	5802
2043	7914	7405

As per the projected traffic, the values of PCU are less due to discontinuity of Project road and poor pavement, after development of road, the traffic intensity will increase because of diverted traffic from adjacent roads. So the project road is proposed to be upgraded.

0.11 PAVEMENT COMPOSITIONS

The existing crust of project alignment is WBM and BT layer. The crust has been dismantled in most of the stretches.

The traffic used in design is in terms of the cumulative number of standard axles to be carried during the



design life of the road.

Pavement thickness required for the designed MSA and as per IRC guidelines is shown in following table-

Table - 0.7

Sr. No.	Section	Calculated MSA (Max.)	Adopted MSA	CBR (%)	Pavement Composition (mm)			
					BC	DBM	WMM	GSB
1	NH 12- Laxmipura- Dora- Dabi- Ranaji ka Gudha	11.98	11.98	7%	40	70	250	230

0.12 PROPOSED BYPASSES/REALIGNMENT

There is not any Bypass or Realignment Proposed for this road.

Table 0.8- Details of proposed Bypasses

S. No.	City or Town of Bypass	Length (km)		Proposed ROW (m)	Start chainage(m)		End chainage(m)	
		Survey	Design		Existing	Design	Existing	Design
Nil								

Estimated Cost of Proposed Bypasses

Name of Bypass	Length (km)	Cost of civil works (INR)	Utility shifting Cost	Land Acquisition Cost	Total Project Cost
Nil					

0.13 ROAD JUNCTIONS/INTERSECTIONS

There are 3 major junctions of primary importance and 43 minor junctions of secondary importance. Their details are-

Table 0.9- Details of Existing Major and Minor Junctions

Sr. No.	Existing Chainage	Design Chainage	Type	Side		Type of Road Category of Cross Road (NH,SH,MDR,ODR,VR)
				LHS	RHS	
1	0+000	0+000	T	Kota	Bundi	NH
2	0+680	0+680	T	In Village		VR
3	1+350	1+350	T		Gumanpura	VR
4	1+665	1+665	T	In Village		VR
5	2+530	2+530	X	Khurar	Gumanpura	VR
6	2+650	2+650	Y		Barundhan	VR
7	6+694	6+690	T	In Village		VR
8	7+104	7+100	X	Motuka	Bhanwariya	VR
9	7+160	7+155	T		In Village	VR
10	10+215	10+196	T		In Village	VR
11	10+410	10+390	T	Bardha		VR
12	10+588	10+565	T	In Village		VR
13	10+693	10+670	Y		Chanda ka Talab	VR
14	11+800	11+777	X		Amathoon	VR



Sr. No.	Existing Chainage	Design Chainage	Type	Side		Type of Road Category of Cross Road (NH,SH,MDR,ODR,VR)
				LHS	RHS	
15	13+218	13+192	T	In Village		VR
16	13+738	13+710	T	Rampuriya		VR
17	17+465	17+431	T		Dora	VR
18	17+655	17+620	T	Jaloti		VR
19	20+285	20+250	T		Kachalia	VR
20	22+156	22+120	T		Kachalia	VR
21	25+037	25+000	T	In Village		VR
22	26+212	26+175	T	Bijari		VR
23	26+837	26+800	Y		Thari	VR
24	32+114	32+075	Y		Thari	VR
25	33+469	33+430	Y	Sootra		VR
26	34+199	34+160	T		Sootra	VR
27	34+915	34+870	T	NH-76		VR
28	35+853	35+800	T		RHS	Linking service Road NH-76
29	36+145	36+350	T	Chittorgarh	Kota	Merging with NH-76
30	39+340	36+350	T	Kota	Chittorgarh	Diverging from NH-76(in Dabi)
31	39+422	36+436	T	Dabi		VR
32	39+528	36+542	T		Dabi	VR
33	39+738	36+752	T	Dabi		VR
34	39+759	36+773	T		Dabi	VR
35	40+013	37+027	T	Dabi		VR
36	40+069	37+083	T		Dabi	VR
37	40+272	37+280	Y	Dabi		VR
38	40+660	37+668	T		Beodia	
39	41+572	38+580	T		Budhpura	
40	42+681	39+688	T	Chant Ka Khera		VR
41	42+698	39+705	T		In Village	
42	45+075	42+080	T		Lamba Khoh	VR
43	45+130	42+135	T	Rajpura		VR
44	47+331	44+334	T		Lambha Khoh	VR
45	50+156	47+158	T		Peepalda	VR
46	52+600	49+600	T		Gudha	VR

0.14 ROAD SIDE DRAINS

Covered RCC drains are provided in village portions, wherever required.

In case of rigid pavement in built-up areas, Covered RCC drains should be provided near cement concrete carriageway. (Refer TCS V & VI)

Open RCC Drains have been proposed near Selected Mining Areas.(Refer TCS III)

Details and dimensions are given in TCS of drain attached after TCS for widening scheme of roads. Chainage wise details of RCC drain is given below-





Table - 0.10 Locations of Covered/Open RCC Drains

S. No.	Chainage		Length	Village Name	Remarks, if any
	From	To			
1	0+000	0+950	950.0	Moheepura	
2	1+320	1+600	280.0	Alkodiya	
3	1+950	2+450	500.0	Sitapura	
4	6+750	7+000	250.0	Bharta Baodi	
5	7+000	7+300	300.0	Bharta Baodi	
6	9+950	10+400	450.0	Laxmipura	
7	10+400	10+700	300.0	Laxmipura	
8	17+180	17+450	270.0	Dora	
9	17+450	17+600	150.0	Dora	
10	17+600	17+850	250.0	Dora	
11	31+000	36+350	5350.0		Drain without cover
12	37+300	37+650	350.0	Dabi	
13	37+650	37+900	250.0	Dabi	
14	39+500	39+900	400.0	Bewadiya	
15	44+330	44+500	170.0	Patpadiya	
Total			10.220		

0.15 SUBMERGENCE

There are 5 Vented Causeways & 4 Flush Causeways (Submersible Structures) along the road. 3 Submersible minor bridges have also been found on the project road.

0.16 CROSS DRAINAGE WORKS

Bridges

There are 8 existing minor bridges in the project road. 5 Minor Bridges are proposed for reconstruction & 3 minor bridges have been retained.

Culverts

There are total 75 culverts/Pipes. 6 of the existing culverts are proposed for widening, 57 are proposed for reconstruction, 4 culverts have been retained and 8 Laid pipe or Stone Slabs along the road have been converted into culverts & proposed as new construction.

Table 0.11- Details of culverts and bridges

Sr. No.	Details of Existing Structure/ Culvert				Details of Proposed Structure		
	Ex. Chainage	Design Chainage	Type of Structure	Span Arrangement	Proposal (widening / Reconstruction/ Retain)	Type of structure	Span Arrangement
1	0+950	0+950	Slab	1X3.8	Reconstruction	Slab	1x4m
2	1+870	1+870	Slab	1X2.9	Reconstruction	Slab	1x3m
3	2+510	2+510	Slab	1X2.9	Reconstruction	Slab	1x3m
4	2+530	2+530	HPC	1X600	Reconstruction	HPC	1x1200
5	3+040	3+040	Slab	1X3	Reconstruction	Slab	1x3m





Sr. No.	Details of Existing Structure/ Culvert				Details of Proposed Structure		
	Ex. Chainage	Design Chainage	Type of Structure	Span Arrangement	Proposal (widening / Reconstruction/ Retain)	Type of structure	Span Arrangement
6	3+600	3+600	HPC	1X600	Reconstruction	Slab	1x3m
7	3+865	3+865	MNB	1X8.2	Retain		
8	4+230	4+230	HPC	1X300	Reconstruction	HPC	1x1200
9	4+485	4+485	Pipe	1X300	New	HPC	1x1200
10	4+720	4+720	HPC	1X300	Reconstruction	HPC	1x1200
11	5+000	5+000	HPC	1X300	Reconstruction	HPC	1x1200
12	5+365	5+365	HPC	2X1000	Widening		
13	6+300	6+300	Pipe	1X600	New	HPC	1x1200
14	6+700	6+700	HPC	1X900	Reconstruction	HPC	1x1200
15	7+110	7+110	MNB	5X3	Retain		
16	7+170	7+170	HPC	2X300	Reconstruction	HPC	1x1200
17	7+735	7+735	HPC	1X450	Reconstruction	HPC	1x1200
18	8+410	8+415	Slab	1X3	Reconstruction	Slab	1x3m
19	8+630	8+625	FCW	-	Reconstruction	HPC	1x1200
20	9+010	9+000	VCW	3X1000	Reconstruction	Slab	1x4m
21	10+085	10+070	HPC	1X600	Reconstruction	HPC	1x1200
22	10+880	10+860	VCW	7X600	Reconstruction	Slab	1x6m
23	12+750	12+730	VCW	5X600	Reconstruction	MNB	2x6m
24	12+800	12+765	HPC	1X600			
25	13+550	13+520	MNB	7X3	Reconstruction	MNB	4X10m
26	15+200	15+160	HPC	1X600	Reconstruction	HPC	1x1200
27	15+255	15+230	HPC	1X600	Reconstruction	HPC	1x1200
28	15+860	15+825	FCW	-	Reconstruction	HPC	1x1200
29	15+920	15+890	HPC	1X600	Reconstruction	HPC	1x1200
30	16+000	15+970	HPC	2X600	Reconstruction	HPC	2x1200
31	16+150	16+115	MNB (Slab+HPC)	(5X3)+(2X1000)	Reconstruction	MNB	4x10m
32	16+300	16+370	HPC	1X350	Reconstruction	HPC	1x1200
33	16+980	16+945	VCW	2X300	Reconstruction	Slab	1x6m
34	17+255	17+225	Pipe	1X150	New	HPC	1x1200
35	17+280	17+245	Pipe	1X350	New	HPC	1x1200
36	19+060	19+060	HPC	4X1000	Reconstruction	Slab	1x4m
37	20+100	20+065	HPC	2X600	Reconstruction	HPC	2x1200
38	20+335	20+300	FCW	-	Reconstruction	HPC	2x1200
39	21+020	20+990	HPC	1X600	Reconstruction	HPC	1x1200
40	21+500	21+465	HPC	1X600	Reconstruction	HPC	1x1200
41	22+500	22+465	HPC	3X900+1X600	Reconstruction	Slab	2x3m
42	23+000	22+965	HPC	2X600	Reconstruction	HPC	2x1200
43	23+320	23+285	Slab	1X1	Retained		
44	23+750	23+710	HPC	1X600	Reconstruction	HPC	1x1200



Sr. No.	Details of Existing Structure/ Culvert				Details of Proposed Structure		
	Ex. Chainage	Design Chainage	Type of Structure	Span Arrangement	Proposal (widening / Reconstruction/ Retain)	Type of structure	Span Arrangement
45	24+450	24+420	Slab	1X1	Retained		
46	24+665	24+630	HPC	2X600+2X1000	Reconstruction	HPC	4x1200
47	27+450	27+410	HPC	5X900	Widening		
48	29+080	29+045	HPC	1X1000	Widening		
49	30+050	29+115	HPC	3X900	Widening		
50	30+190	29+255	HPC	1X900	Reconstruction	HPC	1x1200
51	30+435	29+500	HPC	1X1000	Widening	HPC	1X1000
52	31+010	30+085	HPC	1X900	Widening	HPC	1X900
53	30+665	30+630	HPC	1X600	Reconstruction	HPC	1x1200
54	31+645	30+700	HPC	1X600	Reconstruction	HPC	1x1200
55	31+745	30+805	HPC	2X600	Reconstruction	HPC	2x1200
56	31+860	30+925	HPC	1X600	Reconstruction	HPC	1x1200
57	32+280	31+345	HPC	1X600	Reconstruction	HPC	1x1200
58	32+200	32+165	Stone Slab	1X1.5	New	Slab	1x2m
59	32+450	32+415	Stone Slab	1X1	New	Slab	1x2m
60	32+650	32+615	Stone Slab	1X1 chocked	New	Slab	1x2m
61	34+740	34+700	HPC	3X600	Reconstruction	Slab	1x2m
62	35+075	35+025	MNB	3X4	Reconstruction	MNB	2x7m
63	35+435	35+390	MNB	2X3.2	Reconstruction	MNB	2x4m
64	35+615	35+565	Slab	2X3	Reconstruction	Slab	2x3m
65	40+445	37+455	MNB	2X5	Retain	MNB	2x5m
66	40+500	37+500	HPC	1X1200	Reconstruction	HPC	1x1200
67	40+920	37+920	Slab	1X0.8	Reconstruction	HPC	1x1200
68	41+100	38+110	Slab	1X2	Reconstruction	Slab	1x2m
69	41+500	38+500	HPC	Chocked	Reconstruction	HPC	1x1200
70	41+615	38+620	HPC	1X600	Reconstruction	HPC	1x1200
71	42+200	39+215	VCW	5X900	Reconstruction	Slab	1x6m
72	43+055	40+070	HPC	2X600	Reconstruction	HPC	2x1200
73	44+700	41+700	MNB	7X8	Reconstruction	MJB	9x10m
74	48+230	45+235	HPC	3X1000	Reconstruction	HPC	3x1200
75	48+500	45+500	HPC	1X600	Reconstruction	HPC	1x1200
76	49+770	46+775	HPC	2X600	Reconstruction	HPC	2x1200
77	49+920	46+925	HPC	2X1000	Reconstruction	HPC	2x1200
78	50+620	47+625	HPC	1X1000	Retained		
79	50+855	47+865	HPC	1X1000	Retained		
80	50+960	47+965	Pipe	2X600	New	HPC	1x1200
81	51+650	48+655	HPC	2X1000	Reconstruction	Slab	1x2m
82	51+690	48+685	HPC	2X1200	Reconstruction	Slab	1x2m
83	52+475	49+480	FCW	-	Reconstruction	HPC	2x1200



0.17 RAILWAY TRACKS / CROSSINGS

There is not any railway track or crossing along the road.

0.18 TOLL PLAZAS

There is proposal of toll plaza on the project road at 2 locations. The proposed Chainages are km 21+050 & km 40+500.

0.19 ROADWAY FACILITIES

(a) Way Side Amenities

There is not any proposal for way side amenities.

(b) Truck/Bus Lay Bys

Truck & bus lay byes are not provided. Bus shelters are proposed near villages. There are 10 villages along the road hence 20(2 x 10) bus shelters are proposed along the project road. Their details are given below-

Table 0.12-Locations of proposed Bus Shelters

S. No.	Location	Side	Village Name	Remarks, if any
1	0+000	LHS	Moheepura	
2	0+950	RHS		
3	1+320	LHS	Alkodiya	
4	1+600	RHS		
5	1+950	LHS	Sitapura	
6	2+450	RHS		
7	6+750	LHS	Bharta Baodi	
8	7+300	RHS		
9	9+950	LHS	Laxmipura	
10	10+700	RHS		
11	17+180	LHS	Dabi	
12	17+850	RHS		
13	36+350	LHS	Dabi	
14	37+900	RHS		
15	39+500	LHS	Bewadiya	
16	39+900	RHS		
17	44+330	LHS	Patpadiya	
18	44+500	RHS		
19	49+200	LHS	Gudha	
20	49+600	RHS		

0.20 RECOMMENDATIONS FOR CRUST

Detailed study has been performed for finalizing crust for the project road. As some sections of the road pass through mining area, CC Pavement has been proposed in selected sections. Also built-up locations have been provided with CC Pavement & Covered RCC Drain.

Depending upon detailed design for sections, the following lane configuration & pavement composition is proposed for Project Road.



Table 0.14 Pavement Composition for Rigid Pavement.

Sr. No	From	To	Length	Width of Proposed C/w	Ref C/s	Pavement Composition (mm)		
						PQC	DLC	GSB
1.	0+000	0+950	950.00	7.0 m	TCS VI	300	150	150
2.	1+320	1+600	280.00	7.0 m	TCS VI	300	150	150
3.	1+950	2+450	500.00	7.0 m	TCS VI	300	150	150
4.	6+750	7+000	250.00	7.0 m	TCS VI	300	150	150
5.	7+000	7+300	300.00	7.0 m	TCS VI	300	150	150
6.	9+950	10+400	450.00	7.0 m	TCS V	300	150	150
7.	10+400	10+700	300.00	7.0 m	TCS VI	300	150	150
8.	17+180	17+450	270.00	7.0 m	TCS V	300	150	150
9.	17+450	17+600	150.00	7.0 m	TCS VI	300	150	150
10.	17+600	17+850	250.00	7.0 m	TCS V	300	150	150
11.	31+000	36+350	5350.00	5.5 m	TCS III	300	150	150
12.	37+300	37+650	350.00	7.0 m	TCS V	300	150	150
13.	37+650	37+900	250.00	7.0 m	TCS VI	300	150	150
14.	37+900	39+500	1600.00	5.5 m	TCS IV	300	150	150
15.	39+500	39+900	400.00	7.0 m	TCS VI	300	150	150
16.	39+900	44+330	4430.00	5.5 m	TCS IV	300	150	150
17.	44+330	44+500	170.00	7.0 m	TCS VI	300	150	150
18.	44+500	49+200	4700.00	5.5 m	TCS IV	300	150	150
19.	49+200	49+600	400.00	5.5 m	TCS IV	300	150	150
Total Length			21350					

Table 0.15 Pavement Composition for Flexible Pavement

Sr. No	From	To	Length	Width of Proposed C/w	Ref C/s	Pavement Composition (mm)			
						BC	DBM	WMM	GSB
1.	0+950	1+320	370.00	5.5 m	TCS I	40	70	250	230
2.	1+600	1+950	350.00	5.5 m	TCS I	40	70	250	230
3.	2+450	6+750	4300.00	5.5 m	TCS I	40	70	250	230
4.	7+300	7+700	400.00	5.5 m	TCS I	40	70	250	230
5.	7+700	8+100	400.00	5.5 m	TCS I	40	70	250	230
6.	8+100	9+950	1850.00	5.5 m	TCS II	40	70	250	230
7.	10+700	13+700	3000.00	5.5 m	TCS II	40	70	250	230
8.	13+700	14+200	500.00	5.5 m	TCS II	40	70	250	230
9.	14+200	15+780	1580.00	5.5 m	TCS II	40	70	250	230
10.	15+780	16+300	520.00	5.5 m	TCS II	40	70	250	230
11.	16+300	17+180	880.00	5.5 m	TCS II	40	70	250	230
12.	17+850	22+400	4550.00	5.5 m	TCS II	40	70	250	230
13.	22+400	23+800	1400.00	5.5 m	TCS II	40	70	250	230
14.	23+800	26+200	2400.00	5.5 m	TCS II	40	70	250	230
15.	26+200	30+380	4180.00	5.5 m	TCS II	40	70	250	230
16.	30+380	31+000	620.00	5.5 m	TCS II	40	70	250	230
Total			27300						



Table 0.16 Overlay Requirement for Strengthening

Sr. No.	Chainage		Length (m)	Type of Pavement	Lane	Ref C/s	Composition (mm)	
	From	To					BC	DBM
Nil								

On the following locations **(In Dabi)** existing rigid pavement is in good condition, so it is retained:

S. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Width of C/w	Remarks
	km	km		km	km			
1	39+340	40+290	950.00	36+350	37+300	950.00	7.0 m	Existing Rigid Pavement Retained
	Total Length		0.950 km	Total Length		0.950 km		

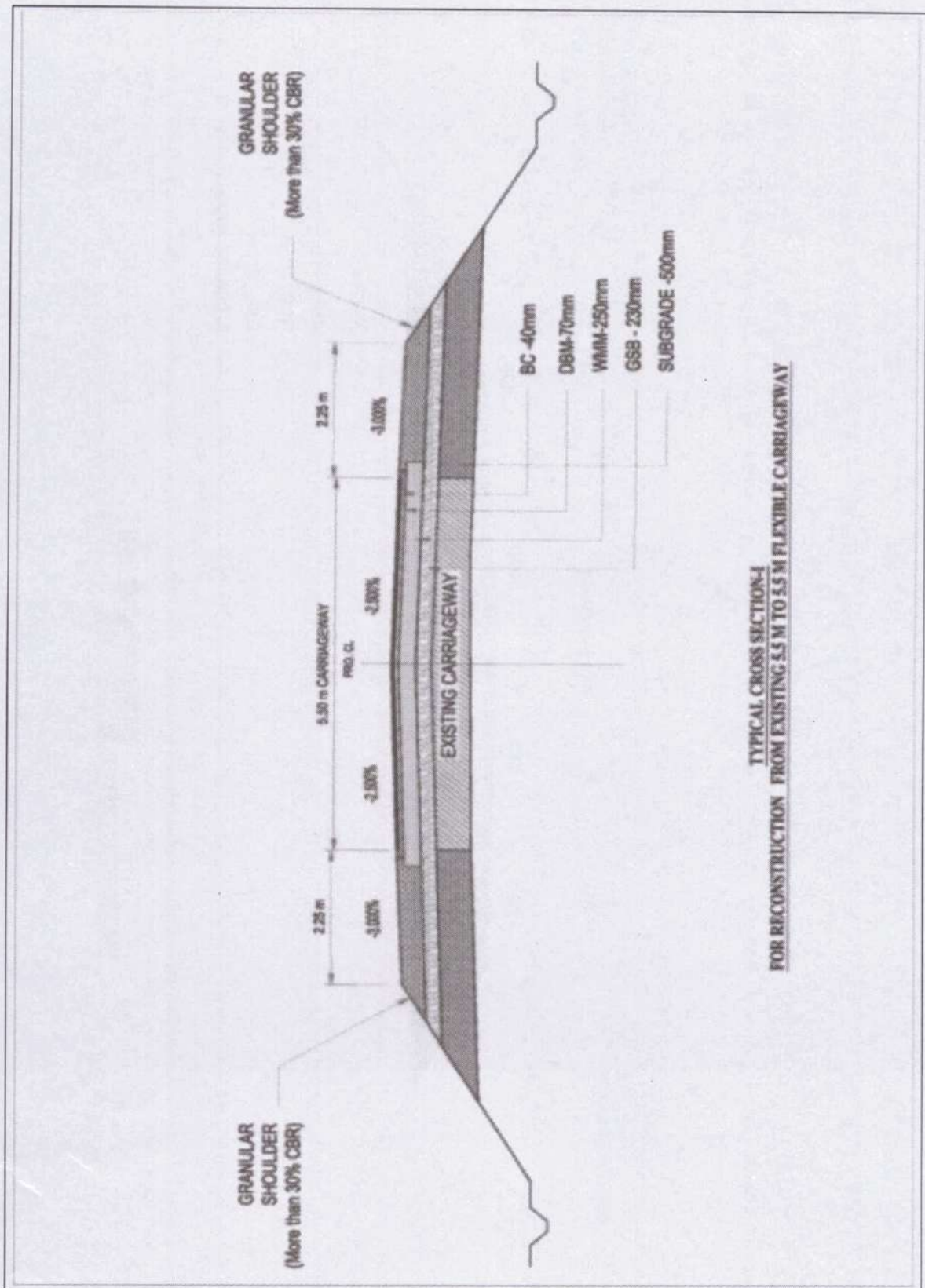
0.21 RECOMMENDATION ON VIABILITY (VGF):

The project road was found to be Non-Viable on the VGF mode. Hence it is proposed for reconstruction on Annuity mode or funding by other agencies for the development work.



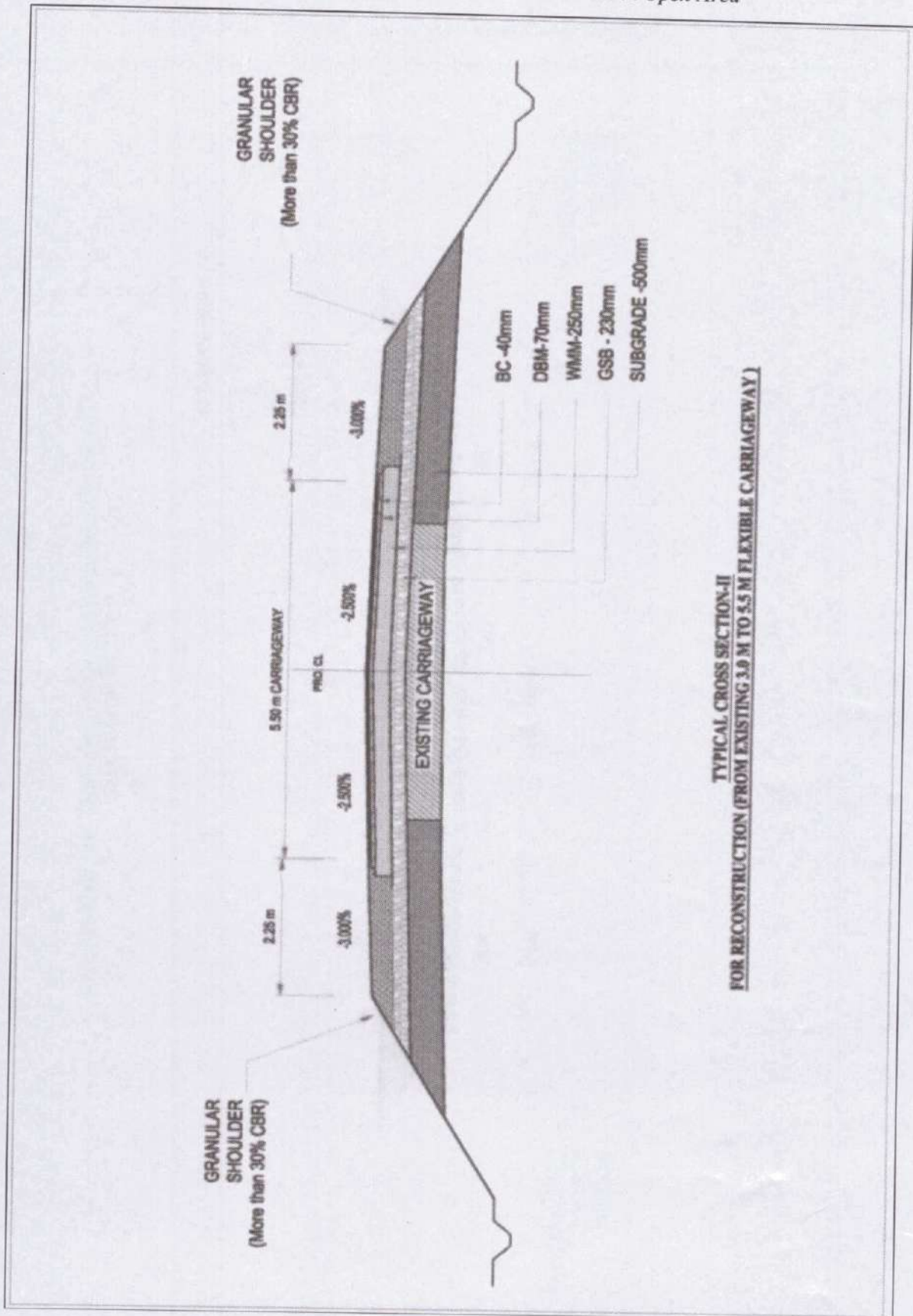
0.22 TYPICAL CROSS SECTION AND WIDENING SCHEME

TCS I: Intermediate Lane Flexible Pavement in Open Area



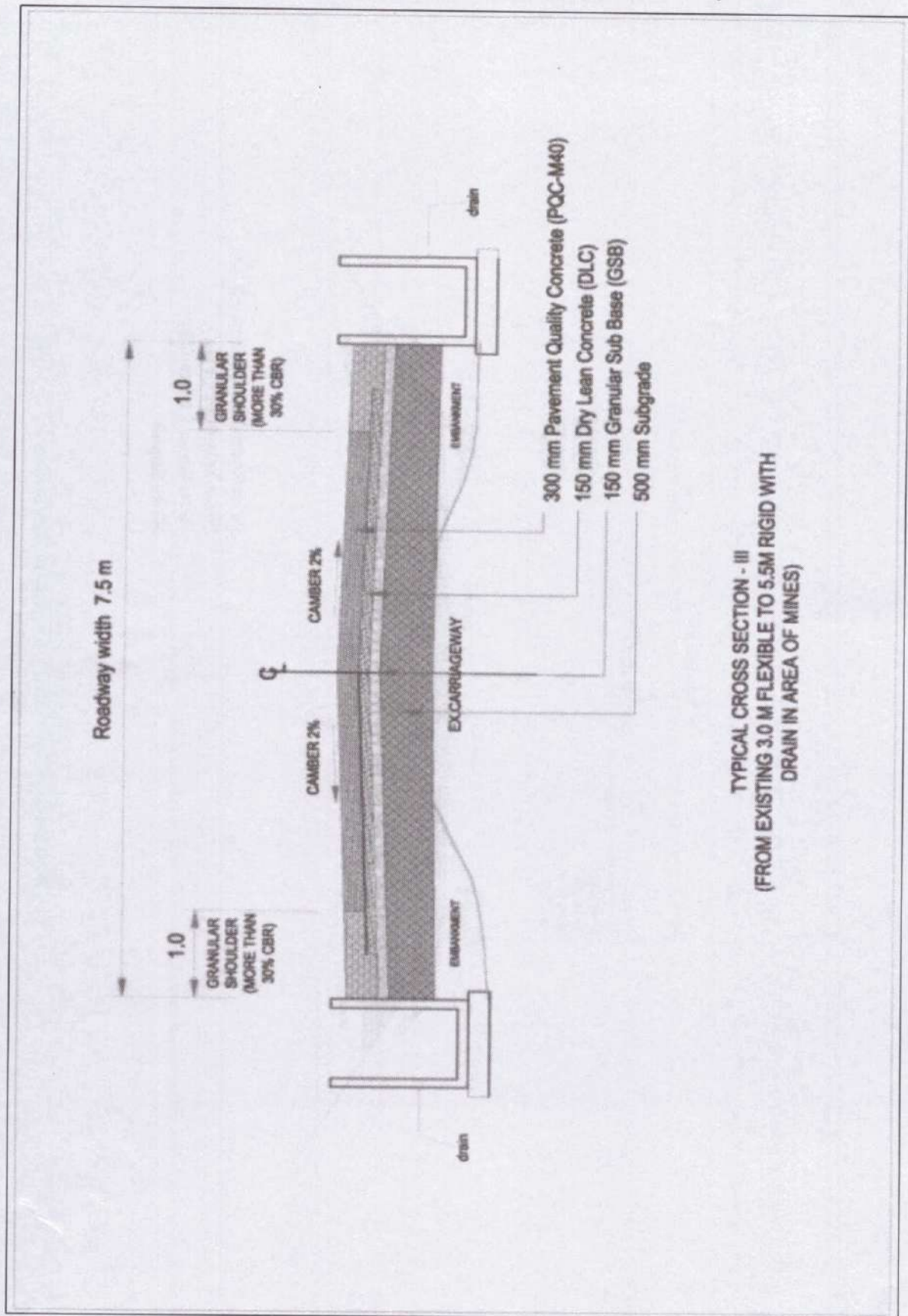


TCS II: Intermediate Lane Flexible Pavement in Open Area



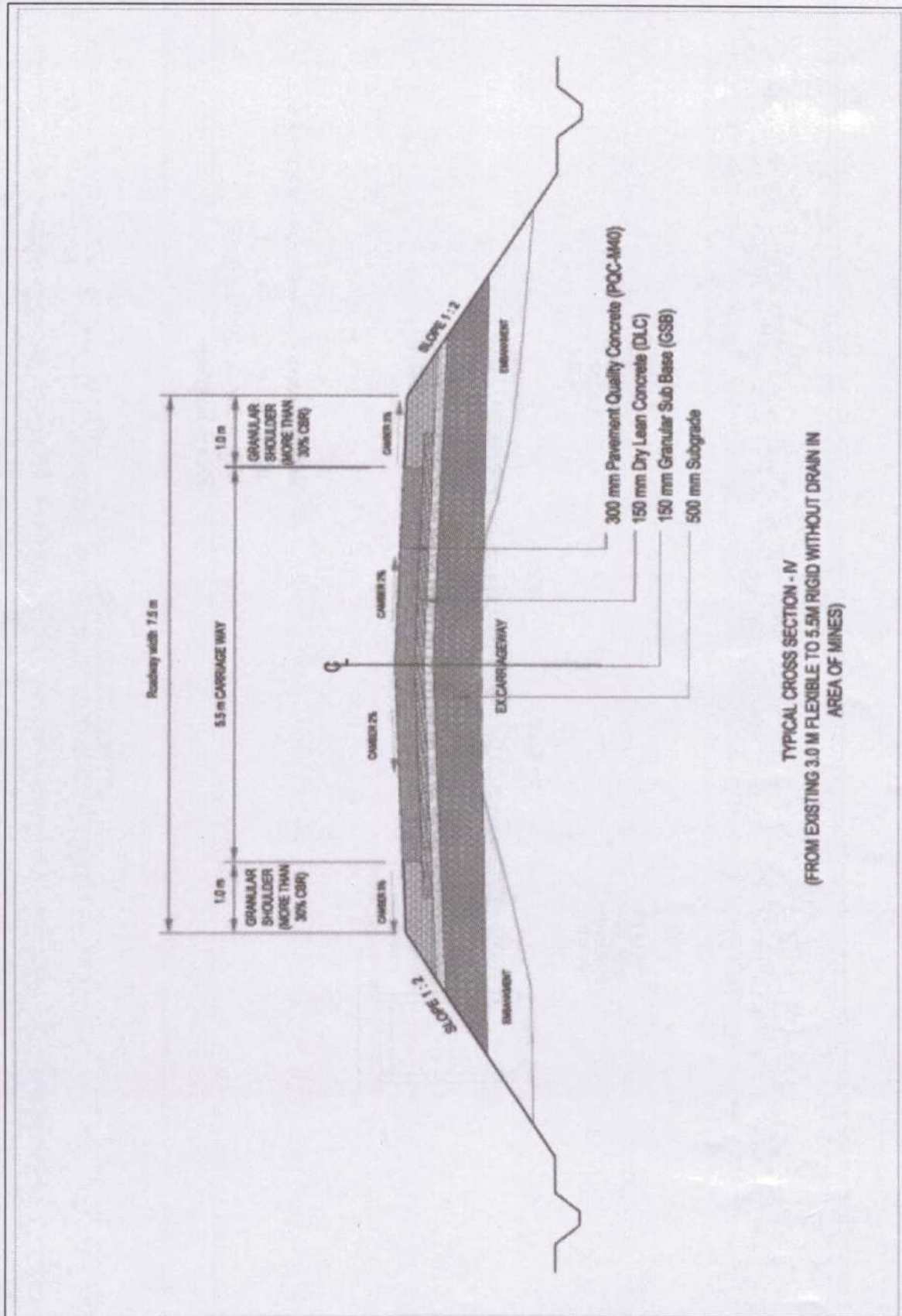


TCS III: Intermediate Lane Rigid Pavement with drain in Area of Mines



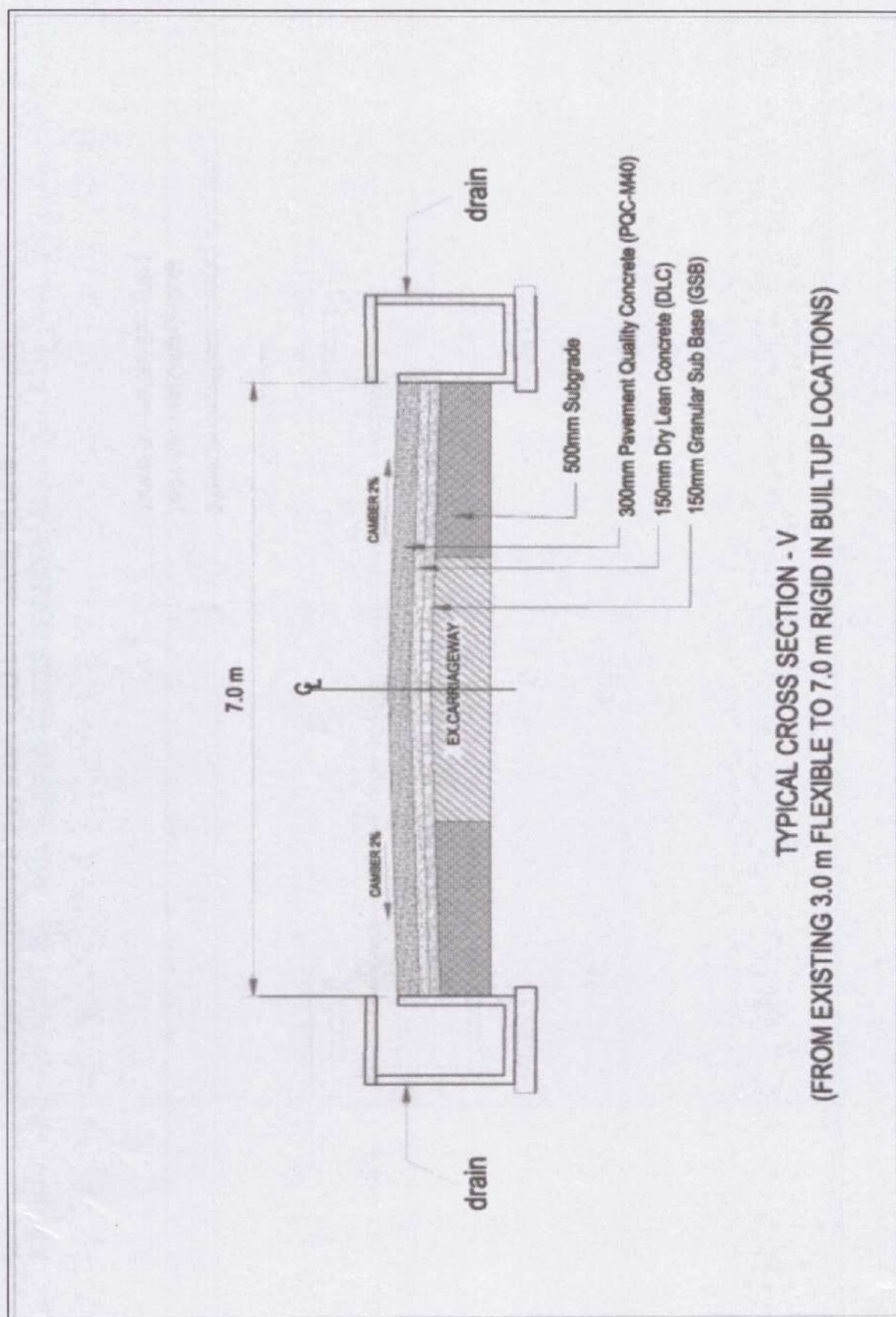


TCS IV: Intermediate Lane Rigid Pavement in Area of Mines



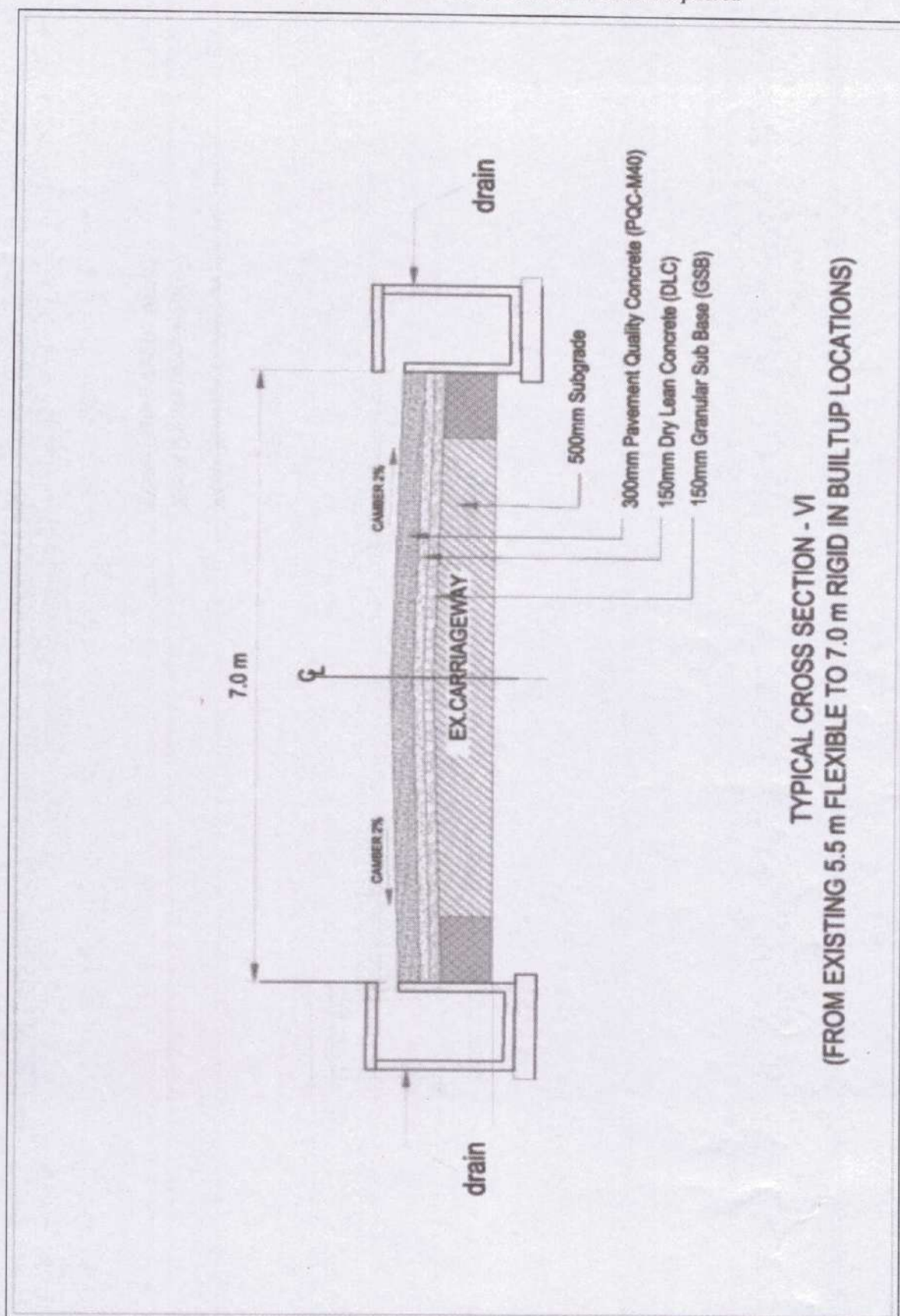


TCS V: Two Lane Rigid Pavement with drain in Builtup Area





TCS VI: Two Lane Rigid Pavement with drain in Builtup Area





0.23 RESETTLEMENT AND REHABILITATION (R & R) POLICY

The Project alignment is proposed in such a way with minimum Resettlement and Rehabilitation. Total Additional Land requirement is 0.7083 Ha. Total 42 structures (that includes private, government and religious structures) are getting affected, as per table 0.17(a) & (b)

0.24 SOCIAL IMPACT ASSESSMENT & ENVIRONMENTAL IMPACT ASSESSMENT

A. Social impact assessment:

Important settlements & land acquisition required

There are total 42 structures, constructed within the existing ROW, which will be affected by the proposed road widening.

Table 0.17(a)- Summary Subproject Impacts

Sl. No.	Impacts	Number
1	Total number of structures affected (Private + Religious + Govt.)	42
2	Total number of private structures affected	32
3	Total number of affected households (TH + NTH)	32
4	Total number of Physically Affected Households (NTH)	NA
5	Total number of Economically Affected Households (TH + NTH)	NA
6	Total number of vulnerable households affected	3
7	Total number of affected persons (APs) (TH + NTH)	95
8	Total number of physically affected person (NYH)	NA
9	Total number of economically affected person (TH + NTH)	NA
10	Total number of CPR (structure) affected	10

Table 0.17(b) - List of Affected Persons/CPRs

S. N.	Side	Name of the Village	Name of Block	Name of District	Chainage	Name of the Owner	Type of Property
Affected Persons							
1	Right	Moipura	Bundi	Bundi	0+700	Mr. Rajendra	Agri Land
2	Left	Sitapura	Taleda	Bundi	2+500	Mr. Bherulal,	Agri Land
3	Right	Sitapura	Taleda	Bundi	2+500	Smt. Gomti Bai	Agri Land
4	Right	Barumdhaj	Taleda	Bundi	4+200	Mr. Badri Mali	Agri Land
5	Right	Barumdhaj	Taleda	Bundi	4+250	Mr. Atmaram	Agri Land
6	Right	Barumdhaj	Taleda	Bundi	4+300	Mr. Shyam Babu	Agri Land
7	Left	Barumdhaj	Taleda	Bundi	4+300	Mr. Kamlesh Sharma	Agri Land
8	Right	Bharta Bawdi	Taleda	Bundi	6+700	Mr. Ramprasad Meena	Residential
9	Left	Patpariya	Taleda	Bundi	7+900	Mr. Parmanand Sindhi	Commercial
10	Left	Patpariya	Taleda	Bundi	7+900	Mr. Om joshi	Commercial
11	Left	Patpariya	Taleda	Bundi	7+900	Mr. Pappu	Commercial
12	Right	Patpariya	Taleda	Bundi	7+900	Mr. Bajeer	Commercial
13	Right	Patpariya	Taleda	Bundi	7+900	Mr. Mahesh	Commercial
14	Right	Patpariya	Taleda	Bundi	7+900	Mr. Indra Khatik	Commercial
15	Left	Laxmipura	Taleda	Bundi	10+100	Mr. Rajendra	Commercial



S. N.	Side	Name of the Village	Name of Block	Name of District	Chainage	Name of the Owner	Type of Property
16	Right	Laxmipura	Taleda	Bundi	10+100	Mr. Parasram	Residential
17	Right	Laxmipura	Taleda	Bundi	10+100	Mr.Prabhulal	Residential
18	Right	Laxmipura	Taleda	Bundi	10+100	Mr.Ramesh	Residential
19	Right	Laxmipura	Taleda	Bundi	10+200	Mr. Mevaram Ji Mehta	Residential
20	Left	Laxmipura	Taleda	Bundi	10+200	Mr. Chhotelal	Residential
21	Right	Laxmipura	Taleda	Bundi	10+200	Mr. Jagannath	Commercial
22	Left	Laxmipura	Taleda	Bundi	10+200	Mr. Mahaveer	Commercial
23	Left	Laxmipura	Taleda	Bundi	10+200	Mr.Ashok	Commercial
24	Left	Laxmipura	Taleda	Bundi	10+200	Mr.Udaylal,	General shop
25	Left	Laxmipura	Taleda	Bundi	10+200	Mr.Mohanlal	Hotel
26	Left	Laxmipura	Taleda	Bundi	10+200	Mr. Jagdish Mewada	Tea shop
27	Right	Laxmipura	Taleda	Bundi	10+450	Mr. Omprakash	Tea shop
28	Left	Dora	Taleda	Bundi	17+500	Mr. Bhojraj	Commercial
29	Right	Dora	Taleda	Bundi	17+500	Mr. Ghasilal	Residential
30	Left	Dora	Taleda	Bundi	17+500	Mr. Mohan	Shop
31	Right	Dora	Taleda	Bundi	17+550	Mr. Lalchandra	Residential
32	Right	Dora	Taleda	Bundi	17+550	Mr.Roopchandra	Residential
Affected CPRs							
1	Left	Alkodiya	Bundi	Bundi	1+400	Govt.	Water Tank
2	Left	Alkodiya	Bundi	Bundi	1+600	Govt.	Tempale
3	Left	Sitapura	Bundi	Bundi	2+100	Govt.	Hand Pump
4	Right	Laxmipura	Taleda	Bundi	2+700	Govt.	Hand Pump
5	Left	Barumdhaj	Taleda	Bundi	4+300	Govt.	Elictric power House
6	Right	Bharta Bawdi	Taleda	Bundi	6+700	Govt.	School Boundary wall
7	Right	Bharta Bawdi	Taleda	Bundi	6+700	Govt.	Tempale
8	Right	Laxmipura	Taleda	Bundi	10+500	Govt.	Tempale
9	Right	Dora	Taleda	Bundi	17+600	Govt.	Tempale
10	Right	Sootda	Taleda	Bundi	34+200	Govt.	Mukti Dham

Land acquisition is required at some stretches for curve improvement & at the location of toll plazas. Details are submitted with land acquisition plan. Summary of land acquisition required is given below-

Table 0.18- Land Acquisition Required

S. No.	Chainage		Area (sq. m)	Area (ha)
	From	To		
1	8910	9010	316	0.0316
2	20900	21200	3210	0.3210
3	37240	37320	398.1396	0.0398
4	37520	37900	421.4102	0.0421
5	39100	39340	306.3484	0.0306



S. No.	Chainage		Area (sq. m)	Area (ha)
	From	To		
6	40720	40920	1089.702	0.1090
7	41980	42300	536.8165	0.0537
8	42880	43010	482.5202	0.0483
9	44500	44600	140.4536	0.0140
10	46180	46200	16.4467	0.0016
11	49200	49350	165.9199	0.0166
Total Area			7083.7571	0.7083

B. Environmental impact assessment:

- The assessment of environment impacts for the sub-project road shows that there are no significant, long term adverse impacts. Most of the impacts are short term and limited to the construction stage.
- The project entails various impacts on the project setting. There are many positive impacts bearing benefits to the area against the limited number and magnitude of negative impacts. These include (i) The project will substantially improve the transport efficiency on the roads. (ii) The project once implemented will improve the overall environmental conditions with better roads, fuel efficiency and environmental protection measures (iii) will reduce traffic congestion particularly at junctions hence, air pollution due to idling of the vehicles.
- The finding of IEE indicates that project is unlikely to cause any significant adverse environmental impacts. While some of the minor impacts are negative, there are many bearing benefits to the area. Most of the impacts are likely to occur during construction stage and are temporary in nature. Anticipated minor impacts will be mitigated through the implementation of mitigation measures summarized in the Environmental Management Plan.
- The project got support and consent from most of local people. The local people did not perceive any adverse impact due to the proposed project. Environmental awareness and likewise concern were found generally low. People, however expressed the desire of minimizing the tree cutting.
- Cost for Environmental Management Plan, Training and Environmental Monitoring:

Table 0.19- Cost for Environmental Management Plan, Training and Environmental Monitoring

S. No.	Parameters / Components	Parameter to be monitored	Guidelines	Unit Cost (Rs)	Total Cost (Rs)
1	Ambient Air Monitoring: 3 times in a year for 3 years or construction period at 6 sites & three time in a year during operation/ defect liability period at six sites	PM10, PM2.5, SO2, NOx & CO	High Volume samplers to be used and located 50 m from the construction site	9000	432000
2	Water Monitoring: 3 times in a year for 3 years or construction period At 6 locations, three time in a year for one year during defect liability period at six site	pH, BOD, COD, TDS, TSS, DO, Total coliform, Conductivity, Oil & Grease	Analyse as per the standard methods for examination of water and waste water	5000	240000
3	Noise Monitoring: 3 times in a year for 3 years or construction period, 6 locations & one year during operation/ defect	Noise levels on dB (A) scale	Using an integrated noise level meter kept at a distance of 15 m from the construction site	3000	144000



S. No.	Parameters / Components	Parameter to be monitored	Guidelines	Unit Cost (Rs)	Total Cost (Rs)
	liability period, three times in a year at six sites				
4.	Soil Quality Camp, Dumping and HMP sites At oil spillage locations and other probable soil contamination location (once during construction and once after operation period)	NPK (ICAR standard) and heavy metals Oil and grease	Analyse as per the standard methods	30000	30000
	Total Monitoring Cost				846000
5.	Opening, running and restoration of stone quarry/sand extraction pits along the entire project length		IRC Code of Practice and MoSRT&H manual	LS	Engineering cost
6.	Gabion walls (above height 4 m) along elevated embankment		IRC Code of Practice and MoSRT&H manual	LS	Engineering cost
7.	Dust Suppression along the entire project Length Six tankers in a days for 240 Days		IRC Code of Practice and MoSRT&H manual	Rs2000/- per day per tanker	1920000/-
8.	Solid Waste management during entire project Period		As per MoEFCC guidelines	10000/ month	180000/-
9.	Erosion Control Measures (Turving / Pitching / Seeding & Mulching) Provision of Cross drainage & side drainage Structures General Borrow area management and maintenance of haul roads related to borrow Areas Air/noise pollution control measures in construction equipment Management and disposal of scarified waste bituminous material Provision of Informatory Signs Bus shelters Construction of Speed Humps Management of quarries Redevelopment of Borrow Areas Construction Camp Management Costs Safety measures for workers		As per IRC Guidelines	Shall be included in contractor's quoted rates	Engineering cost
	Total Mitigation Cost				2946000/-



0.25 COST ESTIMATE

The total project cost is calculated based NH BSR-Circle KOTA-Yr-2016, Government of Rajasthan.

Table 0.20- Abstract of Cost Estimate

BILL NO.	DESCRIPTION	TOTAL AMOUNT (Rs.)	TOTAL AMOUNT (Crores)	Contribution in per km cost
a.	Site-Clearance	2,962,602.88	0.296	0.006
b.	Earthwork	80,552,194.46	8.055	0.162
c.	Sub-base, Base Courses	173,438,304.14	17.344	0.350
d.	Bases & Surface Courses (Bituminous)	125,278,125.41	12.528	0.253
e.	Cost of CC Pavement	275,695,410.48	27.570	0.556
1	Cost of Road Works	657,926,637.37	65.793	1.326
2	Cost of Cross-Drainage structures			
	Major Bridges	30,932,163.02	3.093	0.062
	Minor Bridges	61,578,528.81	6.158	0.124
	Pipe Culverts, Slab Culverts & Box Culverts	51,871,420.00	5.187	0.105
3	Cost of ROB (if any)	0.00	0.000	0.000
4	Cost of Toll Plaza	24,000,000.00	2.400	0.048
5	Cost of Bus Shelters	2,000,000.00	0.200	0.004
6	Cost of RCC drain in Built-up Area & Near Mines	80,944,734.23	8.094	0.163
7	Traffic Signs, Marking and Road Appurtenances	35,352,638.80	3.535	0.071
8	Cost of Metal beam crash barrier	7,803,000.00	0.780	0.016
9	Junction improvement	63,188,771.95	6.319	0.127
10	Protection Work (Retaining wall, Toe wall, Pitching etc.)	15,848,281.31	1.585	0.032
11	Miscellaneous Items	5,308,740.00	0.531	0.011
A	Cost of Civil Works (Sub Total A)	1,036,754,915.48	103.675	
	Per km Cost of Civil Works	20,902,316.84	2.090	
B	Contingency Charges (2.8%)	29,029,138	2.903	0.059
C	Quality Control Charges (0.25 %)	2,591,887	0.259	0.005
D	Escalation Charges (5% per year for 2 Years)	103,675,491.55	10.368	0.209
E	Road Safety Audit Charges (0.25%)	2,591,887	0.259	0.005
F	Administrative Charges (11%)	114,043,040.70	11.404	0.230
G	Construction Supervision Charges (2%)	20,735,098.31	2.074	0.042
H	Maintenance Charges (0.5% for I Year 1.0% for II Year, 1.5% for III & 2% for remaining period per year)	51,837,745.77	5.184	0.105
I	Grand Total	1,361,259,204	136.126	2.744
	Cost per km	27,444,742	2.744	0.055
*	Cost of Utility Shifting (3%)	31,102,647.46	3.110	0.063
*	EMP & EIA Cost	9,920,000.00	0.992	0.020
*	SIA Cost	31,325,470.00	3.133	0.063
*	LA Cost	20,426,400.00	2.043	0.041
xiii	TOTAL CAPITAL COST OF THE PROJECT	1,433,607,321.49	143.361	2.890
	Cost per km	28,903,373.42	2.890	



SALIENT FEATURES

Description	Existing	Proposed
Terrain	: plane/ rolling	plane/ rolling
Length	: Existing Length = 52.600	Proposed Length = 49.600 Km
Alignment	: The existing Alignment is almost Poor except at few locations.	The existing alignment with geometric improvements.
Design Speed	: Avg. 30-40Kmph.	65 Kmph to 80Kmph.
Cross-Section	: C/W Width- Varying b/w 3.0-7.0m Shoulder- 1m to 2 m Hence formation width varies from 5m to 11m	Flexible Pavement 2-Lane with Granular shoulder in Open / Rural Area 2.50m Granular Shoulder + 5.50 m C/W + 2.50m Granular Shoulder = 10.0m Rigid (CC) Pavement -2 Lane in Built-Up Area- RCC Drain + 7.00m Rigid C/W+ RCC Drain
CBR Considered	: -	7%
Traffic (Weighted Average of I & II Traffic Survey)	: PCU - 2019(In 2015) ADT-1889 CVPD-214	On basis of projected traffic,* From Km 00.000 to Km 49.600 : 1.5-Lane with Granular shoulder is considered
Pavement Design Life	: Nil	15 Years
Design MSA	: 11.98 (15 yr)	* MSA = 11.98
Pavement Crust Thickness for widening & new construction	:	BC - 40mm DBM - 70 mm WMM - 250 mm GSB - 230mm
Bridges	: 8 minor bridges	Reconstruction - 5 Nos. Retained- 3 Nos
Culverts	: Total Culvert (Including Laid Pipe/ Slab =75 Nos. HPC = 48 Nos. Slab Culvert =10 Nos. Box Culvert = Nil VCW = 5 Nos. FCW = 4 Nos. Pipe =5 Stone Slab = 3	Retained - 4 Nos. Widening - 6Nos. Reconstruction - 57Nos. New Construction- 08 (5 Laid Pipe & 3 Stone Slab Converted into Culverts)



Description		Existing	Proposed
Bus - Bay	:	Nil	Nil
Bus Shelters	:	Nil	20
Truck Lay Bye	:	Nil	Nil
Way Side Amenities	:	Nil	Nil
Toll Plaza	:	Nil	2 (at km 21.050 & Km 40.500)
Forest	:	15.845 km	15.845 km
ROW	:	10-20 m	16m
Major Junction/ Intersection	:	3	3
Minor Junction/ Intersection	:	43	43
Flyover	:	Nil	Nil
Grade Separator	:	Nil	Nil
Underpasses (VUP Cattle/Pedestrians)	:	Nil	Nil
Overpass (Vehicular)	:	1	Ex. VOP Retained
ROBS	:	Nil	Nil
Level Crossing	:	Nil	Nil
RUBS	:	Nil	Nil
Service Road	:	Nil	Nil
Protection & Others Work	:	Nil	As per site requirement
Civil Cost (Rs.)	:		Rs. 103.675 Cr (Rs 2.090 Cr/Km)
Cost of Utility Shifting	:		Rs. 3.110 Cr
EMP & EIA Cost	:		Rs. 0.992 Cr
SIA Cost	:		Rs. 3.133 Cr
LA Cost	:		Rs. 2.043 Cr
Total Capital Cost (Rs.)			Rs. 143.361 Cr (Rs 2.890 Cr/Km)