0. EXECUTIVE SUMMARY

0.1 GENERAL

Ministry of Road Transport & Highways (MORT & H) has decided to implement for upgradation of road to 2-lane with paved shoulder/4-lane configuration in the State of Maharashtra.

M/s L.N.Malviya Infra Projects have been appointed as Consultants to carry out the consultancy services for preparation of Detailed Project Report for Sakri – Satana - Devla – Chandwad – Manmar – Yevla – Kopergaon – Shirdi – Rahuri Road in the State of Maharashtra for upgradation to Two lane with Paved shoulder/Four lane configuration.

The project road under consideration:

Sakri – Satana - Devla – Chandwad – Manmar – Yevla – Kopergaon – Shirdi Road.

From Chandwad (Km 104.600) to Manmad (Km 128.650) (Design Length-24.050 Km)

0.2 PROJECT ALIGNMENT DESCRIPTION

The project road starts from Chandwad at T-Junction (Major Junction, NH3) at design km 104+600 and ends at the X Junction (Major Junction, NH222) at design km 128+650 at Manmad, in the state of Maharashtra. Total Existing Length of Project road is 24.039km and Design Length of project is 24.050 km.

From Chandwad (Km 104.600) to Manmad (Km 128.650) (Design Length-24.050 Km)

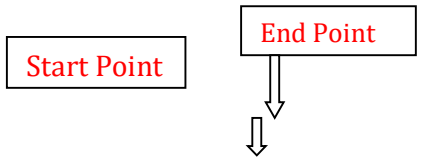


Figure 0.2: - Project Alignment of Project Road

0.3 CHAINAGE REFERENCES (EXISTING v/s DESIGN)

Table 0.1: - Chainage References

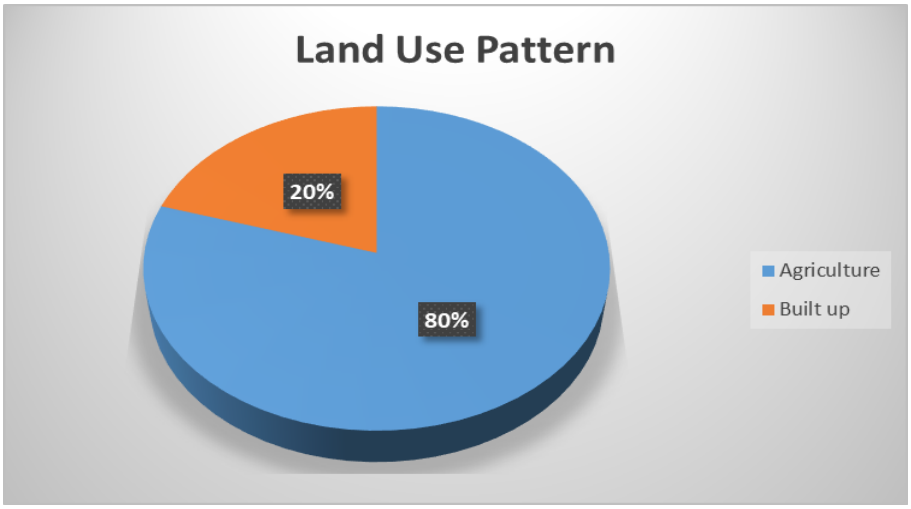
Sr. No.	Existing Chainages		Design Chainages		Name of Village/Town
	From	To	From	To	
1.	104+920	106+830	104+600	106+500	Chandwad
2.	106+830	115+030	106+500	114+700	
3.	115+030	115+930	114+700	115+600	Dugaon
4.	115+930	126+930	115+600	126+600	
5.	126+930	129+001	126+600	128+650	Manmad City

0.5 ABUTTING LAND USE PATTERN

The existing alignment is a link between Chandwad, Dugaon and Manmad City.

The pattern on both side of road is agricultural, forest and built-up. The details of land use pattern along the project road are-

Built-up - 20.00%
Agriculture - 80.00%



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

Table 0.2: - Existing Land Use Pattern

Sr. No.	Existing Chainages		Design Chainages		Length (Km)	Land Use
	From	To	From	To		
1.	104+920	106+830	104+600	106+500	1+900	Chandwad
2.	106+830	115+030	106+500	114+700	8+200	Agriculture
3.	115+030	115+930	114+700	115+600	0+900	Dugaon

Sr. No.	Existing Chainages		Design Chainages		Length (Km)	Land Use
	From	To	From	To		
4.	115+930	126+930	115+600	126+600	11+000	Agriculture
5.	126+930	129+001	126+600	128+650	2+050	Manmad City

0.6 TERRAIN

The terrain along this road is plane at some places and has hilly gradient at some places of the road.

0.7 FOREST

Forest land exists on the project land as per site inspections as follows:-

Table 0.3- Details of Forest

Sr. No	Design Chainage (km)		Length	Remarks
	From	To	(m)	
Nil				

0.8 TRAFFIC

In this chapter, the report is concerned about Sakri **– Satana - Devla – Chandwad – Manmar Road.**

The following ADT and PCU were observed on project road –

Table 0.5–ADT and PCU observed

Chandwad To Manmad Section of Project Road

Traffic Projection on Chandwad to Manmad Road		
Year	**ADT**	**PCU**
Present Year 2016	**7475**	**7530**
Traffic Growth Rate = 5%		
2017	7849	7907
2018	8241	8302
Considering 20% Diverted Traffic		
Base Year 2019	**9889**	**9962**
2020	10383	10460
2021	10902	10983
2022	11447	11532
2023	12019	12109
2024	**12620**	**12714**
2025	13251	13350
2026	13914	14018
2027	14610	14719
2028	15341	15455
2029	**16108**	**16228**
2030	16913	17039

2031	17759	17891
2032	18647	18786
2033	19579	19725
2034	**20558**	**20711**
2035	21586	21747
2036	22665	22834
2037	23798	23976
2038	24988	25175
2039	**26237**	**26434**
2040	27549	27756
2041	28926	29144
2042	30372	30601
2043	31891	32131
2044	**33486**	**33738**
2045	35160	35425
2046	36918	37196
2047	38764	39056
2048	40702	41009
2049	**42737**	**43059**

As per clause 4.6.1 of IRC: 37-2012, the projected traffic growth rate is considered as 5%.

0.9 PAVEMENT COMPOSITIONS

As per the existing CVPD & considering 8% CBR, Rigid pavement is recommended for this road.

Pavement Design

Design is performed as per "IRC-58:2015 GUIDELINES FOR THE DESIGN OF RIGID PAVEMENTS".

Hence the proposed pavement composition is-

Table 0.7

Sr. No.	Section	CVPD		CBR	Pavement Composition (mm)		
		Year (2018)	15 years	(%)	PQC	DLC	GSB
1	Chandwad To Manmad	1710	3556	8%	280	150	150

0.10 PROPOSED BYPASSES/REALIGNMENT

Realignment proposed for the project road.

Table 0.8- Details of Bypasses & Realignment

S. No.	Name of Bypass/Realignment	Start Chainage (km)	End Chainage (km)	Length (km)
Nil				

0.11 ROAD JUNCTIONS/INTERSECTIONS

There are 24 major/minor junctions which are important. Their details are-

Table 0.9- Details of Existing Junctions

Sr. No.	Existing Chainage	Design Chainage	Type	L.H.S	R.H.S	Remarks
1.	104+962	104+600	T	Dhule/Indore	Nashik/Mumbai	MAJOR
2.	105+192	104+860	T	To City Chandwad	Bus Stand	
3.	105+302	104+960	T	To Colony		BT ROAD
4.	105+422	105+070	X	Chandwad/Bajartal	Bharvir	MINOR
5.	105+452	105+100	Y		NIMGAVHAN	MINOR
6.	105+799	105+460	Y		HIVARKHEDE	VR
7.	106+827	106+480	X	Chandwad	Sh-7/Sutarkhede	MAJOR
8.	112+275	111+930	T		HARNUL	VR
9.	112+303	111+950	T	Vanjarwadi		VR
10.	113+532	113+180	Y	Dugaon		VR
11.	115+212	114+880	X	Dugaon	Harsul	VR
12.	115+502	115+150	X	Konkankhede	Vitave	WBM ROAD/MINOR
13.	115+888	115+550	X	Dugaon	Pimpalgaon-Dhabi	VR
14.	118+634	118+280	Y	Konkankhede		VR
15.	121+762	121+410	Y	Shigave Village		VR
16.	122+702	122+350	Y	Shigave Village		VR
17.	124+902	124+580	X	Shigave Village	Wagdardi Road	MINOR
18.	125+609	125+250	Y		LASALGAON-MANMAD ROAD	MINOR
19.	126+907	126+580	Y	Shigave Village		VR
20.	127+041	126+690	X	To Colony	Madhav Nagar	BT ROAD
21.	127+952	127+600	Y		TEACHERS COLONY	BT ROAD
22.	128+191	127+830	T		TO COLONY	BT ROAD
23.	128+419	128+060	X	To Manmad	To Dongaon	SH-20/MINOR
24.	129+001	128+650	X	To Malegaon	To Manmad	NH-222/MAJOR

0.13 ROAD SIDE DRAINS

Covered RCC drains are provided in village portions.
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 RCC Drains

Sr. No.	Design Chainages		Length (Km)		Type	Remark
	From	To	LHS	RHS		
1	104+600	106+500	1.900	1.900	RCC, NP-2 Pipe covered drain & Footpath	Chandwad
2	126+600	128+650	2.050	2.050	RCC, NP-2 Pipe covered drain & Footpath	Manmad City
	Length		**3.950**	**3.950**		
	Total Length		**7.90 Km**			

Total length of road side drains

Chandwad to Manmad = 2X3950=7900 m

0.15 CROSS DRAINAGE WORKS

Minor Bridges:

Details of the existing Minor Bridges:

Sr. No	Existing Chainage	Design Chainage	Type of Structure			No. of Spans with Span Length (m)	Width (m)		Proposal		
			Foundation	Sub Structure	Super Structure		Clear Width	Over all Width	Type	Span	Retained/ Widening/ Reconstruction
1	110+826	110+500	Open Foundation	PCC	Solid Slab	1X10.0	11.4	12	MNB	1X10.0	Widening
2	112+870	112+530	Open Foundation	PCC	Solid Slab	2 X 7.0	11.4	12	MNB	2 X 7.0	Widening
3	114+600	114+270	Open Foundation	PCC	Solid Slab	4 X 6.0	11.4	12	MNB	4 X 6.0	Widening
4	116+640	116+310	Open Foundation	PCC	Solid Slab	5 x 9.0 NEW	7.2	8.4	MNB	5 x 9.0 NEW	Widening
5	116+640	116+310	Open Foundation	S.M.	ARCH	5 x 9.0 OLD	6.7	7.5	MNB	5 x 9.0 OLD	Retain with Repair
6	122+613	122+290	Open Foundation	PCC	Solid Slab	2 X 4.0	11.4	12	MNB	2 X 4.0	Widening

CULVERTS

The existing slab culverts on the project road are:

SI. No.	Existing Chainage (Km)	Design Chainage (Km)	Details of Existing Structure		Details of Design Structure			Remark
			Type of Structure	No. x Dia. (m)	Type of Structure	No. x Dia. (m)	Proposed Width (m)	
1	105+130	104+809	HPC	2 X 1000	HPC	2 X 1200	22.5	Reconstruction
2	105+330	105+008	Slab	1 X 4.5	Slab	1 X 4.5	22.5	Widening
3	105+635	105+310	HPC	1 X 600	HPC	1 X 1200	22.5	Reconstruction
4	106+095	105+774	Slab	1 X 1.8	Slab	1 X 5	22.5	Reconstruction
5	106+374	106+050	HPC	1 X 900	HPC	1 X 1200	22.5	Reconstruction
6	106+564	106+239	HPC	1 X 900	HPC	1 X 1200	22.5	Reconstruction
7	106+893	106+566	Slab	1 X 4	Slab	1 X 4	22.5	Widening
8	106+970	106+643	HPC	4 X1200	Slab	1 x 6	14	Reconstruction
9	107+110	106+782	HPC	1 X 1200	HPC	1 X 1200	14	Widening
10	107+285	106+958	HPC	1 X 1200	HPC	1 X 1200	14	Reconstruction
11	107+438	107+112	Slab	1 X 4.2	Slab	1 X 4.2	14	Widening
12	107+942	107+613	Slab	1 X 4.2	Slab	1 X 4.2	14	Widening
13	108+093	107+766	Slab	1 X 4.2	Slab	1 X 4.2	14	Widening
14	108+585	108+259	Slab	1 X 4.2	Slab	1 X 4.2	14	Widening
15	108+808	108+479	HPC	2 X 1200	HPC	2 X 1200	14	Widening
16	109+045	108+715	Slab	1 X 4.2	Slab	1 X 4.2	14	Widening
17	109+540	109+212	Slab	1 X 4.2	Slab	1 X 4.2	14	Widening
18	109+690	109+363	HPC	1 X 1200	HPC	1 X 1200	14	Widening
19	109+865	109+538	HPC	1 X 900	HPC	1 X 900	14	Widening

SI. No.	Existing Chainage (Km)	Design Chainage (Km)	Details of Existing Structure		Details of Design Structure			Remark
			Type of Structure	No. x Dia. (m)	Type of Structure	No. x Dia. (m)	Proposed Width (m)	
20	109+998	109+670	HPC	1 X 1000	HPC	1 X 1000	14	Widening
21	110+292	109+964	HPC	2 X 1200	HPC	2 X 1200	14	Widening
22	110+475	110+148	HPC	2 X 1200	HPC	2 X 1200	14	Widening
23	111+175	110+850	HPC	1 X 900	HPC	1 X 1200	14	Reconstruction
24	111+588	111+255	HPC	2 X 1200	HPC	2 X 1200	14	Widening
25	111+690	111+360	HPC	1 X 900	HPC	1 X 1200	14	Reconstruction
26	113+615	111+490	HPC	1 X 1000	HPC	1 X 1000	14	Widening
27	111+850	111+510	HPC	2 X 1200	HPC	2 X 1200	14	Widening
28	112+060	111+730	HPC	1 X 1000	HPC	1 X 1000	14	Widening
29	112+360	112+030	HPC	1 X 600	HPC	1 X 1200	14	Reconstruction
30	113+525	113+200	HPC	1 X 1000	HPC	1 X 1000	14	Widening
31	113+780	113+450	HPC	2 X 1200	HPC	2 X 1200	14	Widening
32	114+416	114+090	HPC	1 X 900	HPC	1 X 1200	14	Reconstruction
33	115+166	114+830			HPC	1X1200	14	New Construction
34	116+107	115+790			HPC	1X1200	14	New Construction
35	117+265	116+940	HPC	1 X 1000	HPC	1 X 1000	14	Widening
36	117+792	117+375	HPC	2 X 1200	HPC	2 X 1200	14	Widening
37	118+112	117+790	HPC	5 X1200	Slab	1 x 6	14	Reconstruction
38	118+300	117+980	HPC	2 X 1200	HPC	2 X 1200	14	Widening
39	118+525	118+190	HPC	1 X 1000	HPC	1 X 1000	14	Widening
40	118+633	118+310	HPC	1 X 1200	HPC	1 X 1200	14	Widening
41	118+722	118+400	HPC	1 X 1000	HPC	1 X 1200	14	Reconstruction
42	118+845	118+515	HPC	2 X 1200	HPC	2 X 1200	14	Widening
43	118+955	118+620	HPC	2 X 1200	HPC	2 X 1200	14	Widening
44	119+165	118+840	HPC	1 X 900	HPC	1 X 1200	14	Reconstruction

SI. No.	Existing Chainage (Km)	Design Chainage (Km)	Details of Existing Structure		Details of Design Structure			Remark
			Type of Structure	No. x Dia. (m)	Type of Structure	No. x Dia. (m)	Proposed Width (m)	
45	119+340	119+010	HPC	1 X 1000	HPC	1 x 1200	14	Reconstruction
46	119+480	119+145	HPC	1 X 1200	HPC	1 X 1200	14	Reconstruction
47	119+615	119+290	HPC	1 X 1200	HPC	1 X 1200	14	Widening
48	119+705	119+380	HPC	1 X 1200	HPC	1 X 1200	14	Widening
49	119+771	119+450	HPC	1 X 1000	HPC	1 X 1000	14	Widening
50	119+936	119+610	HPC	1 X 900	HPC	1 X 1200	14	Reconstruction
51	120+161	119+834	HPC	2 X 1000	HPC	2 X 1200	14	Reconstruction
52	120+417	120+090	HPC	2 X 1200	HPC	2 X 1200	14	Widening
53	120+580	120+260	HPC	1 X 1000	HPC	1 X 1000	14	Widening
54	120+683	120+360	HPC	1 X 1200	HPC	1 X 1200	14	Widening
55	120+898	120+580	HPC	2 X 1200	HPC	2 X 1200	14	Widening
56	121+008	120+685	HPC	1 X 1200	HPC	1 X 1200	14	Widening
57	121+353	121+020	HPC	2 X 1000	HPC	2 X 1000	14	Widening
58	121+605	121+270	HPC	1 X 900	HPC	1 X 900	14	Widening
59	122+097	121+780	HPC	1 X 900	HPC	1 X 900	14	Widening
60	122+270	121+950	HPC	1 X 1000	HPC	1 X 1000	14	Widening
61	122+755	122+430	Slab	1 X 4.3	Slab	1 X 4.3	14	Widening
62	124+173	123+852	HPC	2 X 1000	HPC	2 X 1000	14	Widening
63	124+362	124+045	HPC	2 X 1200	HPC	2 X 1200	14	Widening
64	124+548	124+230	HPC	2 X 1200	HPC	2 X 1200	14	Widening
65	124+780	124+460	HPC	2 X 1200	HPC	2 X 1200	14	Widening
66	125+800	125+480			HPC	1X1200	14	New Construction
67	126+680	126+360			HPC	1X1200	14	New Construction
68	128+972	127+655			HPC	1X1200	22.5	New Construction

0.16 RAILWAY TRACKS / CROSSINGS

No railway track exists on the project road corridor.

0.17 TOLL PLAZA

1 toll plaza is proposed on the project road. The details of which are given in **table 0.12**

Table 0.12- Details of Toll Plaza

Sr. No	Design Chainage	Remarks, if any
1	111+100	Traffic Intensity & available Space

0.18 ROADWAY FACILITIES

(a) Way Side Amenities

There is not any proposal for way side amenities.

(b) Truck/Bus Lay Byes

01 Truck lay bye is proposed on the project road.

Bus shelters & Bus Lay Byes are proposed at selected villages. 3x2 Bus Shelters are proposed along the project road.

The details of which are given in **table 0.13.** Their details are given below-

Table 0.13-Locations of proposed Truck Lay Bye & Bus Shelters in Villages

Sr. No.	Design Chainage (km)	Side	Remark
1	112+800	Both Side	Truck Lay Bye

Bus Shelter

Sr. No.	Design Chainage	Side	Village/Town Name	Remarks, if any
1	104+600	LHS	Chandwad	
	106+600	RHS		
2	114+800	LHS	Dugaon	
	116+150	RHS		
3	126+910	LHS	Manmad	
	128+650	RHS		

0.19 INVESTIGATIONS AND SURVEYS

In order to design various components of project road; following investigations and surveys have been carried out: -

- Traffic surveys
  - 7 days' traffic Survey
  - Axle load Survey
- Topographic surveys including GPS
- Material Surveys & Investigations
- Borrow area Identification
- Road Inventory Survey
- Pavement Condition Survey
- Culvert and Bridge Inventory Survey

0.20 DESIGN PARAMETERS

Following design standards have been adopted as per Indian Roads Congress (IRC) Guidelines, contained in IRC: SP: 73-2015, IRC: 73, IRC: 86, IRC: 38 and IRC: SP: 23 and is given in Table below:

Table 0.13- Design Parameters

Sl. No.	Item	Plain/Rolling Terrain
1	Design speed (kmph)	80 Kmph – 100 Kmph
2	Land width (m) Open / Built-up area	25-30 m
3	Width of carriageway (m)	7.00 m + 2x1.50m paved shoulders = 10m
4	Unpaved shoulders	2 x 2.00 m
5	Camber/cross fall	
(i)	Carriageway & paved shoulders	2.0 %
(ii)	Earthen shoulders	3.0%
6	Maximum super elevation	7%
7	Minimum Radii of horizontal curves (m)	250m ruling /155m min.
8	Minimum length of curves (m)	150 m for every deflection angle of 5^0
9	Drains	As per Design
10	Sight Distance	As per IRC 73 & IRC 86
11	Gradient	
(i)	Ruling Gradient	3.33%
(ii)	Limiting Gradient	5%
(iii)	Exceptional Gradient	6.7%
12	Vertical Clearance for power/ telecommunication lines Low Voltage up to 220 to 600 V Power Line up to 650V Electric Power line up to 132 kV Electric Power line up to 220 kV Electric Power line up to 400 kV Electric Power line up to 765 kV	 5.8m 6.1m 6.5m 7.0m 8.4m 12.4 m

0.21 TYPICAL CROSS SECTION AND WIDENING SCHEME

Section (Chandwad To Manmad)

Pavement in Open Areas

Sr. No.	Design Chainage		Length (Km)	Carriageway + P.S. (m)	Typical cross section
	From (Km)	To (Km)			
1.	106+500	114+700	8.200	7.0 + 2X1.5= 10.0m	Fig 2.2
2.	115+600	126+600	11.000	7.0 + 2X1.5= 10.0m	Fig 2.2
	Total Length(A)		**19.200 Km**		

Pavement in Builtup Areas (2L+PS)

Sr. No.	Design Chainage		Length (km)	Carriageway Width (m)+P.S.	Typical cross section
	From (Km)	To (Km)			
1	114+700	115+600	0.900	7.0 + 2X2.5= 12.0m	Fig 2.5(a) Modified
	Total Length(B)		**0.900 Km**		

Pavement in Builtup Areas (4L)

Sr. No.	Design Chainage		Length (km)	Carriageway Width (m)+P.S.	Typical cross section
	From (Km)	To (Km)			
1	104+600	106+500	1.900	2x7.0 = 14 m	Fig 2.5
2	126+600	128+650	2.050	2x7.0 = 14 m	Fig 2.5
	Total Length(C)		**3.95 Km**		

Total Length = A+B+C = 24.050 Km

0.22 TYPICAL CROSS SECTION AND WIDENING SCHEME

Fig 2.2 Rigid pavement in Open Area

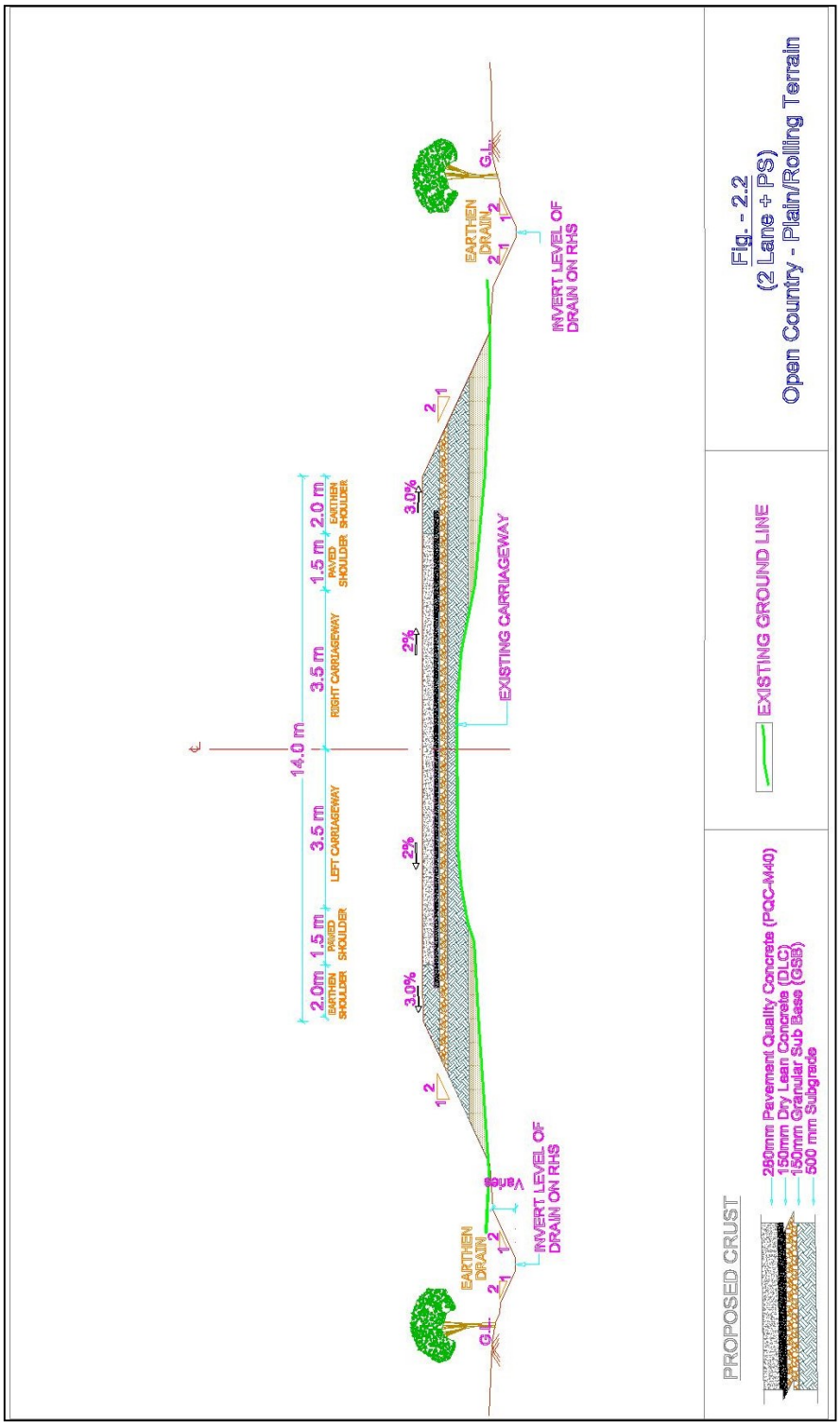


Fig2.5 (a) Modified for 2 Lane configuration in builtup area with paved shoulder

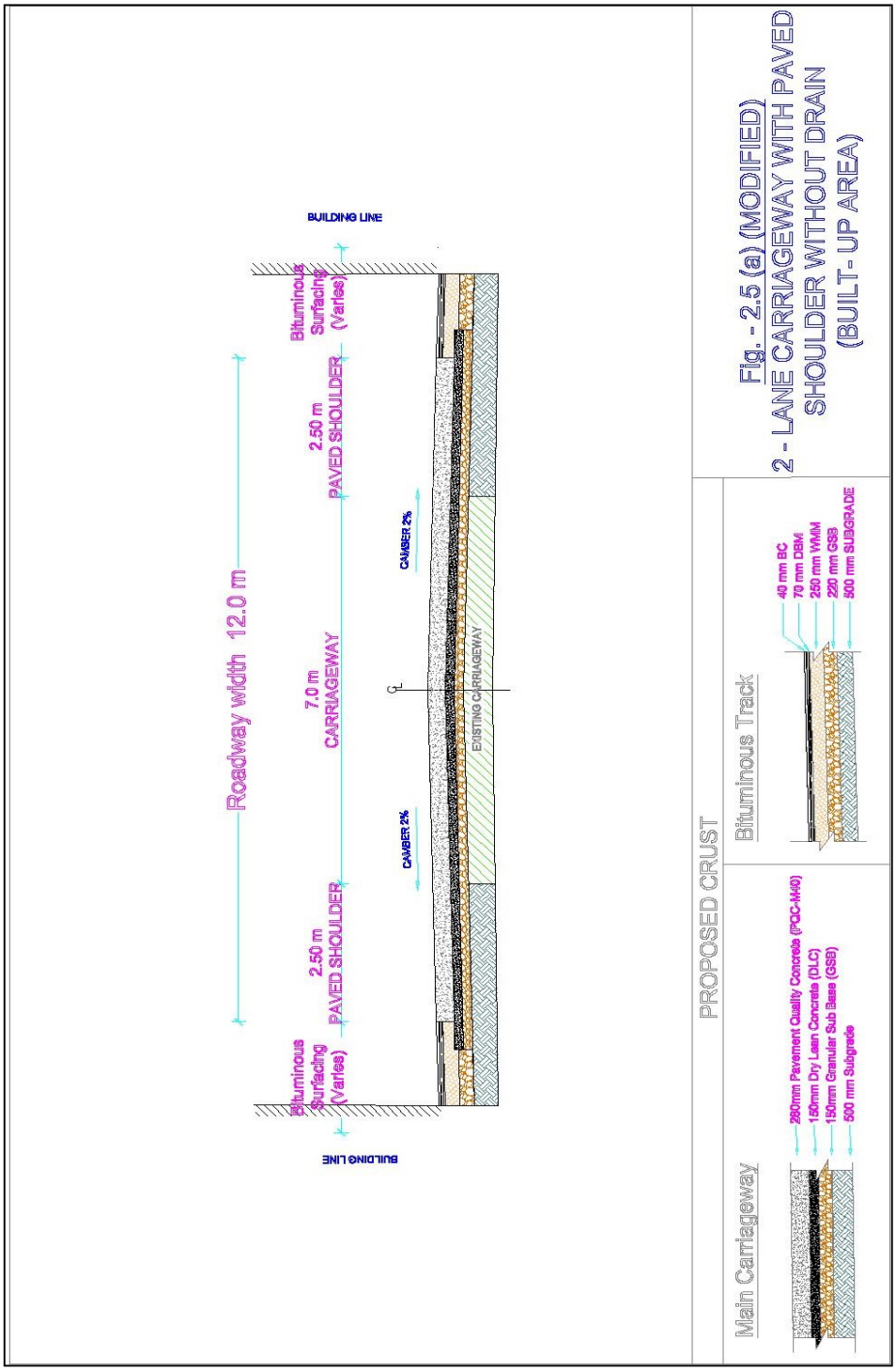
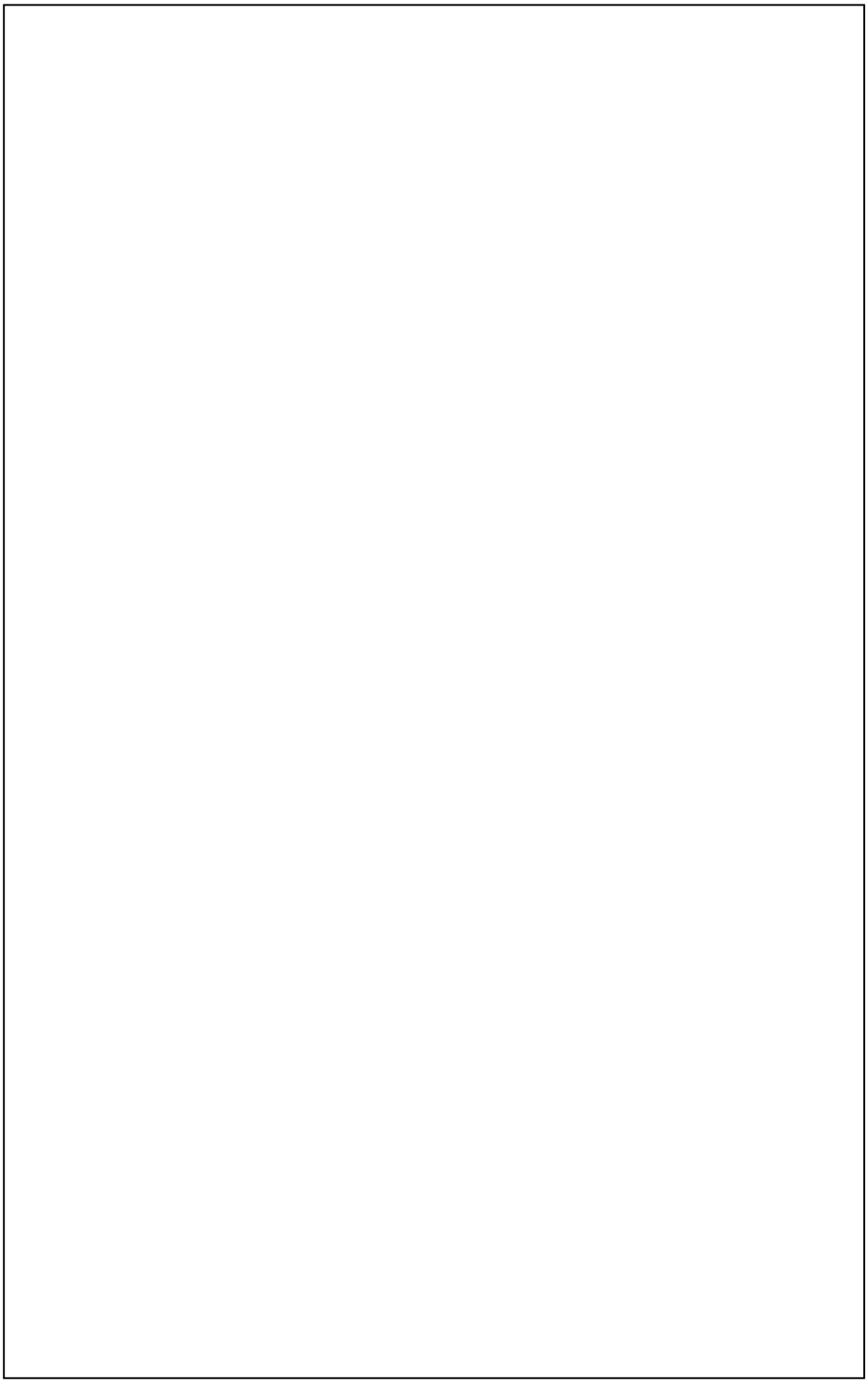


Fig2.5 for 4 Lane configuration in builtup area



0.23 COST ESTIMATE

The total project cost is calculated based on the quantity of individual item multiplied by the rate for this item and summing up the cost of all the items.

The Project road has been considered as one homogenous section and the bill wise total project cost is tabulated in Table below for all the packages of the project.

The Cost estimate is based on rates of State PWD e-SSR 2018-19 and same is verified by MSRDC.

Table 0.18- Abstract of Cost Estimate

BILL NO.	DESCRIPTION	TOTAL AMOUNT (Rs.)	TOTAL AMOUNT (Crores)	Contribution in per km cost
a.	Site-Clearance	67,42,317.32	0.674	0.028
b.	Earthwork	10,32,22,821.07	10.322	0.429
c.	Sub-base, Base Courses	12,65,71,118.66	12.657	0.526
d.	Bases & Surface Courses (Bituminous)	1,50,61,966.00	1.506	0.063
e.	Cost of CC Pavement	62,73,82,546.51	62.738	2.609
1	**Cost of Road Works**	**87,89,80,769.56**	**87.898**	**3.655**
2	**Cost of Cross-Drainage structures**			
	Major Bridges	0.00	0.000	0.000
	Minor Bridges	3,29,63,547.12	3.296	0.137
	Pipe Culverts,Slab Culverts & Box Culverts	5,62,38,064.95	5.624	0.234
3	Cost of ROB (if any)	0.00	0.000	0.000
4	Cost of Toll Plaza	5,04,38,535.46	5.044	0.210
5	Cost of Truck Lay Bye & Bus Shelter	15,00,000.00	0.150	0.006
6	Cost of Pipe drain cum Footpath in Builtup Area	3,86,85,848.73	3.869	0.161
7	Traffic Signs, Marking and Road Appurtenances	3,79,47,181.99	3.795	0.158
8	Cost of Metal beam crash barrier	67,72,700.00	0.677	0.028
9	Junction improvement	8,50,80,855.68	8.508	0.354
10	Protection Work	55,11,836.60	0.551	0.023
i	**Cost of Civil Works**	**1,19,41,19,340.09**	**119.412**	**4.965**
	Per km Cost of Civil Works	4,96,51,531.81	4.965	
ii	**Add GST @12% of civil cost**	**14,32,94,320.81**	**14.329**	**0.596**
iii	**Cost of Civil Works including GST (Sub Total A)**	**1,33,74,13,660.90**	**133.741**	**5.561**
	Per km Cost of Civil Works including GST	5,56,09,715.63	5.561	
iv	Post Construction Maintenance Charges (For 10 years @ 5% of i)	**5,97,05,967.00**	5.971	0.248
v	**Cost of Civil Works (Sub Total B)**	**1,39,71,19,627.91**	**139.712**	**5.809**
vi	Contingencies @ 2.8% of (i)	3,34,35,341.52	3.344	0.139
vii	**Total**	**1,43,05,54,969.43**	**143.055**	**5.948**
viii	Agency charges @ 3 % of (i)	3,58,23,580.20	3.582	0.149
ix	Supervision Consultancy Charges @ 3% of (i)	3,58,23,580.20	3.582	0.149
x	Price Escalation 5% of (i)	7,16,47,160.41	7.165	0.298
	Centages	**14,32,94,320.81**	**14.329**	**0.596**
	Total Project Cost	**1,57,38,49,290.24**	**157.385**	**6.544**

BILL NO.	DESCRIPTION	TOTAL AMOUNT (Rs.)	TOTAL AMOUNT (Crores)	Contribution in per km cost
xi	a. Electrical works	5,27,66,900.00	5.277	0.219
xii	b. Water supply works	3,49,88,360.00	3.499	0.145
xiii	c. Land acquisition and R&R cost	2,28,85,968.00	2.289	0.095
	EW, WS, LA and R&R Cost	**11,06,41,228.00**	**11.064**	**0.460**
xiv	**TOTAL CAPITAL COST OF THE PROJECT**	**1,68,44,90,518.24**	**168.449**	**7.004**
	Cost per km	7,00,41,185.79	7.004	

SALIENT FEATURES

<table>
<tr><th>Description</th><th></th><th>Existing</th><th>Proposed</th></tr>
<tr><td>Terrain</td><td>:</td><td>Plain</td><td>Plain</td></tr>
<tr><td>Alignment</td><td>:</td><td>The existing Alignment is in fair condition.</td><td>The existing alignment with geometric improvements.</td></tr>
<tr><td>Design Speed</td><td>:</td><td></td><td>80 Kmph to100Kmph.</td></tr>
<tr><td>Cross-Section</td><td>:</td><td><u>Open Area</u>
C/W=5.5-7.00m
Shoulder=1.50-2.00m
Formation Width=10-12m
<u>Built Up</u>
C/W=5.5-7.00m
Shoulder=1.50-2.00m
Formation Width=10-12m</td><td><u>Rigid Pavement</u>
2-Lane with paved shoulder
* <u>In Open Area</u>
2.00m Hard Shoulder+1.50m Paved Shoulder+7.00m C/W+1.50m Paved Shoulder+2.00mHard Shoulder=14m
* <u>In Built-Up Area</u>
RCC Drain +2.50m Paved Shoulder+7.00m C/W+2.50m Paved Shoulder+ RCC Drain
<u>*4 LANE Road 7x2=14m</u></td></tr>
<tr><td>CBR Considered</td><td>:</td><td>-</td><td>8%</td></tr>
<tr><td>Traffic (2016)</td><td>:</td><td>Traffic at different survey locations:
<table><tr><th>SL.No.</th><th>Section</th><th>ADT</th><th>PCU</th><th>CVPD</th><th>MSA</th></tr><tr><td>1</td><td>112+000</td><td>7475</td><td>7530</td><td>1710</td><td>31.73</td></tr></table></td><td>On basis of projected traffic 2-Lane with Paved shoulder is considered</td></tr>
<tr><td>Pavement Design Life</td><td>:</td><td></td><td>30 Years</td></tr>
<tr><td>Pavement Crust Thickness for widening & new construction</td><td>:</td><td></td><td><u>Rigid-</u>
PQC -280
DLC -150
GSB – 150</td></tr>
</table>

Description		Existing	Proposed
Bus - Shelter	:	Nil	3x2 Nos.
Truck Lay Bye	:	Nil	01
Way Side Amenities	:	Nil	Nil
Toll Plaza	:	Nil	1(at km 111+100)
Forest	:	Nil	Nil
ROW	:	15-20 m	Design has been done on the basis of existing ROW. However LA is required at some locations.
Covered RCC Drain	:	Nil	2 X 3950=7900m
Flyover	:	Nil	Nil
Grade Separator	:	Nil	Nil
Underpasses(VUP Cattle/Pedestrians)	:	Nil	Nil
ROBS	:	Nil	Nil
Level Crossing	:	Nil	Nil
RUBS	:	Nil	Nil
Service Road	:	Nil	Nil
Slip Road	:	Nil	Nil
Protection & Other Works	:	Nil	Nil