

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 Jamkhed - Lehnewadi - Sautada Road, The project road under consideration **From Jamkhed (Km 195.375) to Sautada (Km 208.774), Design Length-13.399Km** in the State of Maharashtra for upgradation to 2-lane with paved shoulder/ 4-lane configuration.

0.2 PROJECT ALIGNMENT DESCRIPTION

The project Starts from Jamkhed Ex. Km – 195+375 (Latitude - 18°44'27.69"N and Longitude - 75°18'1.91"E) and ends at End point Sautada Ex. Km – 208+857 (Latitude - 18°48'40.08"N and Longitude - 75°22'29.09"E) of the project corridor of NH-548 D, lies in the State of Maharashtra. Total Existing Length of Project road is **13.482 km** and Design Length of project is **13.399 km**.

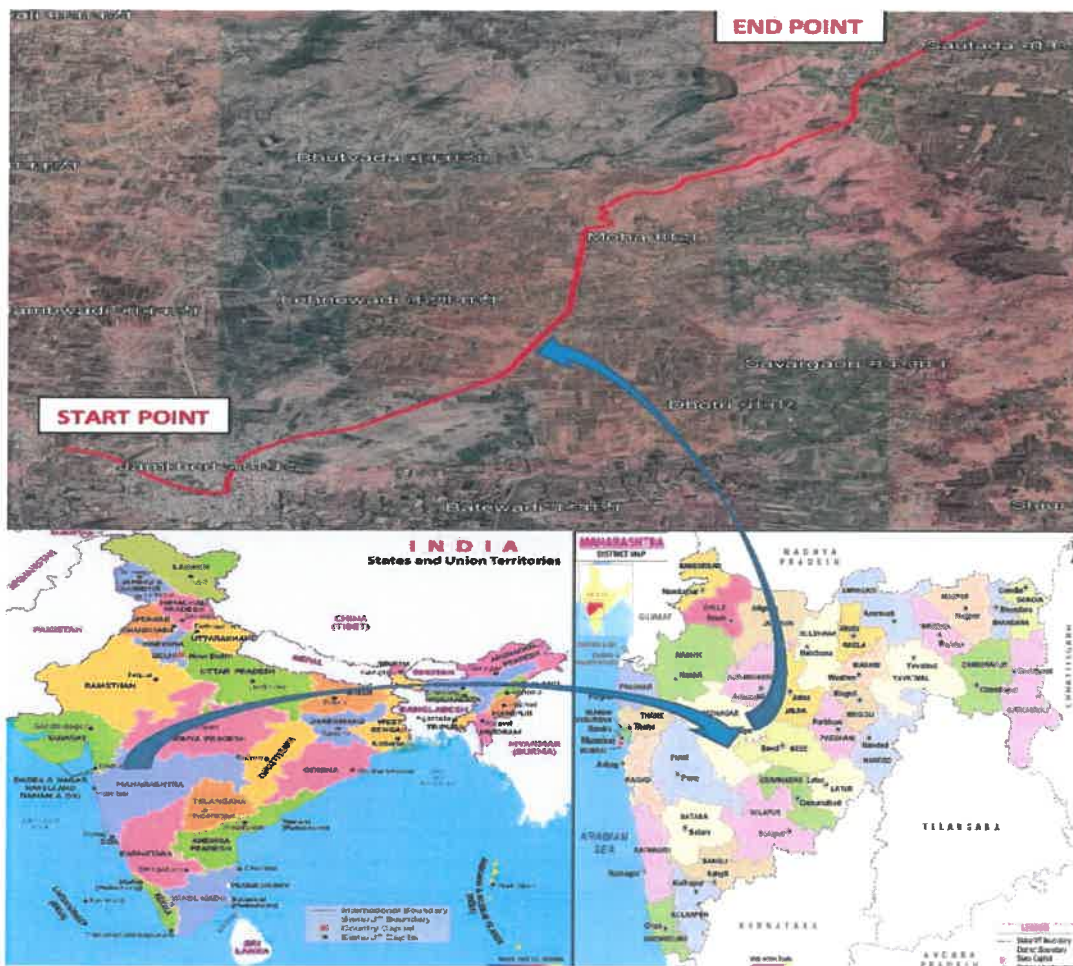


Figure 0.2: - Project Alignment of Project Road

0.3 CHAINAGE REFERENCES (EXISTING v/s DESIGN)

Table 0.1: - Chainage References

S.No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Land Use	Remarks
	Km	Km		Km	Km			
1	195+375	199+000	3625	195+375	199+000	3625	Builtup	Jamkhed
2	199+000	201+050	2050	199+000	201+050	2050	Agriculture	
3	201+050	201+400	350	201+050	201+400	350	Builtup	Lehanewadi
4	201+400	203+085	1685	201+400	203+085	1685	Agriculture	
5	203+085	203+273	188	203+085	203+232	147	Hilly	
6	203+273	204+513	1240	203+232	204+460	1228	Hill FOREST	
7	204+513	206+783	2270	204+460	206+700	2240	Agriculture	
8	206+783	208+048	1265	206+700	207+965	1265	Builtup	Sautada
9	208+048	208+857	809	207+965	208+774	809	Agriculture	
	Total Length (Km)		13.482	Total Length (Km)		13.399		

0.4 RIGHT OF WAY [ROW]

Available ROW is 19-22 m in Built up Area and 10-30m in Open Area along the project corridor.

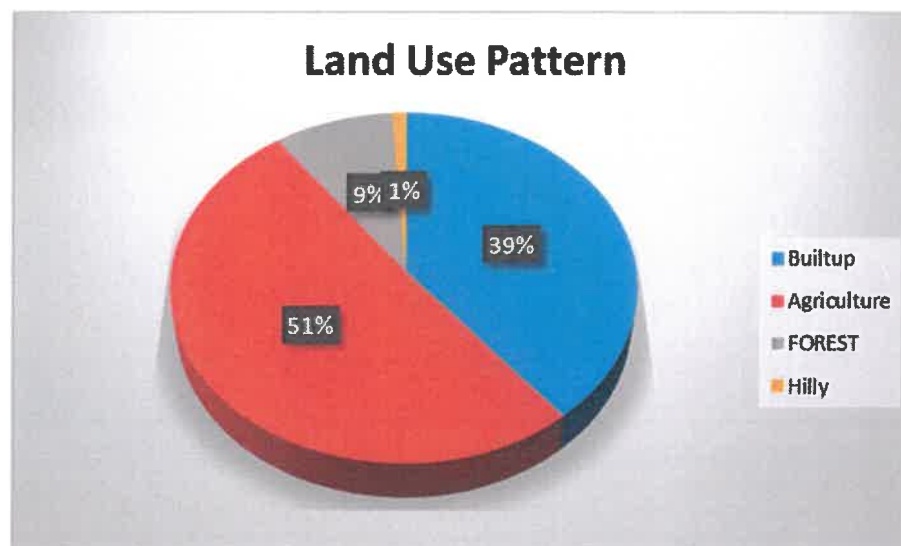
Design has been done within available ROW as long as possible. ROW may be required at some locations for improvement of curves or at Realignment/toll plaza/Bus Bay/Truck Lay bye/VUP/SVUP locations.

0.5 ABUTTING LAND USE PATTERN

The existing alignment is a link between Jamkhed , Lehanewadi and Sautada.

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	-	39.00%
Agriculture	-	51.00%
Forest	-	9.00%
Hilly	-	1.00%



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

Table 0.2: - Existing Land Use Pattern

S. No.	Existing Chainage		Length (m)	Carriageway		Width of Ex. shoulders (m)	Land Use	Name of Village / Town	Terrain
	Km	Km		Type	Width (m)				
1	195+375	196+875	1500	BT	7	1.5-2.6	Builtup	Jamkhed	Plain
2	196+875	197+400	525	BT	5.5	1.5-2	Builtup	Jamkhed	Plain
3	197+400	199+000	1600	BT	5.5	1.5-2.5	Builtup	Jamkhed	Plain
4	199+000	200+010	1010	BT	5.5	1.5-2.5	Agriculture		Plain
5	200+010	201+050	1040	BT	7	1.5-2.5	Agriculture		Plain
6	201+050	201+400	350	BT	7		Builtup	Lehanewadi	Plain
7	201+400	203+085	1685	BT	7	1.5-2.5	Agriculture		Plain
8	203+085	203+273	188	BT	7	1-1.5	Hilly		Hilly
9	203+273	204+513	1240	BT	7	1-1.5	Hilly Forest		Hilly
10	204+513	205+220	707	BT	7	1.5-2.5	Agriculture		Plain
11	205+220	206+473	1253	BT	8	1.5-2.6	Agriculture		Plain
12	206+473	206+783	310	BT	8	1.5-2.6	Agriculture		Plain
13	206+783	208+048	1265	BT	7		Builtup	Sautada	Plain
14	208+048	208+857	809	BT	7	1.5-2.5	Agriculture		Plain

0.6 TERRAIN

The terrain along this road is generally plain & Hilly. Details of the terrain along the project stretches are shown in **Table 0.3**.

Table 0.3- Details of Terrain

S. No.	Design Chainage		Length (m)	Terrain
	Km	Km		
1	195+375	203+100	7725	Plain
2	203+100	205+640	2540	Hilly
3	205+640	208+774	3134	Plain

0.7 FOREST

1.228 Km Forest land exists on the project land as per site inspections.

S. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Land Use	Remarks
	Km	Km		Km	Km			
1	203+273	204+513	1240	203+232	204+460	1228	Hill Forest	

0.8 TRAFFIC

In this chapter, the report is concerned about **Jamkhed to Sautada Road**.

Traffic survey locations and schedules were, as given below: -

Table 0.4 –Traffic surveys and their dates of commencement

Section	Date of Traffic Survey		Duration
	From	To	
Classified Traffic Volume Count			
Km 199+523	01.07.2016	07.07.2016	7 Days/24 Hours

The following ADT and PCU were observed on project road –

Table 0.5–ADT and PCU observed

Traffic Projection on Jamkhed to Sautada Road		
Location: 199+523		
Year	ADT	PCU
Present Year 2016	5361	6579
projected traffic 5% Configuration		
Present Year 2021	6842	8397
Traffic Growth Rate = 5%		
2022	7184	8817
2023	7543	9258
Base Year 2024	7920	9721
2025	8316	10207
2026	8732	10717
2027	9169	11253
2028	9627	11816
2029	10108	12407
2030	10613	13027
2031	11144	13678
2032	11701	14362
2033	12286	15080
2034	12900	15834
2035	13545	16626
2036	14222	17457
2037	14933	18330
2038	15680	19247
2039	16464	20209
2040	17287	21219
2041	18151	22280
2042	19059	23394
2043	20012	24564
2044	21013	25792
2045	22064	27082
2046	23167	28436
2047	24325	29858
2048	25541	31351
2049	26818	32919
2050	28159	34565
2051	29567	36293
2052	31045	38108
2053	32597	40013
2054	34227	42014

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

Table 0.6–ADT and PCU observed at 2021 year

Vehicle Category	AT KM 199+523	
	ADT	PCU
Two wheeler	2318	1159
Three Wheeler	138	69
Car/Jeep/Van/Taxi	2488	2488

Vehicle Category	AT KM 199+523	
	ADT	PCU
Mini Bus	314	471
Bus	333	999
LCV	496	744
2 - Axle Truck	391	1172
3 Axle Truck	197	591
Multi Axle Truck	116	522
Tractor with Trailer	34	152
Tractor without Trailer	3	5
Total Fast Moving Vehicles (FMV)	6827	8371
Cycles	11	6
Cycle Rickshaw	0	0
Bullock Cart	3	20
Horse Drawn	0	0
Hand Cart	0	0
Total Slow Moving Vehicles	15	25
Total	6842	8397
CVPD	1533	

0.9 PAVEMENT COMPOSITIONS

As per the design CVPD & minimum CBR considered for design CBR 8%, as per cl.no. 5.7.3.6 of IRC: 58-2015.

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

S. No.	Section	CVPD	CBR (%)	Pavement Composition (mm)			
				PQC	DLC	GSB	Subgrade
1	Jamkhed to Sautada Road	1533	8%	280	150	150	500

0.10 PROPOSED BYPASSES

No Bypasses have been proposed in this section of Highway.

0.11 ROAD JUNCTIONS/INTERSECTIONS

There are 04 major and 12 minor junctions which are important. Their details are-

Table 0.8- Details of Existing Junctions

Major Junctions

Sr. No.	Ex Chainage (Km)	Design Chainage (Km)	Location	At Grade	Separated	Category of cross road			
						NH	SH	MDR	Others
1	195+375	195+375	RHS-Talegaon, LHS-Ahmednagar	Y	-	NH			
2	196+880	196+875	RHS-Chumbhali	T	-		SH		
3	197+010	197+018	RHS-Jamkhed Town	T	-				Other
4	200+010	200+030	RHS- Patoda	Y	-		SH		

Minor Junctions

Sr. No.	Existing Chainage	Design Chainage (Km)	Location	Type	Type of Road SH/ MDR/VR/ PMGSY/ Other
1	195+690	195+690	LHS-VR	T	Other
2	195+930	195+930	RHS-VR	Y	Other
3	196+174	196+174	LHS-Jamkhed Town	X	Other
4	196+290	196+290	RHS-VR	Y	Other
5	196+420	196+420	RHS-VR	Y	Other
6	196+875	196+875	LHS- Matkuli	T	LHS- VR
7	196+980	196+980	LHS-VR	T	VR
8	197+693	197+690	LHS-VR	Y	Other
9	197+933	197+930	LHS-VR	Y	Other
10	198+588	198+585	BHS- Jamkhed Town	X	Other
11	201+257	201+253	RHS- Savargaon	Y	VR
12	201+637	201+633	LHS- Hapatwadi	Y	VR
13	202+240	202+236	BHS- Moha	X	VR
14	203+103	203+100	LHS	Y	VR
15	207+040	207+061	LHS- Sautada	T	Other
16	207+220	207+233	LHS- Sautada	Y	Other
17	207+410	207+325	RHS- Pimpalwadi	Y	VR
18	207+840	207+762	LHS- Rameshwar/ Sautada Dam	X	VR

0.12 ROAD SIDE DRAINS

Covered RCC drains cum footpath 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 - 0.9 Locations of Covered RCC Drains

RCC Rectangular Drain in Built-up Area

Sr. No.	Design Chainage (Km)		Length (m)		Type	Remark
	From	To	LHS	RHS		
1	195+375	195+919	544.00	544.00	RCC Rectangular Drain	Jamkhed
2	196+000	196+875	875.00	875.00	RCC Rectangular Drain	Jamkhed
3	196+875	197+400	525.00	525.00	RCC Rectangular Drain	Jamkhed
4	197+400	199+000	1600.00	1600.00	RCC Rectangular Drain	Jamkhed
5	199+750	200+065	315.00	315.00	RCC Rectangular Drain	Skat Phata
6	201+050	201+400	350.00	350.00	RCC Rectangular Drain	Moha
7	206+700	207+080	380.00	380.00	RCC Rectangular Drain	Sautada
8	207+230	207+800	570.00	570.00	RCC Rectangular Drain	
	Length		5159.00	5159.00		
	Total Length		10.318 km			

Lined Drain in Hilly Area

Sr. No.	Design Chainage (Km)		Length (m)	Remark
	From	To		
1	203+100	203+240	140.00	Lined Drain in

Sr. No.	Design Chainage (Km)		Length (m)	Remark
	From	To		
2	203+240	205+640	2400.00	Hilly Area
Total Length (km)			2.540 km	

0.13 SUBMERGENCE

No area of the road falls under submergence area.

0.14 CROSS DRAINAGE WORKS

Bridges

Total 04 bridges exist on the project road.

There are 01 Major bridge in the project road, which is proposed for Widening & New Major Bridge is proposed parallel to existing bridge. There are 03 minor bridges in the project road which are proposed for reconstruction.

Table 0.10 Details of Bridges

Major Bridge:

Sr. No.	Existing details			Proposed details				
	Name of River and Type of Crossing	Chainage (Km)	Existing Span Arrangement (No. of Span x Span Length) (m)	Total outer width of Bridges (m)	Proposal	Proposed Structure	Proposed span Arrangement	Proposed Width(m)
1	Vin sarna River	195+960	9x9	8.1	Widening Parallel New Construction	M/B	9X9	11.1
2	Vin sarna River	-	-	-	New Proposal	M/B	9X9	11.0

Minor Bridge:

Sr. No.	Existing details				Proposed details			
	Chainage (Km)	Existing Span Arrangement (m)	Clear Roadway width b/w kerbs (m)	Total outer width of Bridges (m)	Proposal	Proposed span Arrangement	Proposed Width (m)	Remarks
1	200+880	2X5.5	7.5	8.1	MNB	2X6	16.0	Reconstruction
2	202+060	3X5.3	7	7.5	MNB	2X8	16.0	Reconstruction
3	207+120	2X4.2	11.9	12.9	MNB	1X10	16.0	Reconstruction

CULVERTS

There are total 23 culverts of Which 14 are proposed for new construction and 9 are proposed for reconstruction .

Table 0.11 Details of Culverts

Sl. No .	Design Chainage	Type of structures	Span Arrangement (m)	Width of Culvert (m)	PROPOSAL		
					Retained / Widening /Reconstruction	Type of structures	Span Arrangement
1	195+710	-	-	-	Reconstruction	HPC	1X1200
2	197+010	PIPE LAID	1 X 1200	-	Reconstruction	HPC ENCASING	1X1200
3	198+315	HPC	1 ROW 900	9.6	Reconstruction	HPC	1X1200
4	198+730	HPC	1 ROW 600	17	Reconstruction	HPC	1X1200
5	199+055	HPC	1 ROW 600	12.4	Reconstruction	HPC	1X1200
6	201+000				New Construction	HPC	1X1200
7	201+460				New Construction	HPC	1X1200
8	201+810	HPC	1 X 1200	14.2	Reconstruction	HPC	1X1200
9	201+950				New Construction	HPC	1X1200
10	203+150				New Construction	HPC	1X1200
11	203+770				New Construction	HPC	1X1200
12	203+900				New Construction	HPC	1X1200
13	204+150				New Construction	HPC	1X1200
14	204+300				New Construction	HPC	1X1200
15	204+450				New Construction	HPC	1X1200
16	204+600				New Construction	HPC	1X1200
17	204+785				New Construction	SLAB	1X4
18	205+110				New Construction	HPC	1X1200
19	205+765				New Construction	HPC	1X1200
20	206+000				New Construction	HPC	1X1200
21	207+495	STONE SLAB	1X1	10.2	Reconstruction	SLAB	1X4
22	207+965	STONE SLAB	1X2.5	10.5	Reconstruction	SLAB	1X4
23	208+510	STONE SLAB	1X3.5	10.2	Reconstruction	SLAB	1X5

0.15 RAILWAY TRACKS / CROSSINGS

No railway track exists on the project road corridor.

0.16 VEHICULAR / SMALLER VEHICULAR UNDERPASSES : - NIL

0.17 SLIP/SERVICE ROAD : - NIL

0.18 TOLL PLAZA

No toll plaza is proposed on the project road.

0.19 ROADWAY FACILITIES

(a) Way Side Amenities

There is not any proposal for way side amenities.

(b) Truck/Bus Lay Bys/ Bus shelters

Truck lay byes and bus byes are not proposed on the project road.

Bus shelters are proposed at selected villages. Bus shelters are provided at 3 locations along the

project road.

The details of which are given in **Table 0.12**. Their details are given below-

Table 0.12- Locations of proposed Bus Shelters in Villages

Sr. No.	Design Chainage	Side	Village/Town Name	Remarks, if any
1	195+400	Both Side	Jamkhed	Bus Shelter
2	201+050	Both Side	Lehonewadi	Bus Shelter
3	206+700	Both Side	Sautada	Bus Shelter

0.20 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

0.21 DESIGN PARAMETERS

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

Table 0.13- Design Parameters

Sr. No.	Item	Plain/Rolling Terrain
1	Design speed (kmph)	80 Kmph - 100 Kmph.
2	Land width (m) Open / Built-up area	In Open areas 22-25m & in Built-up areas 12-15 m.
3	Width of carriageway (m)	7m
4	Paved shoulders	-
5	Unpaved shoulders	2 x 1m
6	Camber/cross fall	
(i)	Carriageway & paved shoulders	2%
(ii)	Earthen shoulders	3.0%
7	Maximum super elevation	7%
8	Minimum Radii of horizontal curves (m)	400m ruling /250m min.
9	Minimum length of curves (m)	150 m for every deflection angle of 50
11	Drains	As per Design
12	Sight Distance	As per IRC 73 & IRC 86
13	Gradient	
(i)	Ruling Gradient	3.33%
(ii)	Limiting Gradient	5%
(iii)	Exceptional Gradient	6.7%
14.	Vertical Clearance for power/ telecommunication lines Low Voltage up to 110 V	5.5m

Sr. No.	Item	Plain/Rolling Terrain
	Power Line up to 650V	6.0m
	Electric Power line more than 650 V	6.5m

0.22 SUMMARY OF PROPOSED TYPICAL CROSS-SECTION

Rigid pavement in Open Area

Sr. No.	Design Chainage (Km)		Length (m)	Carriageway & PS (m)	Typical cross section
	From	To			
1	199+000	199+750	750	1.5+7.0+1.5=10m	TCS 1
2	200+065	201+050	985	1.5+7.0+1.5=10m	TCS 1
3	201+400	203+100	1700	1.5+7.0+1.5=10m	TCS 1
4	205+640	206+400	760	1.5+7.0+1.5=10m	TCS 1
5	206+400	206+600	200	1.5+7.0+1.5=10m	TCS 1
6	206+600	206+700	100	1.5+7.0+1.5=10m	TCS 1
7	207+080	207+230	150	1.5+7.0+1.5=10m	TCS 1
8	207+800	208+774	974	1.5+7.0+1.5=10m	TCS 1
Total Length(A)			5.619 km		

Rigid pavement in Hilly Area

Sr. No.	Design Chainage (Km)		Length (m)	Carriageway	Typical cross section
	From	To			
1	203+100	203+240	140.00	1.5+7.0+1.5=10m	TCS 2
2	203+240	205+640	2400.00	1.5+7.0+1.5=10m	TCS 2
Total Length(B)			2.540 km		

Rigid pavement in Builtup Area (2L+PS)

Sr. No.	Built-up stretch (township)	Design Chainage(km)		Length (m)	Carriageway Width (m)	Typical cross section
		From	To			
1	Skat Phata	199+750	200+065	315	2.5+7+2.5=12m	TCS 3
2	Moha	201+050	201+400	350	2.5+7+2.5=12m	TCS 3
3	Sautada	206+700	207+080	380	2.5+7+2.5=12m	TCS 3
4	-	207+230	207+800	570	2.5+7+2.5=12m	TCS 3
Total Length(C)				1.615 km		

Rigid pavement in Built-up Area (4 Lane)

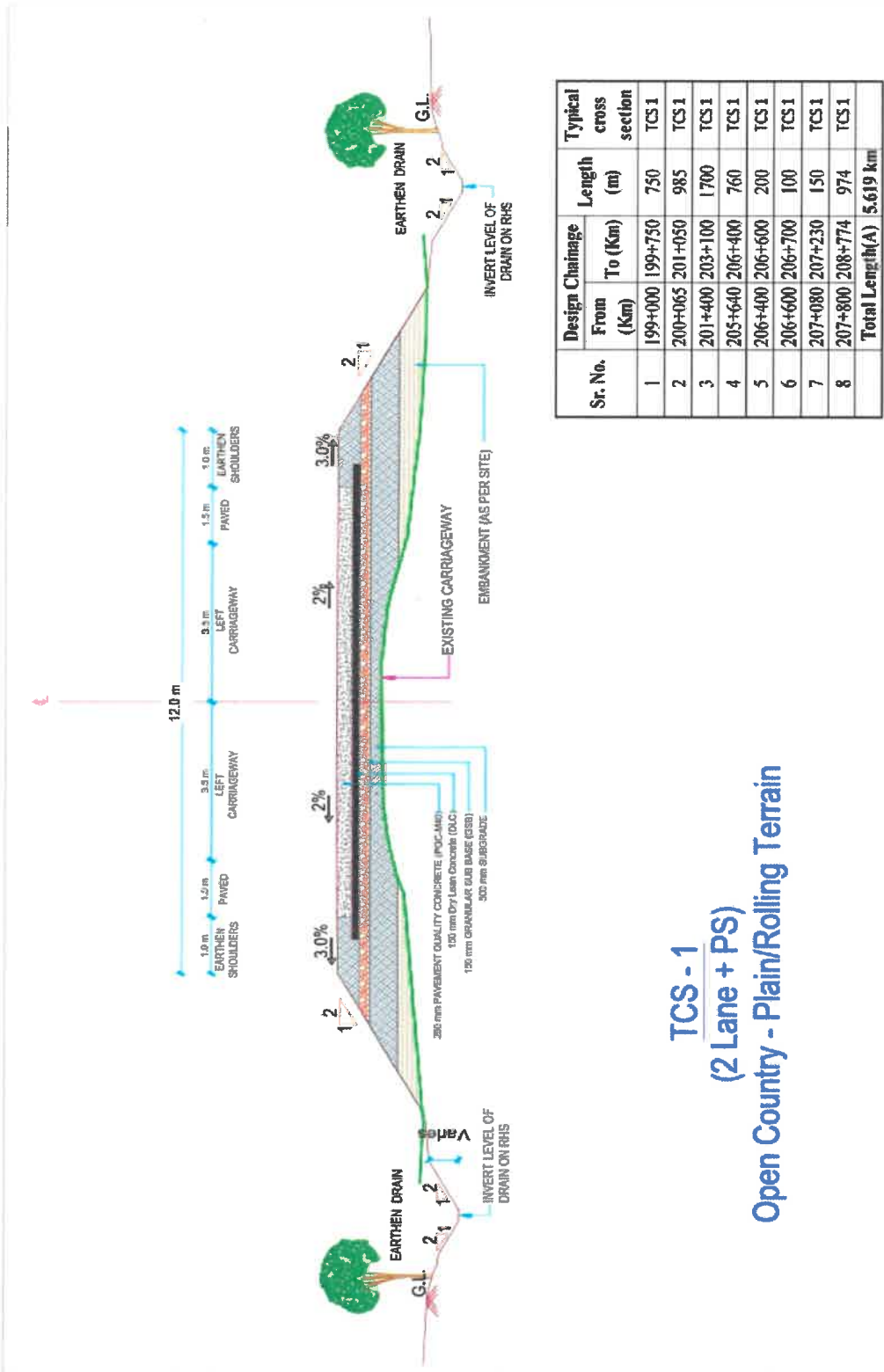
Sr. No.	Built-up stretch (township)	Design Chainage(km)		Length (m)	Carriageway Width (m)	Typical cross section
		From	To			
1	Jamkhed	195+375	196+875	1500.00	2x7=14m	TCS 4
2	Jamkhed	196+875	197+400	525.00	2x7=14m	TCS 4
3	Jamkhed	197+400	199+000	1600.00	2x7=14m	TCS 4

Sr. No.	Built-up stretch (township)	Design Chainage(km)		Length (m)	Carriageway Width (m)	Typical cross section
		From	To			
		Total Length(D)		3.625 km		

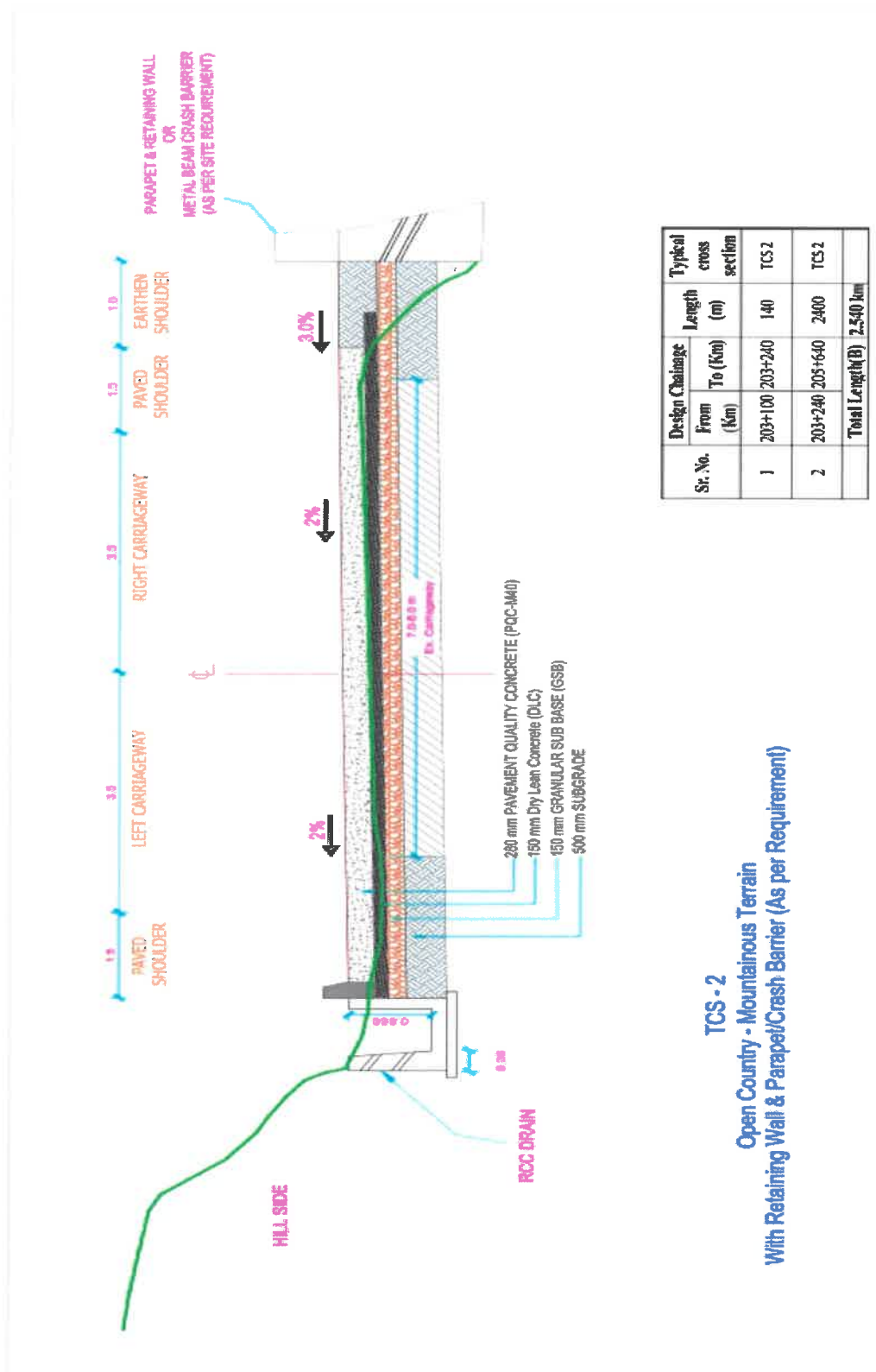
$$\text{Total Length} = A+B+C+D = 5.619 + 2.54 + 1.615 + 3.625 = 13.399 \text{ km}$$

0.23 TYPICAL CROSS SECTION

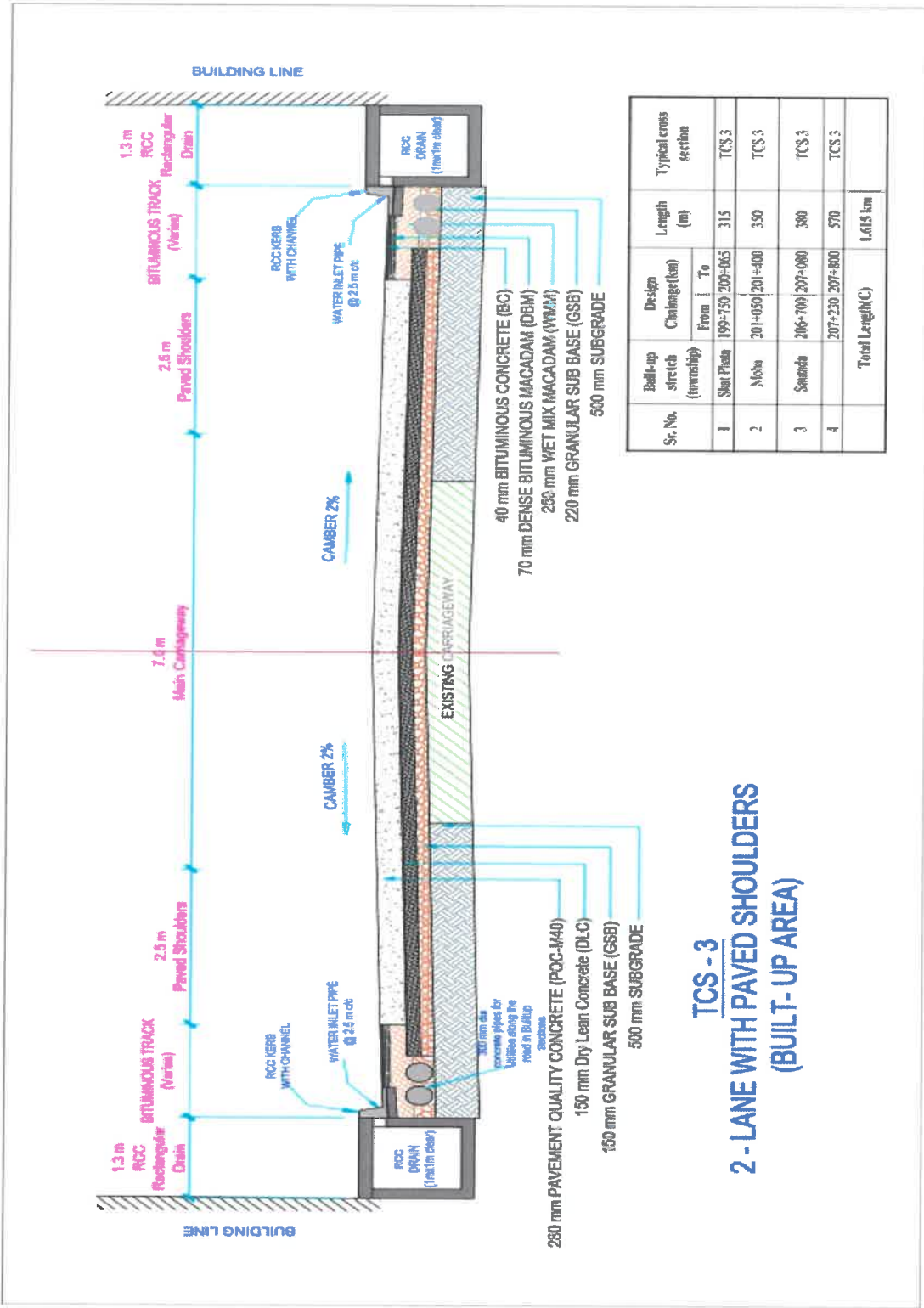
TCS 1 for 2L+PS configuration for open area



TCS 2 for 2L+PS configuration for Hilly area

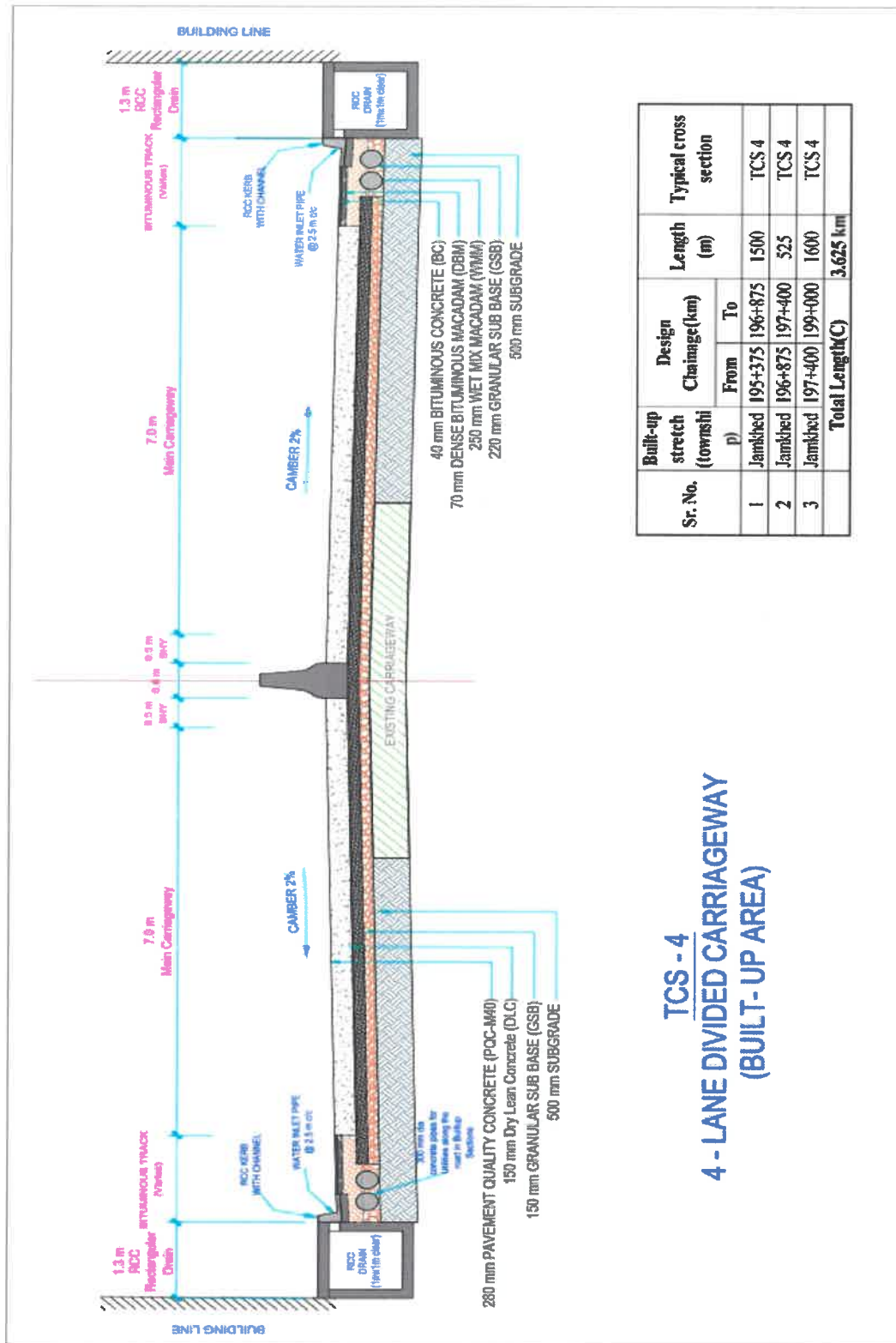


TCS 3 for 2L with Paved shoulders in Built-up Area



TCS - 3
2 - LANE WITH PAVED SHOULDERS
(BUILT - UP AREA)

TCS 4 for 4L configuration in Built-up area with drain & with NJ type Crash Barriers



0.24 GEOMETRIC IMPROVEMENT AND LAND REQUIREMENTS

GEOMETRIC IMPROVEMENTS

Following deficient curves have to be improved as per IRC guidelines:

S. No	Existing Chainage (Km)		Length (m)	Existing Radius (m)	Design Chainage (Km)		Length (m)	Design Radius	Remark
	Start Curve	End Curve			Start Curve	End Curve			
1	204+369	204+513	144	65	204+327	204+460	133	250	As per IRC guidelines
2	205+220	205+423	203	84	205+167	205+350	183	200	
3	206+473	206+683	210	64	206+400	206+600	200	250	

Realignments

S. No	Existing Chainage		Length (m)	Existing Radius (m)	Design Chainage		Length	Design Radius (m)	Remark
	Start Curve	End Curve			Start Curve	End Curve			
1	203+085	203+328	243	15	203+085	203+286	201	60	As per IRC guidelines

LAND REQUIREMENTS

The details of Land available and required to be acquired are as under:

Jamkhed Sautada Road (NH 548D)					
Village	Area Ha	Design Chainage (Km)		Length (m)	Purpose for land acquisition
		From	To		
Moha	0.008	201+600	201+750	150.00	Curve Improvement
	0.020				
	0.004				
	0.008	203+000	203+200	200.00	
	0.015				
	0.039				
	0.161				
	2.568	203+200	204+400	1200.00	Widening
2.824					
Sautada	0.195	204+400	204+800	400.00	Curve Improvement
	0.095				
	0.255	205+200	205+400	200.00	
	0.204	206+400	206+600	200.00	
	0.003	207+200	207+450	250.00	
	0.067				
	0.818				
	3.642			2600.00	

Total Land required = 33.50 Ha,
Total Land available = 29.86 Ha,
Total Land to be acquired = 3.642 Ha

0.25 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 estimate is worked out based on the data obtained from detailed reconnaissance and inventory of the project roads, records from MoRT&H data book 2019-2020 and guidelines given in TOR.

The rates of the items are based on SOR -2020-2021

Sr. No.	Items	Cost in Rupees	Cost in crore
A1	<u>Widening and strengthening of existing road</u>	-	
1	Site Clearance including dismantling	4766796.22	0.48
2	Earthwork	121176184.29	12.12
3	Granular work (sub-base, base, shoulders)	94061340.55	9.41
4	Bituminous work		
	(a) BC	7542906.12	0.75
	(b) DBM	12545690.86	1.25
	Total Bituminous Work	20088596.98	2.01
5	Cement Concrete pavement work		
	(a) PQC	378083557.76	37.81
	(b) DLC	97933975.20	9.79
	Total CC Work	476017532.96	47.60
6	Slip Roads	0.00	0.00
	Sub total A1	716110451.00	71.61
A2	Major Bridge Works	59856212.00	5.99
	Sub total A2	59856212.00	5.99
A3	<u>Culverts, minor bridges, underpasses, overpasses on existing road, realignments and bypasses:</u>	-	
1	Culverts	37856105.94	3.79
2	Minor bridges	50686486.28	5.07
3	Cattle / Pedestrian underpass	0.00	0.00
4	Pedestrian overpass	0.00	0.00
5	Grade Separated structures	0.00	0.00
6	Light Vehicular Underpass (LVUP)	0.00	0.00
7	Overpass	0.00	0.00
	Sub total A3	88542592.22	8.85
A4	OTHER WORKS		
1	Toll Plaza	0.00	0.00
2	Road side drains	93435181.73	9.34
3	Protection Works (Retaining Wall, Toe Wall, Pitching of Stone)	63625879.04	6.36
4	W-Metal Beam Crash Barrier	6667500.00	0.67
5	Road signs, markings, km stones, Boundary stones, safety devices, utility ducts etc.	22135686.36	2.21
6	Bus Shelter and Truck lay Bay	1500000.00	0.15
7	NJ Type Barrier for Median/Divider @ 4 Lane Locations	9780869.42	0.98
8	Junctions	56782101.38	5.68
9	Street Lighting in Towns	11957994.40	1.20
10	Utility Duct (Across the Road & Along Builtup Sections)	18284379.37	1.83
11	Horticulture (Tree Plantation & Its maintenance)	0.00	0.00
11	Utility Shifting Cost		
	a. Electrical works	31847235.39	3.19
	b. Water supply works	9338052.60	0.93
	Sub total A4	325354879.70	32.54
A	CIVIL COST (A) = A1+A2+A3+A4	1189864134.91	118.99
B	Add GST @12% of civil cost	142783696.19	14.28
C	Cost of Civil Works including GST (A+B)	1332647831.10	133.27
D	Maintenance Charges (For 10 years @ 5% of C)	66632391.56	6.66
E	Contingencies @ 1% of (A)	11898641.35	1.19
F	Agency Charges 3% on (A)	35695924.05	3.57
G	Supervision 3% on (A)	35695924.05	3.57

Sr. No.	Items	Cost in Rupees	Cost in crore
H	Price Escalation: 5% on C	66632391.56	6.66
	Total project cost	1549203103.66	154.92
I	Land Acquisition	24162741.79	2.42
J	Tree Cutting and Compensatory Plantation	2848065.00	0.28
K	Total Capital cost of the project	1576213910.45	157.62

SALIENT FEATURES

Sr. No.	Particulars	Details
1.	Length of the project	13.399 Km
2.	Existing ROW	
	(i) Minimum	10.0 m
	(ii) Maximum	30.00m
	(iii) Average	24.0m
3.	Existing Carriage way	Length of Intermediate Lane (3.128 Km) Length of Two lane (10.354 Km) Total length = 13.482 km
4.	Improvement proposal	2L+PS (1.5m)= 5.619 km 2L+PS (2.5m) (Builtup Section)= 1.615 km 4L (Builtup Section) = 3.625 km 2L+PS(1.5m) in Hilly Terrain = 2.540 Km Total length= 13.399 km
5.	Traffic	8397 PCU/Day (Near Jamkhed)
6.	Land Acquisition details	Total Land required = 33.50 Ha, Total Land available =29.86 Ha Total Land to be acquired= 3.64 Ha, Cost of LA= 2.416 Cr. Land available in terms of linear measurement 80.60 %
7.	Utility shifting details	Cost = 4.12 crore (i) Water line= 0.93 Cr. (ii)Electric Line= 3.19 Cr
8.	Forest clearance and Tree Cutting cost	Project road passes through forest in 1.20 Km length in which improvement of geometry is proposed as per minimum requirement. Forest clearance proposal is submitted.
9.	Cost	(i) Total Civil cost= 133.27 Cr. including GST (ii) Total Project cost= 154.92 Cr (Per km = 11.310 Cr) (iii) Total Capital cost= 157.62 Cr. (Per km = 11.512 Cr)
10.	Earthwork up to the top of subgrade	12.118 crore
11.	Major Bridges	Existing = 01 Nos, Proposed = 01 No. Widening of existing bridge + 01 No. New construction parallel to existing.
12.	Minor Bridges	Existing = (03 nos), To be reconstructed – 03 Nos.
13.	Culverts (Pipe & Slab)	Existing = 09 Nos (3 Slab,06 HPC) Proposed = (Reconstruction -03 Slab+06 HPC), (New- HPC- 13 No., New Slab – 01 Nos.) = 23 Nos (slab-4, HPC-19).
14.	Foot Underpass	Existing = Nil Proposed = Nil
15.	VUP	Existing = Nil Proposed = Nil
16.	ROB	Existing = Nil Proposed = NIL
17.	Foot Over Bridge	Existing = Nil Proposed = Nil
18.	Major & Minor Road	Existing = 04 Major, 12 Minor

Sr. No.	Particulars	Details
	Junctions	
19.	Toll Plaza	Nil

Permissible 3D							
Sr. no.	District	Tehsil	Village no.	Village Name	Govt. Land	Private Land	Total (Hact.)
1	Morena	Sabalgarh	21	Atar (1)	20.662	4.903	25.565
				Bantbar (2)			
				Banwara (3)	1.474	13.7682	15.2422
				Barotha (4)	25.94738	1.376	27.32338
				Bhatpura (5)	12.0451	0	12.0451
				Digwar (6)	2.667	0.521	3.188
				Gadhula (7)	12.122961	2.158	14.280961
				Gajkheda (8)			
				Gondoli (9)			
				Gurema (10)	13.8447	3.9678	17.8125
				Heerapur (11)			
				Ihamipura (12)			
				Kachhinda (13)	15.995	0.269	16.264
				Kadawana (14)	4.976	6.139	11.115
				Kaimara Kalan (15)			
				Kaimara Khurd (16)	12.722	2.151	14.873
				Khairon (17)	33.5189	0	33.5189
				Kheda Digwar (18)	15.202	0	15.202
				Norwali Khairon (19)			
				Palari (20)	0.2964	1.9919	2.2883
				Rahu Ra Gason (21)			
				TOTAL	171.473441	37.2449	208.718341
		Morena	11	Gadora (1)	19.307	0.5	19.807
				Gorkha (2)	18.507	2.01	20.517
				Gospur (3)			
				Jakhona (4)	43.8986	2.7635	46.6621
				Jarah (5)	3.764	2.312	6.076
				Kainthari (6)	17.82	6.143	23.963
				Masoodpur (7)	7.794	11.286	19.08
				Nayakpura (8)			
				Paprai (9)			
				Tichhauia (10)	13.7837	8.6816	22.4653
				Vindwa Chambal (11)	6.191	6.474	12.665
				TOTAL	131.0653	40.1701	171.2354
		Abmah	7	Dandoli (1)	5.211	7.298	12.509
				Esah (2)	20.547	8.0849	28.6319
				Geonj (3)			
				Jonha (4)			
				Khirenta (5)	2.432	10.707	13.139
				Rithona (6)			
				Tiloi (7)			
				TOTAL	28.19	26.0899	132.676
		Joura	18	Barijgadhi (1)	29.687	7.378	37.065
				Barred (2)			
				Bindwa Deogarh (3)	10.47	0	10.47
				Chidnawara (4)			
				Chirumoni Chambal (5)			
				Gudha Chambal (6)	2.48	0	2.48
				Gurja (7)	20.91	0	20.91
				Khandoli (8)			
				Kolhudanda (9)	28.174	1.92	30.094
				Kotara (10)	9.485	5.315	14.8
				Milaua (11)	15.017	5.264	20.281
				Nandpura (12)	5.79	1.455	7.245
				Sarsani (13)			
				Singhroli (14)	13.794	3.412	17.206
				Sukhpura (15)			
				Tajpur (16)	15.146	0	15.146
				Tindokhar (17)			
				Uttampura (18)	14.611	2.898	17.509
				TOTAL	165.564	27.642	193.206
			16	Barwai (1)	14.2994	26.1535	40.4529
				Bhadawali (2)			
				Chapak (3)	10.1561	0	10.1561
				Dhaurra (4)	19.658	0.47	20.128
				Kudona (5)	10.755	0	10.755
				Kuretha (6)			
				Lodhawali (7)			

		Porsa		Mahua (8)	27.1241	3.9664	31.0905
				Nagara Porsa (9)	16.2885	0	16.2885
				Rachhed (10)	5.795	2.659	8.454
				Rajpur (11)	23.2498	20.8505	44.1003
				Ratan Basai (12)	12.878	15.255	28.133
				Rithora Marjadgarh (13)	12.354	0.264	12.618
				Ruar (14)	14.278	6.514	20.792
				Silawali (15)	25.105	0.3596	25.4646
				Vijaygarh (16)	0.4974	0.2398	0.7372
				TOTAL	192.4383	76.7318	269.1701
				District Wise Total	688.731041	207.8787	975.005841
			36	Aawani (1)	5.916	9.97	15.886
				Adoosa (2)	0.263	5.121	5.384
				Adwad (3)	1.584	14.791	16.375
				Badwadaram (4)			
				Bagdari (5)	9.485	12.66	22.145
				Bagdiya (6)	5.435	27.104	32.539
				Barwada (7)			
				Bichpuri (8)			
				Biloni (9)	14.966	2.925	17.891
				Chakjwad (10)	0.994	7.336	8.33
				Chhitakhedli (11)	0.822	10.318	11.14
				Dabarsa (12)	1.636	17.789	19.425
				Datarde Kallan (13)	3.515	23.735	27.25
				Dhiroli (14)	3.123	7.957	11.08
				Fatehpur (15)	5.849	5.388	11.237
				Jani (16)			
				Jalalpura (17)	2.136	11.17	13.306
				Jalera (18)	0.520	5.346	5.866
				Jawasa (19)	1.971	18.839	20.81
				Jwad (20)	0.675	24.016	24.691
				Khirkhiri (21)	5.926	10.16	16.086
				Khojipura (22)	0	13.27	13.27
				Laghchoda (23)	3.765	3.717	7.482
				Makdod (24)	7.119	19.229	26.348
				Makhanakhedli (25)	2.316	17.515	19.831
				Mubhammadpur (26)			
				Mudalapada (27)	0.802	7.807	8.609
				Pahadlya (28)	0.671	21.623	22.294
				Panadi (29)	1.04	6.999	8.039
				Sada Ka Pada (30)	1.678	5.494	7.172
				Samrsa (31)	2.182	7.934	10.116
				Sewapur (32)			
				Sirsod (33)			
				Talawada (34)	0.952	14.068	15.02
				Unchakheda (35)			
				Vitthalpur (36)	0.269	6.254	6.523
				Sub Total	85.61	338.535	424.145
			21	Arrodari (1)	8.28	17.029	25.309
				Baroli (2)	19.203	9.108	28.311
				Bhuredi (3)	3.915	21.314	25.229
				Champur (4)			
				Dhori Badadi (5)	0	1.887	1.887
				Dolpura (6)	0.119	4.243	4.362
				Duvawali (7)			
				Ghughas (8)	2.315	0	2.315
				Hirapura (9)	8.269	22.356	30.625
				Jainpura (10)			
				Jimarchha (11)			
				Khatronda Kalan (12)			
				Leeloli (13)	7.542	0	7.542
				Milawali (14)	1.619	12.452	14.071
				Nadiyaon (15)	57.582	3.287	60.869
				Nitanwas (16)	30.904	1.704	32.608
				Pancho (17)	15.461	14.492	29.953
				Parashtha (18)			
				Parvatipura (19)	1.589	4.897	6.486
				Sukhwas (20)	1.16	12.622	13.782
				Suthara (21)	1.279	8.612	9.891
				Sub Total	159.237	134.003	293.24

				District Wise Total	244.847	472.538	717.385
3	Bhind	Bhind	1	Barhi (1)	12.316	16.428	28.744
		Ater	26	Aakona (1)	9.419	3.091	12.51
				Ahrolkali (2)			
				Arjunpura (3)	6.4512	0	6.4512
				Badapura (4)	2.601	3.775	6.376
				Baderi (5)	1.85	5.97	7.82
				Bijoura (6)			
				Chachar (7)	0	0.868	0.868
				Chilunga (8)			
				Gadha (9)	0.305	0	0.305
				Ghinochi (10)	10.722	1.591	12.313
				Himmatpura (11)	3.413	3.591	7.004
				Jamsara (12)	22.347	0.321	22.668
				Jori Ahir (13)	8.034	3.202	11.236
				Kadunra (14)			
				Kanera (15)	40.5151	6.7943	47.3094
				Khairahat (16)			
				Khipona (17)			
				Koshan (18)			
				Nakhli (19)			
				Nawali Vindawan (20)	0.3708	16.8653	17.2361
				Pariyaya (21)	10.91	0	10.91
				Raipura (22)	9.249	6.467	15.716
				Rama (23)	9.333	0	9.333
				Ranipura (24)	0.852	6.445	7.297
				Salimpura (25)	9.61	0	9.61
				Vindwa (26)	3.883	2.214	6.097
				Sub Total	149.8651	61.1946	211.0597
				District Wise Total	162.1811	77.6226	239.8037
				Grand Total	1095.759141	758.0393	1932.194541
% of Total area					68.15264929	64.42164346	69.39143991

Permissible 3D							
Sr. no.	District	Tehsil	Village no.	Village Name	Govt. Land	Private Land	Total (Hact.)
1	Morena	Sabalgarh	21	Atar (1)	20.662	4.903	25.565
				Banthar (2)			
				Banwara (3)	1.474	13.7682	15.2422
				Barooha (4)	25.94738	1.376	27.32338
				Bhatpura (5)	12.0451	0	12.0451
				Digwar (6)	2.667	0.521	3.188
				Gadhuia (7)	12.122961	2.158	14.280961
				Gajikheda (8)			
				Gandoli (9)			
				Gurema (10)	13.8447	3.9678	17.8125
				Hotrapur (11)			
				Jhundpura (12)			
				Kachhinda (13)	15.995	0.269	16.264
				Kadawana (14)	4.976	6.139	11.115
				Kaimara Kalan (15)			
				Kaimara Khurd (16)	12.722	2.151	14.873
				Khairon (17)	33.5189	0	33.5189
				Kheda Digwar (18)	15.202	0	15.202
				Norwali Khairon (19)			
				Palari (20)	0.2964	1.9919	2.2883
				Raha Ka Gaon (21)			
				TOTAL	171.473441	37.2449	208.718341
		Morena	11	Gadora (1)	19.307	0.5	19.807
				Gorkha (2)	18.507	2.01	20.517
				Gospur (3)			
				Jakhona (4)	43.8986	2.7635	46.6621
				Jarah (5)	3.764	2.312	6.076
				Kainthari (6)	17.82	6.143	23.963
				Masoodpur (7)	7.794	11.286	19.08
				Nayakpura (8)			
				Piprai (9)			
				Tichhaura (10)	13.7837	8.6816	22.4653
				Vindwa Chambal (11)	6.191	6.474	12.665
				TOTAL	131.0653	40.1701	171.2354
		Abmah	7	Dandoli (1)	5.211	7.298	12.509
				Esah (2)	20.547	8.0849	28.6319
				Gourj (3)			
				Jonha (4)			
				Khirenta (5)	2.432	10.707	13.139
				Ritbana (6)			
				Tilol (7)			
				TOTAL	28.19	26.0899	132.676
		Joura	18	Barijgadhi (1)	29.687	7.378	37.065
				Barred (2)			
				Bindwa Deogarh (3)	10.47	0	10.47
				Chhinwara (4)			
				Chirmoni Chambal (5)			
				Gudha Chambal (6)	2.48	0	2.48
				Gurja (7)	20.91	0	20.91
				Khandoli (8)			
				Kolhudanda (9)	28.174	1.92	30.094
				Kotara (10)	9.485	5.315	14.8
				Milaua (11)	15.017	5.264	20.281
				Nandpura (12)	5.79	1.455	7.245
				Satsami (13)			
				Singhroli (14)	13.794	3.412	17.206
				Sukhpura (15)			
				Tajpur (16)	15.146	0	15.146
				Tindokhar (17)			
				Uttampura (18)	14.611	2.898	17.509
				TOTAL	165.564	27.642	193.206
			16	Barwai (1)	14.2994	26.1535	40.4529
				Bhadawali (2)			
				Chapak (3)	10.1561	0	10.1561
				Dhaurra (4)	19.658	0.47	20.128
				Kudona (5)	10.755	0	10.755
				Kuretha (6)			
				Ludhawali (7)			

		Porsa		Mahua (8)	27.1241	3.9664	31.0905
				Nagara Porsa (9)	16.2885	0	16.2885
				Rachhed (10)	5.795	2.659	8.454
				Raipur (11)	23.2498	20.8505	44.1003
				Ratan Basai (12)	12.878	15.255	28.133
				Rithora Marjadgarh (13)	12.354	0.264	12.618
				Ruar (14)	14.278	6.514	20.792
				Silawali (15)	25.105	0.3596	25.4646
				Vijaygarh (16)	0.4974	0.2398	0.7372
				TOTAL	192.4383	76.7318	269.1701
				District Wise Total	688.731041	207.8787	975.005841
			36	Aawani (1)	5.916	9.97	15.886
				Adoosa (2)	0.263	5.121	5.384
				Adwad (3)	1.584	14.791	16.375
				Baduadoram (4)			
				Bagdari (5)	9.485	12.66	22.145
				Bagdiya (6)	5.435	27.104	32.539
				Barwada (7)			
				Bichpuri (8)			
				Biloni (9)	14.966	2.925	17.891
				Chakjwad (10)	0.994	7.336	8.33
				Chhitakhedli (11)	0.822	10.318	11.14
				Dabarsa (12)	1.636	17.789	19.425
				Datarada Kallan (13)	3.515	23.735	27.25
				Dhiroli (14)	3.123	7.957	11.08
				Fatehpur (15)	5.849	5.388	11.237
				Jaini (16)			
				Jalalpura (17)	2.136	11.17	13.306
				Jalera (18)	0.520	5.346	5.866
				Jawasa (19)	1.971	18.839	20.81
				jwad (20)	0.675	24.016	24.691
				Khirkhiri (21)	5.926	10.16	16.086
				Khojpura (22)	0	13.27	13.27
				Laghchoda (23)	3.765	3.717	7.482
				Makdod (24)	7.119	19.229	26.348
				Makhanakhedli (25)	2.316	17.515	19.831
				Mohammadpur (26)			
				Mudalapada (27)	0.802	7.807	8.609
				Pahadiya (28)	0.671	21.623	22.294
				Panadi (29)	1.04	6.999	8.039
				Sada Ka Pada (30)	1.678	5.494	7.172
				Sanirsa (31)	2.182	7.934	10.116
				Sewapur (32)			
				Sirwad (33)			
				Talawada (34)	0.952	14.068	15.02
				Unchakhedli (35)			
				Vitthalpur (36)	0.269	6.254	6.523
				Sub Total	85.61	338.535	424.145
			21	Arrodari (1)	8.28	17.029	25.309
				Baroli (2)	19.203	9.108	28.311
				Bhuredi (3)	3.915	21.314	25.229
				Chainpur (4)			
				Dhori Badadi (5)	0	1.887	1.887
				Dolpura (6)	0.119	4.243	4.362
				Dovavali (7)			
				Ghughas (8)	2.315	0	2.315
				Hirapura (9)	8.269	22.356	30.625
				Janpura (10)			
				Jamanchha (11)			
				Khaironda Kalan (12)			
				Leeloli (13)	7.542	0	7.542
				Milawali (14)	1.619	12.452	14.071
				Nadigaon (15)	57.582	3.287	60.869
				Nitanwas (16)	30.904	1.704	32.608
				Pancho (17)	15.461	14.492	29.953
				Parashtha (18)			
				Purvatiपुरा (19)	1.589	4.897	6.486
				Sukhwas (20)	1.16	12.622	13.782
				Suthara (21)	1.279	8.612	9.891
				Sub Total	159.237	134.003	293.24

				District Wise Total	244.847	472.538	717.385
3	Bhind	Bhind	1	Barhi (1)	12.316	16.428	28.744
		Ater	26	Aakona (1)	9.419	3.091	12.51
				Ahrotikali (2)			
				Arjunpura (3)	6.4512	0	6.4512
				Badapura (4)	2.601	3.775	6.376
				Baderi (5)	1.85	5.97	7.82
				Bijoura (6)			
				Chachar (7)	0	0.868	0.868
				Chilonga (8)			
				Gadha (9)	0.305	0	0.305
				Ghinochi (10)	10.722	1.591	12.313
				Himmatpura (11)	3.413	3.591	7.004
				Jamsara (12)	22.347	0.321	22.668
				Jori Ahir (13)	8.034	3.202	11.236
				Kadoura (14)			
				Kanera (15)	40.5151	6.7943	47.3094
				Khairahat (16)			
				Khipona (17)			
				Koshan (18)			
				Nakhloji (19)			
				Nawali Vindawan (20)	0.3708	16.8653	17.2361
				Pariyaya (21)	10.91	0	10.91
				Raipura (22)	9.249	6.467	15.716
				Rama (23)	9.333	0	9.333
				Ranipura (24)	0.852	6.445	7.297
				Salimpura (25)	9.61	0	9.61
				Vindwa (26)	3.883	2.214	6.097
				Sub Total	149.8651	61.1946	211.0597
				District Wise Total	162.1811	77.6226	239.8037
				Grand Total	1095.759141	758.0393	1932.194541
% of Total area					68.15264929	64.42164346	69.39143991