

Annexure 3.7
Flexible Pavement Design

DESIGN OF FLEXIBLE PAVEMENT			
(Sample Calculation for Road No.42 - Proposed 4 Lane)			
Data Input:			
1) Traffic			
No. of Commercial Vehicles per Day on Road 42 -Both Direction			4705
2) Vehicle Damage Factor F			
			4.5
3) Design life in Years- n			
			20
4) Lane Distribution Factor D			
			0.75
5) Annual growth rate (%) r			
Upto Year 2016			4
Upto Year 2016			3
Upto Year 2021			3
Upto Year 2026			2
6) No. of years between last count and the year of completion of construction			
			2
7) CBR of Subgrade Soil			
			5%
Pavement Design :			
MSA = $365 \times VDF \times A \left(\frac{(1+r)^n - 1}{r} \right)$			
= $(365 \times 4.5 \times 4705/2 \times ((1+0.04)^5 - 1)/0.04) + 365 \times 4.5 \times 4705/2 \times ((1+0.03)^5 - 1)/0.03 + (365 \times 4.5 \times 4705/2 \times ((1+0.03)^5 - 1)/0.03)$			
+ $(365 \times 4.5 \times 4705/2 \times ((1+0.02)^5 - 1)/0.02)$			
= 67msa			
Pavement thickness from Design Curves/tables(IRC 37-2001) for 67 msa			850 mm
Proposed Pavement Composition			
	BC	50	mm
	DBM	150	mm
	WMM	250	mm
	GSBI	200	mm
	GSBII	200	mm
	Total	850	mm
Construtability point of view thickness of DBM of 140 mm and WMM of 225 mm has been proposed.			

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DESIGN OF FLEXIBLE PAVEMENT			
(Sample Calculation for Road No.27 - Proposed 2 Lane)			
Data Input:			
1) Traffic			
No. of Commercial Vehicles per Day on Road 27			549
2) Vehicle Damage Factor F			3.5
3) Design life in Years- n			20
4) Lane Distribution Factor D			0.75
5) Annual growth rate (%) r			
Upto Year 2016			4
Upto Year 2016			3
Upto Year 2021			3
Upto Year 2026			2
6) No. of years between last count and the year of completion of construction			2
7) CBR of Subgrade Soil			3%
Pavement Design :			
MSA =	$365 \times VDF \times A \left(\frac{(1+r)^n - 1}{r} \right)$		
	$= (365 \times 3.5 \times 549 \times \frac{((1+0.04)^5 - 1)}{0.04}) + 365 \times 3.5 \times 549 \times \frac{((1+0.03)^5 - 1)}{0.03} + 365 \times 3.5 \times 549 \times \frac{((1+0.03)^5 - 1)}{0.03}$		
	$+ (365 \times 3.5 \times 549 \times \frac{((1+0.02)^5 - 1)}{0.02})$		
	= 12msa		
Pavement thickness from Design Curves/tables(IRC 37-2001) for 20 msa			810 mm
Proposed Pavement Composition			
	BC	40	mm
	DBM	120	mm
	WMM	250	mm
	GSBI	200	mm
	GSBII	200	mm
	Total	810	mm
Construtability point of view thickness of DBM of 110 mm and WMM of 275 mm has been proposed.			

**Annexure 3.7
Flexible Pavement Design**

DESIGN OF FLEXIBLE PAVEMENT			
(Sample Calculation for Road No.9 - Proposed 6 Lane)			
Data Input:			
1) Traffic			
No. of Commercial Vehicles per Day on Road 9 (Expected Traffic in year 2006)-Both Direction		2489	
2) Vehicle Damage Factor F		4.5	
3) Design life in Years- n		20	
4) Lane Distribution Factor D		0.6	
5) Annual growth rate (%) r			
Upto Year 2016		4	
Upto Year 2016		3	
Upto Year 2021		3	
Upto Year 2026		2	
6) No. of years between last count and the year of completion of construction		2	
7) CBR of Subgrade Soil		3%	
Pavement Design :			
MSA =	$365 \times VDF \times A \frac{((1+r)^n - 1)}{r}$		
	$= (365 \times 4.5 \times 2489 / 2 \times ((1+0.04)^5 - 1) / 0.04) + 365 \times 4.5 \times 2489 / 2 \times ((1+0.03)^5 - 1) / 0.03 + (365 \times 4.5 \times 2489 / 2 \times ((1+0.03)^5 - 1) / 0.03) + (365 \times 4.5 \times 2489 / 2 \times ((1+0.02)^5 - 1) / 0.02)$		
	= 28msa		
Pavement thickness from Design Curves/tables(IRC 37-2001) for 30 msa		830 mm	
Proposed Pavement Composition			
	BC	40 mm	
	DBM	140 mm	
	WMM	250 mm	
	GSBI	200 mm	
	GSBII	200 mm	
	Total	830 mm	