

## LIST OF TABLES

<b><u>Table No.</u></b>	<b><u>Title</u></b>	<b><u>Page No.</u></b>
Table 1.1	Rough estimate of stone aggregates requirement in 2001-2021	05
Table 1.2	Top bituminous concrete producers around the globe	07
Table 1.3	Amount of waste glass and their net percentage of recycling	13
Table 2.1	Gradation for mineral filler	22
Table 2.2	Influence of filler characteristics and quantity on the bituminous mastic and mixes	25
Table 2.3	Influence of filler properties and quantity on the bituminous mastic and mixes	26
Table 2.4	Various factors affecting rutting resistance of the mixes	32
Table 2.5	Difference between controlled stress and controlled strain mode of testing	45
Table 2.6	Type of minerals and their effect on stripping	51
Table 2.7	Test methods for loose mix and mixture components	54
Table 2.8	Test methods for moisture sensitivity analysis of compacted bituminous mixes	55
Table 2.9	Effect of various factors on the ageing of bituminous mixes	60
Table 2.10	Various bitumen ageing methods	63
Table 2.11	Various long term ageing protocols for bituminous mixes	65
Table 2.12	Various types of wastes and their process of generation	74
Table 2.13	Characterization properties of major waste fillers	76
Table 2.14	Effect of waste fillers in the performance of bituminous mixes	78
Table 4.1	Properties of aggregates used in this study	114
Table 4.2	Properties of bitumen used in this study	118
Table 4.3	Specific gravities of fillers	120
Table 4.4	Plasticity index and MBV of fillers	121
Table 4.5	Modified Rigden voids and German filler values of the fillers	125
Table 4.6	Particle size distribution parameters of studied	129

	materials	
Table 4.7	Primary minerals in studied fillers	135
Table 4.8	Comparison of chemical composition of various fillers	137
Table 4.9	Hydrophilic coefficients and pH values of studied materials	139
Table 5.1	Proportion of glass powder and hydrated lime in glass lime composite	144
Table 5.2	Correction factors for the Marshall stability values	155
Table 5.3	Requirements of bituminous concrete mix	156
Table 5.4	Marshall properties of bituminous mixes with stone dust at OBC	165
Table 5.5	Marshall properties of bituminous mixes with glass powder at OBC	165
Table 5.6	Marshall properties of bituminous mixes with Kota stone dust at OBC	165
Table 5.7	Marshall properties of bituminous mixes with glass lime composite at OBC	165
Table 6.1	Various properties of mastics	175
Table 6.2	Softening point of various mastics	178
Table 6.3	LVE strains of different mastics	186
Table 6.4	Rate of increase of complex shear modulus with the frequency (slope)	194
Table 6.5	Rate of decrease of phase angle with the frequency (slope)	194
Table 6.6	Rutting parameters at 64°C and at three different frequencies	202
Table 6.7	Average $J_{nr}$ diff values (%) of different mastics	205
Table 6.8	Ranking of mastics at 64°C with rutting parameter and MSCR	211
Table 6.9	Complex modulus, phase angle and fatigue parameter of different mastics	213
Table 6.10	Fatigue damage parameters and fatigue life equations of bitumen and mastics	218
Table 6.11	Percentage recovery of bitumen and various mastics at 25°C	224
Table 6.12	Ranking of bitumen and mastics using different methods	224
Table 6.13	Complex shear modulus of mastics at different temperatures and ageing	225

Table 7.1	Various parameters of bituminous mastic and mixes	241
Table 7.2	RMS and TSR values of various mixes	246
Table 7.3	Various fatigue parameters of bituminous mastics and mixes	260
Table 7.4	Various properties of un-aged and long-term aged mixes	271
Table 8.1	Adopted thickness and computed strains of various mixes	289
Table 8.2	Comparison of surface layer thickness of different mixes	290
Table 8.3	Quantity of ingredients and cost analysis of various mixes	295
Table 8.4	Comparison of final cost of different mixes	296
Table 9.1	Table showing representative parameter matrix	303
Table 9.2	Table representing test results of this study	304
Table 9.3	Normalized parameter matrix	305
Table 9.4	Priority assigned to various tests in different cases	306
Table 9.5	Weightage factors and Total Rank Value (TRV) for case $P_L R_L V_L T_L$	307
Table 9.6	TRV values and Global Total Rank Values (GTRV) values of different mixes	308
Table 9.7	Overall ranking of various mixes	309