

6/5/19

ANNA UNIVERSITY
COLLEGE OF ENGINEERING, GUINDY
B.E./B.Tech (Full Time) DEGREE END SEMESTER EXAMINATION, April/ May 2019
CIVIL ENGINEERING BRANCH
VIII SEMESTER
CE8011 – PAVEMENT ENGINEERING
REGULATION 2012

Time : 3 Hours

Max Marks : 100

PART – A (10 x 2 = 20 Marks)

- 1) What are the materials used in construction of a flexible and rigid pavement?
- 2) Define Resilient Modulus.
- 3) What do you understand by CVPD and how is it obtained for design of a highway?
- 4) Explain the terms Tack coat and Seal Coat.
- 5) State the ideal tyre pressure and standard axle load in design of a rigid pavement?
- 6) What are the types of concrete pavements?
- 7) How does the pavement texture affect the its skid resistance property?
- 8) What do you understand by International Roughness Index and what is its unit of measurement?
- 9) What changes are likely to occur in soil due to soil stabilization.
- 10) Distinguish between water proofing agents and water retaining agents

PART – B (5 x 16 = 80 Marks)

- 11) Discuss in detail the components and functions of different layers in pavements and their material property. (16marks)
- 12.a) Explain the following:
 - i. Factors to be considered in the design of flexible pavements. (8marks)
 - ii. Concept of Equivalent Single Wheel Load. (8marks)

(OR)

- 12b) Design the Flexible Pavement for the construction of new highway with (16marks)
the following data:
No of commercial vehicles as per last count - 3000 CVPD;
Period of construction - 3 years;
Design CBR of Subgrade soil - 10%;
Category of road - NH, 4 lane single carriageway;
Design life 10 years. Assume suitable data

Also draw the thickness of each layer to be provided.



13a) Discuss the factors influencing the design of Rigid pavements. (16marks)

(OR)

13b) Write short notes on the following: (8marks)

i. Types of joints in concrete pavement.

(8marks)

ii. Critical stresses in concrete pavements.

(8marks)

14a) Explain any 5 distresses that occur in a flexible pavement and how are they treated? (16marks)

(OR)

14b) Discuss the following:

i. Functional and Structural performance of pavement.

(5marks)

ii. Pavement Serviceability Rating.

(6marks)

iii. Types of Maintenance of pavements.

(5marks)

15a) What are the functions of Geosynthetics and explain the use of geotextiles in pavements (16marks)

(OR)

15b) What are the field tests done to investigate the strength of soil and the need for soil stabilization? (16marks)

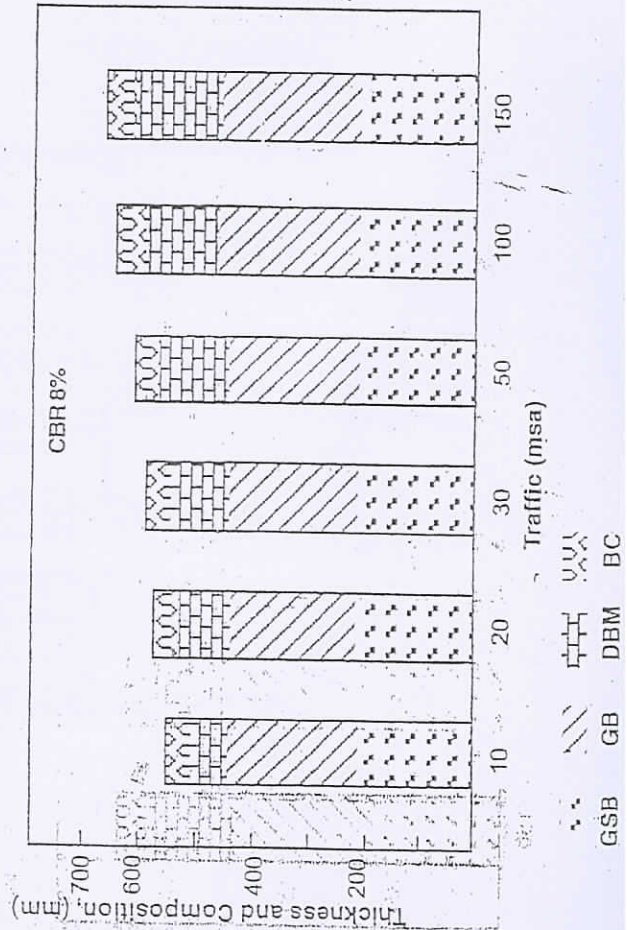


Pavement Design Catalogue

Recommended design for Traffic Range 10-150 msa

CBR 8%

Cumulative Traffic (msa)	Total Pavement Thickness (mm)	Pavement Composition		
		Bituminous Surfacing		Granular Base and Sub Base (mm)
		BC (mm)	DBM (mm)	
10	550	40	60	Base = 250
20	575	40	85	
30	590	40	100	Sub-base = 200
50	610	40	120	
100	640	50	140	
150	660	50	160	

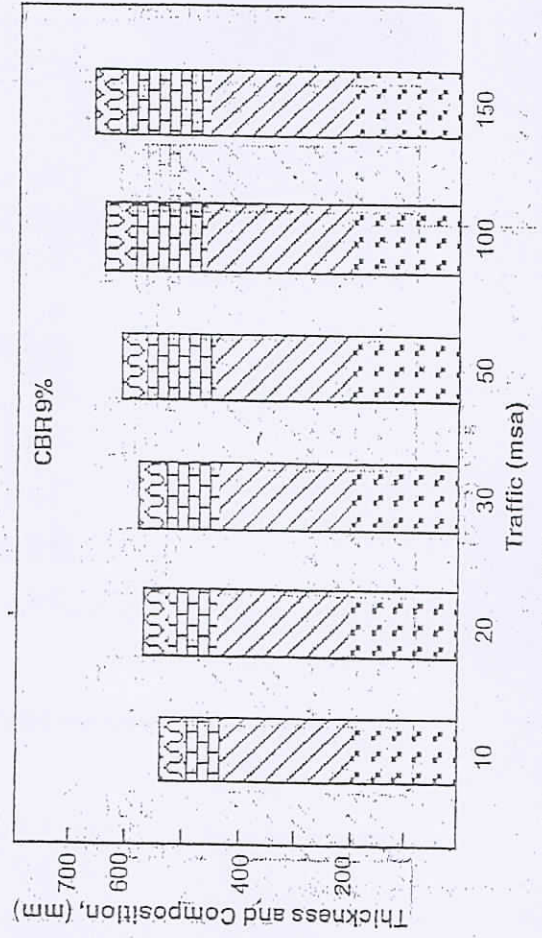


Pavement Design Catalogue

Recommended design for Traffic Range 10-150 msa

CBR 9%

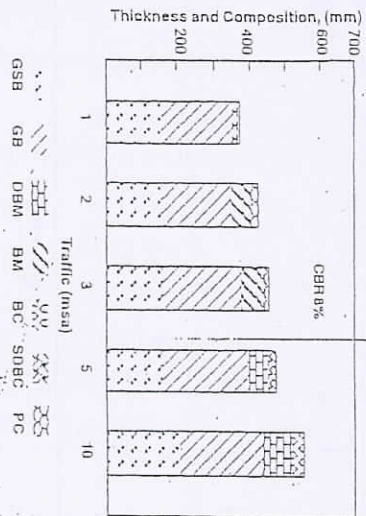
Cumulative Traffic (msa)	Total Pavement Thickness (mm)	Pavement Composition		
		Bituminous Surfacing		Granular Base and Sub Base (mm)
		BC (mm)	DBM (mm)	
10	540	40	50	Base = 250
20	570	40	80	
30	585	40	95	Sub-base = 200
50	605	40	115	
100	635	50	135	
150	655	50	155	



Pavement Design Catalogue
Recommended design for Traffic Range 1-10msa

CBR 8%

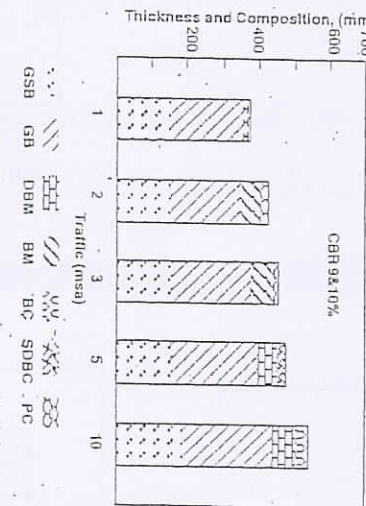
Cumulative Traffic (msa)	Total Pavement Thickness (mm)	Pavement Composition		
		Bituminous Surfacing	Granular sub base	Granular base (mm)
		Wearing Course (mm)	Binder Course (mm)	Base (mm)
1	375	20 PC	50 BM	225
2	425	20 PC	50 BM	225
3	450	20 PC	50 BM	250
5	475	25 SDBC	50 DBM	250
10	550	40 BC	60 DBM	250



Pavement Design Catalogue
Recommended design for Traffic Range 1-10msa

CBR 9 & 10 %

Cumulative Traffic (msa)	Total Pavement Thickness (mm)	Pavement Composition		
		Bituminous Surfacing	Granular sub base	Granular base (mm)
		Wearing Course (mm)	Binder Course (mm)	Base (mm)
1	375	20 PC	50 BM	225
2	425	20 PC	50 BM	225
3	450	20 PC	50 BM	250
5	475	25 SDBC	50 DBM	250
10	540	40 BC	50 DBM	250



Pavement Design Catalogue
Recommended design for Traffic Range 10-150 msa

CBR 10%

Cumulative Traffic (msa)	Total Pavement Thickness (mm)	Pavement Composition		
		Bituminous Surfacing	Granular Base and Sub Base (mm)	
		IC	DBM	
		Thickness (mm)	Thickness (mm)	
10	540	40	50	Base = 250
20	565	40	75	
30	580	40	90	Sub-base = 200
50	600	40	110	
100	630	50	130	
150	690	50	150	

