

JHARSUGUDA ENGINEERING SCHOOL, JHARSUGUDA

Department of Civil Engineering

4th Sem (2nd Year) Summer 2023

Course Code : 4

Course Name: HIGHWAY ENGINEERING

**Name Of The
Faculty:**

SRI Dhanraj Rohidas

Sl No	Week No	No. Of classes	Topics to be covered	Remarks
1	W1	1	1 Introduction 1.1 Importance of Highway transportation: importance organizations like Indian roads congress, Ministry of Surface Transport, Central Road Research Institute	
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4		1	1.2 Functions of Indian Roads Congress	
5		1	1.3 IRC classification of roads	
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7		1	1.3 IRC classification of roads	

		1	1.4 Organisation of state highway department	
8	W2	1	2.1 Glossary of terms used in geometric and their importance, right of way, formation width, road margin, road shoulder, carriage way, side slopes, kerbs, formation level, camber and gradient	
9	W3	1	2.1 Glossary of terms used in geometric and their importance, right of way, formation width, road margin, road shoulder, carriage way, side slopes, kerbs, formation level, camber and gradient	
		1	2.1 Glossary of terms used in geometric and their importance, right of way, formation width, road margin, road shoulder, carriage way, side slopes, kerbs, formation level, camber and gradient	
10		1	2.2 Design and average running speed, stopping and passing sight distance	
11		1	2.2 Design and average running speed, stopping and passing sight distance	
12		1	2.3 Necessity of curves, horizontal and vertical curves including transition curves and super elevation, Methods of providing super – elevation	
13	W4	1	2.3 Necessity of curves, horizontal and vertical curves including transition curves and super elevation, Methods of providing super – elevation	
14		1	2.3 Necessity of curves, horizontal and vertical curves including transition curves and super elevation, Methods of providing super – elevation	

15		1	Road Materials 3.1 Difference types of road materials in use: soil, aggregates, and binders
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16		1	Road Materials 3.1 Difference types of road materials in use: soil, aggregates, and binders
17	W5	1	3.2 Function of soil as highway Subgrade
18		1	3.3 California Bearing Ratio: methods of finding CBR valued in the laboratory and at site and their significance
19		1	3.4 Testing aggregates: Abrasion test, impact test, crushing strength test, water absorption test & soundness test
		1	Road Pavements 4.1 Road Pavement: Flexible and rigid pavement, their merits and demerits, typical cross-sections, functions of various components
20		1	Road Pavements 4.1 Road Pavement: Flexible and rigid pavement, their merits and demerits, typical cross-sections, functions of various components
21			1


22	W6	1	4.2 Sub-grade preparation: Setting out alignment of road, setting out bench marks, control pegs for embankment and cutting, borrow pits, making profile of embankment, construction of embankment, compaction, stabilization, preparation of subgrade, methods of checking camber, gradient and alignment as per recommendations of IRC, equipment used for subgrade preparation	
23		1	4.2 Sub-grade preparation: Setting out alignment of road, setting out bench marks, control pegs for embankment and cutting, borrow pits, making profile of embankment, construction of embankment, compaction, stabilization, preparation of subgrade, methods of checking camber, gradient and alignment as per recommendations of IRC, equipment used for subgrade preparation	
		1	4.3 Sub base Course: Necessity of sub base, stabilized sub base, purpose of stabilization (no designs) Types of stabilization ☐ Mechanical stabilization	
24		1	Lime stabilization ☐ Cement stabilization ☐ Fly ash stabilization	
25		1	Lime stabilization ☐ Cement stabilization ☐ Fly ash stabilization	

26	W7	1	4.4 Base Course: Preparation of base course, Brick soling, stone soling and metalling, Water Bound Macadam and wet-mix Macadam, Bituminous constructions: Different types	
27		1	4.4 Base Course: Preparation of base course, Brick soling, stone soling and metalling, Water Bound Macadam and wet-mix Macadam, Bituminous constructions: Different types	
		1	4.5 Surfacing: Surface dressing (i) Premix carpet and (ii) Semi dense carpet .Bituminous concrete Grouting	
28		1	4.6 Rigid Pavements: Concept of concrete roads as per IRC specifications	
29	W8	1	Hill Roads: 5.1 Introduction: Typical cross-sections showing all details of a typical hill road in cut, partly in cutting and partly in filling	
30		1	5.2 Breast Walls, Retaining walls, different types of bends	
31		1	5.2 Breast Walls, Retaining walls, different types of bends	
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32		1	Road Drainage: 6.1 Necessity of road drainage work, cross drainage works	

33	W9	1	6.2 Surface and sub-surface drains and storm water drains. Location, spacing and typical details of side drains, side ditches for surface drainage, intercepting drains, pipe drains in hill roads, details of drains in cutting embankment, typical cross sections.	
34		1	6.2 Surface and sub-surface drains and storm water drains. Location, spacing and typical details of side drains, side ditches for surface drainage, intercepting drains, pipe drains in hill roads, details of drains in cutting embankment, typical cross sections.	
35		1	7.1 Common types of road failures – their causes and remedies	
		1	7.2 Maintenance of bituminous road such as patch work and resurfacing	
36		1	7.3 Maintenance of concrete roads – filling cracks, repairing joints, maintenance of shoulders (berm), maintenance of traffic control devices	
37		W10	1	Construction equipments: Preliminary ideas of the following plant and equipment: 8.1 Hot mixing plant
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		1	8.2 Tipper, tractors (wheel and crawler) scraper, bulldozer, dumpers, shovels, graders, roller dragline	
		1	8.3 Asphalt mixer and tar boilers	
	W11	1	8.4 Road pavers	
		1	8.4 Road pavers	
43		1	8.4 Road pavers	
		1	8.5 Modern construction equipments for roads.	
44		1	8.5 Modern construction equipments for roads.	
45	W12	1	8.5 Modern construction equipments for roads.	
46		1	8.5 Modern construction equipments for roads.	
47		1	REVISION	
		1	REVISION	
48		1	REVISION	
49	W13	1	REVISION	
50		1	REVISION	
51		1	REVISION	
		1	REVISION	
52		1	REVISION	
53	W14	1	REVISION	
54		1	REVISION	
55		1	REVISION	
		1	PYQ	
56		1	PYQ	
57	W15	1	PYQ	
58		1	PYQ	
59		1	PYQ	
		1	REVISION	
60		1	REVISION	
Total		75		

Dhanraj Rohidas .
Signature of
Faculty


31/07/2023.
Signature of H.O.D
Amrta W S (M)