



**GANDHI SCHOOL OF ENGINEERING**  
**BHABANDHA, BERHAMPUR**

BRANCH:- CIVIL ENGINEERING

SEMESTER:- 4th

SUBJECT:- Th4. HIGHWAY ENGINEERING

Name of the Faculty- Er. MANJULA BHUYAN & ER. ROJALIN MISHRA

| Topic to be taken |                 |               | Actual topic taken  |                               |                          |   |  |         |
|-------------------|-----------------|---------------|---|-------------------------------|--------------------------|---|--|---------|
| Sl. No            | Topic/Module    | No. of period | Details of the topics   | Date                          | Topic No.                | Topic Name  | Date   | Remarks |
| 1                 | Introduction    | 5             | 1.1 Importance of Highway transportation: importance organizations like Indian roads congress, Ministry of Surface Transport, Central Road Research Institute.<br>1.2 Functions of Indian Roads Congress<br>1.3 IRC classification of roads<br>1.4 Organisation of state highway department   | 13.02.2023<br>-<br>21.02.2023 | 1.1<br>1.2<br>1.3<br>1.4 | Importance of Highway transportation: importance organizations like Indian roads congress, Ministry of Surface Transport, Central Road Research Institute.<br>Functions of Indian Roads Congress<br>IRC classification of roads<br>Organisation of state highway department   | 13.02.2023<br>14.02.2023<br>15.02.2023<br>20.02.2023<br>21.02.2023               |         |
| 2                 | Road Geometrics | 20            | 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<br>2.2 Design and average running speed, stopping and passing sight distance<br>2.3 Necessity of curves, horizontal and vertical curves including transition curves and super elevation, Methods of providing super – elevation | 22.02.2023<br>-<br>10.04.2023 | 2.1<br>2.2<br>2.3        | 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<br>Design and average running speed, stopping and passing sight distance<br>Necessity of curves, horizontal and vertical curves including transition curves and super elevation, Methods of providing super – elevation | 22.02.2023<br>27.02.2023<br>28.02.2023<br>01.03.2023<br>06.03.2023<br>10.03.2023 |         |



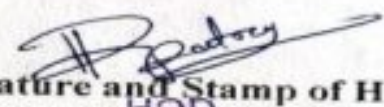
|   |                   |   |   |  |            |  |            |     |  |            |  |
|---|-------------------|---|---|--|------------|--|------------|-----|--|------------|--|
| 3 | Road<br>Materials | 9 | <p>3.1 Difference types of road materials in use: soil, aggregates, and binders</p> <p>3.2 Function of soil as highway Subgrade</p> <p>3.3 California Bearing Ratio: methods of finding CBR valued in the laboratory and at site and their significance</p> <p>3.4 Testing aggregates: Abrasion test, impact test, crushing strength test, water absorption test &amp; soundness test</p> | <p>11.04.2023</p> <p>-</p> <p>01.05.2023</p> | 3.1        | Difference types of road materials in use: soil, aggregates, and binders | 11.03.2023 |     |  |            |  |
|   |                   |   |   |  |            |  |            |     | 13.03.2023   |            |  |
|   |                   |   |   |  |            |  |            |     | 14.03.2023   |            |  |
|   |                   |   |   |  |            |  |            |     | 15.03.2023   |            |  |
|   |                   |   |   |  |            |  |            |     | 20.03.2023   |            |  |
|   |                   |   |   |  |            |  |            | 3.2 | Function of soil as highway Subgrade   | 21.03.2023 |  |
|   |                   |   |   |  |            |  |            |     |  | 27.03.2023 |  |
|   |                   |   |   |  |            |  |            |     |  | 28.03.2023 |  |
|   |                   |   |   |  |            |  |            |     |  | 29.03.2023 |  |
|   |                   |   |   |  |            |  |            | 3.3 | California Bearing Ratio: methods of finding CBR valued in the laboratory and at site and their significance   | 03.04.2023 |  |
|   |                   |   |   |  |            |  |            |     |  | 05.04.2023 |  |
|   |                   |   |   |  |            |  |            |     |  | 10.04.2023 |  |
|   |                   |   |   |  |            |  |            |     |  | 11.04.2023 |  |
|   |                   |   |   |  |            |  |            |     |  | 12.04.2023 |  |
|   |                   |   |   |  |            |  |            | 3.4 | Testing aggregates: Abrasion test, impact test, crushing strength test, water absorption test & soundness test | 17.04.2023 |  |
|   |                   |   |   |  |            |  |            |     |  | 18.04.2023 |  |
|   |                   |   |   |  | 19.04.2023 |  |            |     |  |            |  |
|   |                   |   |   |  | 24.04.2023 |  |            |     |  |            |  |
|   |                   |   |   |  | 25.04.2023 |  |            |     |  |            |  |
|   |                   |   |   |  | 26.04.2023 |  |            |     |  |            |  |
|   |                   |   |   |  | 01.05.2023 |  |            |     |  |            |  |



|   |                |    |   |  |   |   |  |
|---|----------------|----|---|--|---|---|--|
| 4 | Road Pavements | 13 | <p>4.1 Road Pavement.</p> <p>4.2 Sub-grade preparation: Setting out alignment of road, setting out bench marks etc.</p> <p>4.3 Sub base Course: Necessity of sub base, stabilized sub base, purpose of stabilization.</p> <p>4.4 Base Course:Preparation of base course, Brick soling, stone soling and metalling.</p> <p>4.5 Surfacing</p> <p>4.6 Rigid Pavements</p> <p>Concept of concrete roads as per IRC specifications</p> | <p>02.05.2023</p> <p>-</p> <p>23.05.2023</p> | <p>4.1 Road Pavement.</p> <p>4.2 Sub-grade preparation: Setting out alignment of road, setting out bench marks etc.</p> <p>4.3 Sub base Course: Necessity of sub base, stabilized sub base, purpose of stabilization.</p> <p>4.4 Base Course:Preparation of base course, Brick soling, stone soling and metalling.</p> <p>4.5 Surfacing</p> <p>4.6 Rigid Pavements</p> <p>Concept of concrete roads as per IRC specifications</p> | <p>02.05.2023</p> <p>03.05.2023</p> <p>08.05.2023</p> <p>09.05.2023</p> <p>10.05.2023</p> <p>15.05.2023</p> <p>16.05.2023</p> <p>17.05.2023</p> <p>22.05.2023</p> <p>23.05.2023</p> |  |
| 5 | Hill Roads     | 7  | <p>5.1 Introduction: Typical cross-sections showing all details of a typical hill road in cut, partly in cutting and partly in filling</p> <p>5.2 Breast Walls, Retaining walls, different types of bends</p>   | <p>17.02.2023</p> <p>-</p> <p>04.03.2023</p> | <p>5.1 Introduction: Typical cross-sections showing all details of a typical hill road in cut, partly in cutting and partly in filling</p> <p>5.2 Breast Walls, Retaining walls, different types of bends</p>   | <p>17.02.2023</p> <p>18.02.2023</p> <p>24.02.2023</p> <p>25.02.2023</p> <p>03.03.2023</p> <p>04.03.2023</p>   |  |
| 6 | Road Drainage  | 7  | <p>6.1 Necessity of road drainage work, cross drainage works</p> <p>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.</p>  | <p>10.03.2023</p> <p>-</p> <p>25.03.2023</p> | <p>6.1 Necessity of road drainage work, cross drainage works</p> <p>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.</p>  | <p>10.03.2023</p> <p>11.03.2023</p> <p>17.03.2023</p> <p>18.03.2023</p> <p>24.03.2023</p> <p>25.03.2023</p>   |  |



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|---|-------------------------|---|--|-------------------------------|--|--|--|
| 7 | Road Maintenance        | 7 | 7.1 Common types of road failures – their causes and remedies<br>7.2 Maintenance of bituminous road such as patch work and resurfacing<br>7.3 Maintenance of concrete roads – filling cracks, repairing joints, maintenance of shoulders (berm), maintenance of traffic control devices<br>7.4 Basic concept of traffic study, Traffic safety and traffic control signal | 31.03.2023<br>-<br>21.04.2023 | 7.1 Common types of road failures – their causes and remedies<br>7.2 Maintenance of bituminous road such as patch work and resurfacing<br>7.3 Maintenance of concrete roads – filling cracks, repairing joints, maintenance of shoulders (berm), maintenance of traffic control devices<br>7.4 Basic concept of traffic study, Traffic safety and traffic control signal | 31.03.2023<br>01.04.2023<br>08.04.2023<br>15.04.2023<br>21.04.2023                             |  |
| 8 | Construction equipments | 7 | 8.1 Hot mixing plant<br>8.2 Tipper, tractors scraper, bulldozer, dumpers, shovels, graders, roller dragline<br>8.3 Asphalt mixer and tar boilers<br>8.4 Road pavers<br>8.5 Modern construction equipments for roads.   | 28.04.2023<br>-<br>20.05.2023 | 8.1 Hot mixing plant<br>8.2 Tipper, tractors scraper, bulldozer, dumpers, shovels, graders, roller dragline<br>8.3 Asphalt mixer and tar boilers<br>8.4 Road pavers<br>8.5 Modern construction equipments for roads.   | 28.04.2023<br>29.04.2023<br>05.05.2023<br>06.05.2023<br>12.05.2023<br>13.05.2023<br>20.05.2023 |  |

  
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