

भारतीय राजमार्ग अभियन्ता अकादमी  
(सड़क परिवहन एवं राजमार्ग मंत्रालय, भारत सरकार)  
**Indian Academy of Highway Engineers**  
(Ministry of Road Transport and Highways, Govt. of India)

**Mandatory Training Programme on Preparation of Detailed Project Reports (DPR) for Highway Projects for the personnel of Consultants at IAHE, Noida**

1 <sup>st</sup> Day	
Time	Topic
09:45-11:15	<b>Overview of DPR preparation and RFP for DPR Preparation</b> <ul style="list-style-type: none"> <li>❖ Scope</li> <li>❖ Key Personnel in DPR Consultancy Team</li> <li>❖ Stages in Project Preparation</li> <li>❖ Activities in DPR Preparation</li> <li>❖ Client's role and supervision in preparation of DPR</li> </ul>
11:30-15:15	<b>Geometrical Design of Highways</b> Design Standards, Design Speed, Row, Lane Width, Median & Shoulder Types & Width, Roadway Width, Crossfall, Super Elevation, Sight Distance, Gradients, Lateral and Vertical Clearances, Design of Horizontal, Circular, Transition Curves, Design of vertical Curve, Access Control, Median Opening, Service Road- Acceleration & Deceleration Lanes, etc.
15:30-17:15	<b>Traffic Studies, Traffic demand estimation and Realistic Forecasting</b> Traffic Volume, Turning Movement, OD, Cargo/Commodity Movements, Axle Load Surveys, Speed & Delay, NMTs, Logistic Park Terminals, Traffic demand estimation/growth rate assessment, population growth rate, elasticity of transport demand, socio-economic development plan, land use studies, Diverted/Generated/Induced Traffic, Level of Service, etc.
17:15-18:45	<b>Hydraulic &amp; Hydrological Investigations &amp; Studies</b> Hydrological studies, Topography, River & Catchment Area studies, Storm & Rainfall Characteristics, Vegetation and deposits, Collection of LWL, HFL, LTL, HTL, observed maximum depth of scour, history of hydraulic functioning of existing bridge, Flood Discharge, Area Velocity Method, Unit Hydrograph Method, Linear Waterway, HFL, Afflux, Scour depth and Model Study
2 <sup>nd</sup> Day	
09:45-13:00	<ul style="list-style-type: none"> <li>❖ New Technologies and Materials for Highways</li> <li>❖ High Modulus Asphalt (HiMA) Mixes for Durable Highways</li> <li>❖ FRP bars for Bridges and CRCP</li> <li>❖ Ultra-High Performance and Fiber Reinforced Concrete</li> </ul>
14.00-15.15	<b>Pavement Condition Survey, Material Survey, Geo Technical Survey</b> Pavement composition & Condition (Cracking, Rutting, Ravelling, Pothole, Edge Breaking etc.), Shoulder Condition, Pavement Roughness- BI & IRI, Structural Evaluation FWD Test, Subgrade Characteristics & Strength, Borrow area selection based on soil properties, quantity & availability and clearance issues, Identification of Quarry for sand & stone based on material properties, quantity availability and clearance issues, use of alternative materials viz. flyash, slag, recycled materials & waste materials, Bituminous mix design and concrete mix design, Geo Technical Investigations & Sub-Soil Exploration
15:30-17:15	<b>Project Costing, Economic and Financial Analysis</b> <ul style="list-style-type: none"> <li>❖ Quantity Calculation, Rate Analysis and Cost Estimation</li> <li>❖ Objective of Economic and Financial Analysis</li> <li>❖ Economic Analysis using HDM-IV</li> <li>❖ Financial Analysis, Financial structuring and Modelling</li> </ul>

कृपया ध्यान दें: सभी पत्राचार केवल निदेशक को पदनाम द्वारा संबोधित किए जाएं।/Please note: All correspondence should be addressed to the Director by

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3 <sup>rd</sup> Day	
09:30-13:00	<b>Design of Flexible Pavement</b> Types of pavements, Load Distribution, Conventional & Pavement with Stabilized Base, Full Depth Asphalt Pavement, Pavement Design Approaches, Empirical, Mechanistic & Mechanistic-Empirical, Factor Affecting Pavement Design, Traffic and Loading (Axle Load, Repetition of load, Tyre Pressure/Contact pressure, Vehicle Speed), Environment (Temperature, Precipitation/ Rainfall) considerations, Failure/Performance Criteria, Reliability/Economic Assessment (Life Cycle Cost), Perpetual/ Long-life Pavements, Design Traffic Estimation as per IRC:37-2018, Design of overlays, Pavement Analysis using
14.00-17.15	<b>Design of Rigid Pavement</b> <ul style="list-style-type: none"> <li>❖ Design of rigid pavement (IRC:58)</li> <li>❖ Design of CRCP (IRC: 118) and demo. on IITPAVE Software</li> <li>❖ Design of conventional, thin white topping, ultrathin white topping and composite pavements</li> </ul>
4 <sup>th</sup> Day	
09.45-13.00	<b>Modern Topography Survey and Data Collection</b> <ul style="list-style-type: none"> <li>❖ Scope of Surveying in Highway Project</li> <li>❖ Accuracy</li> <li>❖ DGPS Survey, Total Station, Auto Level</li> <li>❖ Introduction to LiDAR, Drone Photogrammetry</li> </ul>
14.00-17.00	<b>Preconstruction activities, Statutory Clearances (Land Acquisition, Shifting of Utilities)</b> <ul style="list-style-type: none"> <li>❖ Guiding Principles for Land Acquisition</li> <li>❖ Preparation of Land Plan, Schedule and Draft Notifications under RFCTLARR</li> <li>❖ Shifting of utilities and estimates</li> </ul> <b>Environmental &amp; Social issues and Statutory Project Clearances</b> <ul style="list-style-type: none"> <li>❖ Environmental Impact Assessment Study and Preparation of Environmental Management Plan</li> <li>❖ Guidelines for Environmental Clearance, Wild Life Clearance, CRZ Clearance, Guidelines for Forest Land Diversion</li> <li>❖ Social screening, PAP, R&amp;R plan and Compensation</li> </ul>
5 <sup>th</sup> Day	
09.45-13.00	<b>Road Safety Engineering &amp; Other Measures</b> <ul style="list-style-type: none"> <li>❖ Safe System Approach</li> <li>❖ Elements &amp; Design Principles of At-Grade Intersections and Grade Separated Intersections</li> <li>❖ Road Safety Engineering Measures- Road Signs, Road Markings, Delineators, RPM, Crash Barriers, Traffic Calming Measures etc.</li> <li>❖ Bus Bays, Truck Lay Bye. Highway Lighting and Way Side Amenities</li> </ul>
14.00-17.15	<b>General Guidelines for Bridge Design</b> <ul style="list-style-type: none"> <li>❖ Types of Bridges and Bridge Components, Bridge Siting, Decision on Span arrangement and Preparation of GAD</li> <li>❖ Bridge Loading, Material Characteristics &amp; design values, Function &amp; Behaviour of different components under different loadings</li> <li>❖ Design Principles of different components such as Foundation, Substructures, different types of Superstructures, Bearing etc.</li> </ul>

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6 <sup>th</sup> Day	
08:00-10:00	Written Test of the participants
10.00-13.00	Evaluation of Written Exam
10.00-13.00	<b>Gati-Shakti</b> <ul style="list-style-type: none"> <li>❖ Planning for DPR preparation for proposed road alignment through National Master Plan Platform</li> <li>❖ Demonstration of National Portal (PM Gati Shakti Integrated Master Plan) &amp; Ministry of Road Transport and Highways Portal</li> </ul>
14.00-15:15	Feedback, Concluding session, Declaration of evaluation result and Distribution of Certificates to the successful participants

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