

## Computer Aided Geometric Design of Highways

<b>1<sup>st</sup> Day</b>		
09:15 – 09:45	Registration	
09.45 – 13.00	<b>Traffic Surveys and Analysis</b> <ul style="list-style-type: none"> <li>Classified Traffic Count Survey- Peak Hour, ADT &amp; AADT</li> <li>Intersection Turning Movement Survey</li> <li>Origin and Destination Survey- Traffic Assignment</li> <li>Speed &amp; Delay Survey</li> <li>Traffic Growth Forecast</li> <li>Level of Service</li> </ul>	
14.00-17.15	<ul style="list-style-type: none"> <li>Capacity Upgradation Plan</li> <li>Route Selection &amp; Finalisation of Alignment</li> <li>Guiding Principles for Selection of Bypass</li> <li>Guiding Principles for Finalisation of Widening Scheme</li> <li>Guiding Principles for Raising of FRL of Existing Road</li> <li>Finalisation of Improvement of Existing Intersections to At Grade/Grade Separated Intersections</li> </ul>	
<b>2<sup>nd</sup> Day</b>		
09.45 – 13.00 & 14.00-17.15	<b>Geometrics Design of Highways</b> <ul style="list-style-type: none"> <li>Applicable Manual &amp; Code of Practice</li> <li>Cross Sectional Components- Lane, Paved/Hard Shoulder, Earthen Shoulder, Median, Kerb, Slope of Embankment, Service Road, Drain, Footpath, Cross Fall</li> <li>Developing Typical Cross Sections for Rural/Built UP/Plain/Hilly Sections &amp; Approaches to Bridges &amp; Structures</li> <li>Terrain, Design Speed, Sight Distance</li> <li>Elements of Horizontal Curve</li> <li>Design of Horizontal Curve</li> <li>Permissible Vertical Gradient</li> <li>Design of Vertical Curve</li> </ul>	
<b>3<sup>rd</sup> Day</b>		
09.45 – 13.00	<b>Principles and Design of At-grade and Grade Separated intersections</b>	
14.00-17.15	<b>Introduction to Computer Aided Highway Design Techniques:</b> MX Software, Application Areas, Features, Demonstration & hands on practice on various command of the Software	
<b>4<sup>th</sup> Day</b>		

09.45 – 13.00&14.00-17.15	Demonstration & hands on practice for Horizontal & Vertical alignment design (Plan & Profile) on MX Software starting from Input of Survey Data to final generation of Plan & Profile	
<b>5<sup>th</sup> Day</b>		
09.45 – 13.00	Demonstration & hands on practice for Intersections Design on MX Software.	
14.00-17.00	<b>Use of (Building Information Modelling) BIM in Highway Project</b> <ul style="list-style-type: none"> <li>• BIM process in the roads and infrastructure design</li> <li>• Methodology for initial design &amp; multiple design proposal</li> <li>• Analysis of the existing surface using survey data</li> <li>• Creation of design guidelines for Highways</li> <li>• Calculation of quantities for cutting and filling and all elements of roads</li> <li>• Optimization of earthwork and materials</li> <li>• Design of intersections Models</li> <li>• Design of interchanges Models</li> <li>• Clash detection and conflict resolution of different components</li> <li>• Collaboration and Coordination</li> </ul>	
17.00 – 17.15	Test and concluding of the programme	