

Modern Topographic and Data Collection Techniques for Highways

Time Period	Description of Topic
1st day	
09.45-13:00	Provisions in TOR of DPR Consultant for Topographic Survey Desktop study of alignment using Toposheet, Google Earth <ul style="list-style-type: none"> ➤ Field Reconnaissance ➤ Obligatory Points ➤ Techno-economic consideration ➤ Social Consideration ➤ Environmental Consideration ➤ Finalization of alignment ➤ Case Study
14:00-17:15	Differential Global Positioning Systems (DGPS) <ul style="list-style-type: none"> ➤ Accuracy requirement of survey data ➤ Basic principles of GPS equipment and accuracy achieved ➤ GPS & DGPS- principle, accuracy, equipment ➤ Step by step procedure of setting up equipment, tracing signals from satellite, data transfer, analysis of data and determining coordinates of station ➤ Checklist for handling of equipment
2nd day	
09.45-13:00	Differential Global Positioning Systems (DGPS) (contd..) <ul style="list-style-type: none"> ➤ Demonstration of Field Survey ➤ Data Processing and analysis ➤ Fixing of survey monuments (pair)
14.00-17.15	Total Station <ul style="list-style-type: none"> ➤ Basic Principles of Total Station and its features ➤ Factors influencing data accuracy collected through Total Station ➤ Step by step procedure of setting up equipment, recording of observations and data transfer ➤ Checklist for handling of equipment
3rd day	
09.45-13:00	Total Station (contd..) <ul style="list-style-type: none"> ➤ Demonstration and hands on training of Field Survey with Total Station Centring, Levelling, Job Creation, Setup of Station, Data Collection,
14:00-17:15	Total Station (contd..) <ul style="list-style-type: none"> ➤ Demonstration of Data Transfer ➤ Data Processing ➤ Creation of Digital Terrain Modelling (DTM)
4th day	
09.45-13:00	Auto level Surveying <ul style="list-style-type: none"> ➤ Basic Principle of Auto level and its features- Levelling Staff, Datum, R.L., Bench Mark, Line Collimation, Back Sight, Foresight, Intermediate Sight , Change Point, Height of Instrument ➤ Levelling- Height of instrument method, Rise and fall method ➤ Step by step procedure of setting up equipment, recording of observation ➤ Checklist for handling of equipment ➤ Demonstration and hands on training of Auto levelling

14:00-17:15	LiDAR <ul style="list-style-type: none"> ➤ Basic Principles & Advantages of LiDAR Technology ➤ Application in Roads- Health Monitoring, New Alignment, Asset Management ➤ Deliverables ➤ Accuracy achieved in survey data ➤ Step by step procedure ➤ Demonstration of LiDAR Survey
5th day	
09.45-13:00	Aerial Photogrammetry using Drone <ul style="list-style-type: none"> ➤ Definition of Photogrammetry ➤ Brief on Satellite Photogrammetry Survey ➤ Drone based Photogrammetry ➤ Introduction to Drone integrated with DGPS ➤ Workflow and Output of Aerial Survey Technology ➤ Demonstration of Aerial Photogrammetry using Drone ➤ Data Processing and drawing development and creation of 3-D model
14:00-15:30	Total Station <ul style="list-style-type: none"> ➤ Demonstration and hands on training with Total Station for fixation of Alignment of a Horizontal Curve
15.45-17.15	Test, Feedback and Concluding the Programme