

Surface & Subsurface Drainage Management

Time Period	Description of Topic
1st Day	
09.45 – 11:15	Requirement and Overview of Drainage <ul style="list-style-type: none"> ➤ Adverse Impacts of Stagnant Water on Pavement Courses ➤ Drainage Consideration for Roads in Rural Sections and Urban Sections ➤ Drainage Considerations for Road in Embankment, Road in Cutting and Road with Hill on One Side and Valley on other Side ➤ Types of Surface Drainage ➤ Types of Sub-surface Drainage
11:30 - 13:00	Hydrological Design of Road Side Drain <ul style="list-style-type: none"> ➤ Design Rainfall ➤ Catchment Area ➤ Initial Abstraction ➤ Antecedent Moisture Condition ➤ Runoff Coefficient ➤ Design Discharge
14.00-17.15	Hydrological Design of Road Drainage <ul style="list-style-type: none"> ➤ Drainage Plan ➤ Cross-sectional Features of Drain ➤ Channel Grade ➤ Channel Lining ➤ Outfall Location
2nd Day	
09.45 – 13:00	Storm Water Drainage System and Appurtenances in Urban Areas <ul style="list-style-type: none"> ➤ Primary Drain ➤ Secondary Drain ➤ Tertiary Drain ➤ Drainage in Kerbed pavement ➤ Inlets ➤ Disposal
14.00-15:30	Drainage of Medians, At-grade Intersections, High Embankments and Bridge/Structures
15:45-17:15	Drainage of Hill Roads <ul style="list-style-type: none"> ➤ Road Side Drain ➤ Catch-Water/Intercepting Drain ➤ Chute ➤ Sub-surface Drainage
3rd Day	
09.45 – 13.00	Subsurface Drainage and Groundwater Recharge <ul style="list-style-type: none"> ➤ Sources of Moisture in Lower Layers of Pavement ➤ Treatment of Sub-surface Moisture ● GSB Drainage Layer ● Geo-Synthetic Composite ● Fin Drain ● Subsurface Drain for Intercepting Sewage Water in Hill Terrain ● Capillary Cutoff ● Aggregate Drain

	<ul style="list-style-type: none"> ➤ Ground Water Recharge Arrangement • Check Dam • Percolation Tanks • Contour Trenching • Pits and Shafts • Ground Water Dams
14.00- 17.15	<p>Sustainable Storm Water Management</p> <ul style="list-style-type: none"> ➤ Filtration ➤ Conveyance ➤ Infiltration ➤ Retention ➤ Detention
17.15 – 17:30	Feedback and Concluding of the Programme