Construction, Quality Control and Maintenance of Structures

Day 1	
Time Period	**Description of Topic**
09.45-13.00 + 14.00-15.30	**Concrete for Bridges** ❖ Materials : • Quality Characteristics of materials • Cement types and their salient properties • Aggregates and their desirable properties • Water and its properties • Admixtures • Manufacturers test certificates requirements for construction materials ❖ Mix design of Concrete • Importance & need of mix design • Properties Considered in Mix Design • Design of Cement Concrete Mixes Structural Concrete
15.30-17.15	**Quality assurance and Quality control for bridges** ❖ Principles of Quality Assurance, Quality Control and Quality Audit in Bridge Projects ❖ Quality Characteristics of materials, mixes, hardened concrete in Structural Concrete ❖ Production of Concrete
Day 2	
09.45-13.00	**Steel for Structures:** ❖ Quality Characteristics of Reinforcing Bars, ❖ Quality Characteristics Pre stressing steel ❖ Quality Characteristics of structural steel ❖ Fabrication and placement of reinforcement cage

14.00-17.15	**Formwork: Fabrication, transportation, erection and dismantling of formwork, falsework and temporary structures** ❖ Fabrication ❖ Erection of formwork ❖ Precautions to be taken ❖ Preparation of formwork before concreting ❖ Removal of formwork ❖ Re-use of formwork ❖ Points to be seen before/during concreting ❖ Common faults and causes
Day-3	
09-45: 13.00 + 14.00-17.15	**Construction of Open foundations, Pile foundations and Well foundations** ❖ Construction of open foundations • Excavation: • Leveling pad • Execution: • Foundation in dry conditions • Foundation below sub-surface water • Construction tolerances ❖ Construction of pile foundations • Sequence of prime activities • Pile Boring tools • Pile bore supported by casings • Pile bore: Using stabilizing fluid • Cleaning of pile bore • Fabrication & placement of reinforcement cage • Concreting of bore • Trimming of pile head • Construction tolerances ❖ Construction of well foundations

A-5, Institutional Area, Sector-62, Noida (UP) – 201301 (India)
Tel 0120-2400085-86, 2405006-9, Fax 2400087
Email: director.iahe@gmail.comWebsite:iahe.org.in

	• Fabrication of cutting edge • Casting of kerb • Casting of well steining • Well sinking in soil/rock • Precautions during sinking • Correction of tilts and shifts • Construction of bottom plug and top plug • Construction tolerances
Day-04	
09.45-13.00	**Construction of Sub-Structures** ❖ Construction of Pile Cap ❖ Construction of Well cap ❖ Construction of Pier and abutment ❖ Construction of Pierand abutment cap ❖ Construction of wing wall, return wall, filter media and floor protection works
14.00-17.15	**Bearings for Structures:** ❖ Types of bearings and load transfer mechanism ❖ Fabrication, Testing and Installation of Bearings • Metallic Bearings: Workmanship • Acceptance criteria & testing • Placing and positioning the bearings • Elastomeric Bearings: Fabrication & tolerances • POT-PTFE bearings • Replacement of bearings
Day-05	
09.45-13.00 + 14.00-17.15	**Construction of bridge superstructure** • Construction of RCC Superstructure • Solid Slabs • RCC T-Beam girder & slab

A-5, Institutional Area, Sector-62, Noida (UP) – 201301 (India)
Tel 0120-2400085-86, 2405006-9, Fax 2400087
Email: director.iahe@gmail.comWebsite:iahe.org.in

	• Voided Slab ❖ Prestressed Concrete Super structures • PSC Girder(Cast-in-Situ and Pre cast) and Composite RCC Slab • Box girder • Cantilever Construction
Day-06	
09.45-13.00	**Construction of other components of structures** ❖ Wearing Coats & Drainage Spouts • Wearing coats • Drainage Spouts ❖ Fabrication, Testing and Installation of Expansion Joints • Fabrication • Testing • Installation ❖ Construction of crash barrier, parapet, railing
14.00-17.15	**Maintenance of bridges and culverts** ❖ Distresses in RCC/ PSC components and repair methods ❖ Distresses in bearingsand repair/replacement methods ❖ Distresses in expansion jointand repair/replacement methods ❖ Distresses in wearing coatand repair/replacement methods ❖ Distresses in floor protection works/scouring of pierand repair methods ❖ Checklists for maintenance of bridges