

GUJARAT TECHNOLOGY UNIVERSITY

M.Tech.(Civil)Transportation System Engineering

Syllabus

Major Elective2: HIGHWAY CONSTRUCTION AND MANAGEMENT

Course Objectives :

To impart detailed information on the construction specifications and techniques of various types of roads, and procedures for laboratory and field testing of paving mixes and quality control practices.

Course Contents :

Types of Highway Construction, Water Bound Macadam (WBM) , Wet Mix Macadam (WMM), Dry Lean Concrete (DLC), Stabilized Roads, Bituminous Construction and Cement Concrete Constructions. Types of bituminous constructions, Interface treatments, Wearing Courses for roads and Bridge deck slabs, Selection of wearing course under different climatic and traffic conditions, IRC specifications, Construction techniques and Quality Control, Concrete road construction, tests on concrete mixes, Construction equipments, Methods of construction of joints in concrete pavements, Quality Control in construction of concrete pavements. Construction of continuously reinforced, Prestressed, Steel Fibre Reinforced (SFRC), Pavements, IRC, MOST, ACI specifications, Ferrocement, Ferro-fibrocrete, Pavement and overlay construction. Hill Landsides – causes and control measures. Hill road construction practices, Construction of bituminous and cement concrete roads at high attitudes,Hill road drainage, Construction and maintenance problems and remedial measures.

Pre-requisite : Nil

Reference Books :

1. H.M.S.O. (London), “Bituminous Materials in Road Construction”, 1966
2. Hewes, Laurance, Isley “American Highway Practice”, New York, John Wiley and Sons, Inc. Vol. II, 4th Edition, 1949
3. Sherrad H.M., “Australlian Road Practices”, Melbourne University Press, 1958
4. H.M.S.O. (London), Concrete Roads, 1966
5. Sparkes, F.N. and Smith A.F., “Concrete Roads”, Edward Amola and Co., London, 1952
6. MOSRTH Roads and Bridge Specifications.

Practical

1. Highway construction practices in flexible pavement: ER,GR,WBM,BBM,WMM
2. Highway construction practices in rigid pavements: PQC, Concrete Mix Design, Pavement construction
3. Joints in rigid pavements
4. Overlay and white topping constructions
5. Bar chart, CPM and PERT
6. Introduction to Microsoft planning software.
7. Highway construction Machinery
8. Visit to Highway construction site