

## Asphalt Mix Design Training program

### Course Description

Maximizing the performance of high quality materials and sophisticated construction practices is best achieved with a thorough understanding of material properties and asphalt mix design. Engineers and technical managers are faced with the challenge of maintaining, within shrinking budgets, the investment in highways, airport runways, urban roads, parking areas and access roads in many residential, commercial and industrial developments.

An understanding of the considerations for the design and construction of an asphalt pavement and of the factors that influence its deterioration is essential to make technically and economically feasible decisions regarding the design of asphalt mixes. Participants will work on asphalt mix design suitable for different load and environmental conditions.

### OVERVIEW

**After participating in the course, you will be able to:**

- make critical decisions in the lab and on the construction projects using the background knowledge gained from the course
- select asphalt and aggregate material knowing their effect on mixture properties
- perform proportioning, volumetric analysis, mixture evaluation using the guidelines for the application of different mixture types
- increase the useful life of your pavement by efficient asphalt mix design
- analyze your specifications to understand how they affect the quality you receive

### Objective

To present methods of design for asphalt mix suitable for various applications.

### Who Should Attend?

Designers actively involved in asphalt mix design, materials specifications and field management of asphalt mixes, geotechnical and materials engineers in government transport departments, project managers, maintenance engineers, technicians and technologists, contractors, construction inspectors, technical managers, consultants and municipal engineers with responsibility for asphalt pavements. This course is an excellent opportunity for those wishing to develop or increase their knowledge base of asphalt mix to build longer lasting pavements.

## Outline

- Importance of geotechnical conditions
- Sub-grade evaluation
- Frost, drainage and erosion control
- Causes of distress
- Design considerations
- Asphalt binders and their uses
- Influence of asphalt mix designs on durability of pavement
- OPSS 1003
- Quality requirements
- Aggregate gradations
- Specific gravities
- Aggregate batching
- HMA volumetrics
- Selecting design aggregate structures
- Estimating VMA
- Specimen preparation calculations
- Specimen compaction
- Bulk specific gravity testing
- Theoretical maximum specific gravity testing
- Asphalt cements, emulsions and cut backs
- Types and applications
- Asphalt cements for hot mix asphalt
- Stability, fatigue and durability considerations
- Volumetric calculations
- Determination of optimum asphalt content
- Functional requirements
- Construction considerations
- Quality control
- Mixture performance testing
- Marshall and SUPERPAVE System
- Demonstration of lab results
- Test procedures and the meaning of results
- Effects of binder on quality of the mix
- LTPP program and selection of appropriate grade
- MTO's modified procedure
- Use of the web in finding out about pavements
- Pavement preservation-what it means
- Life cycle costing as it affects design
- Innovative technologies
- Mixture properties: selection criteria for various mix types
- OPSS for Marshall mixes

- SUPERPAVE requirements for design
- Mix size and layer thickness range
- Workshop
- Binder selection
- Calculations: SMA mixture design requirements
- Mixture properties
- Applications for SMA
- SUPERPAVE testing requirements
- Mix problems during production
- Maintaining VMA in the field
- Asphalt overlays for serviceability and strength
- Use of fabrics