Road Design: Intersections

DATE: March 20 – 24, 2017
COURSE CODE: TM37-17
LOCATION: Centre for Health and Safety Innovation, Mississauga, ON
FEE: $1,260

Course Content
• Introduction to intersections
• Sight distance
• Design controls and criteria
• Tapers, auxiliary lanes and channelization
• Design project

Course Objectives
To introduce participants to the basics of designing new and retrofit urban and rural intersections.

Who Should Attend
Analysts, designers, technicians, technologists, and engineers from public and private sector organizations involved in traffic operations, road design, maintenance operations, highway safety, and/or land development.

Prerequisites
Knowledge of engineering principles, especially related to roadway design; Road Design: Geometrics (TM30) is recommended.

Accreditation
This course is recognized by:

Association of Ontario Road Supervisors

This course may be used for technical specialist and technician exam programs only. Please contact OACETT to ensure that this course satisfies your particular examination program for certification. Point Value = 5

The Engineering Institute of Canada awards 3 Continuing Education Units to this course.

Duration
4.5 days

Materials Required
Calculator with scientific functions, engineering design tools: metric engineering scale, set squares, compass/radius template, coloured pencils
Materials Provided
Course notes

Recommended References

Format
Presentations, discussions and problem-solving workshops

Evaluation Process
Comprehensive final examination, overall grade of 60%

COURSE DESCRIPTION

Introduction to Intersections
Participants will be introduced to the basic elements of an intersection. They will learn about the objectives of intersection design, and understand how different traffic manoeuvres and conflicts affect safety and operation. The traffic, physical, human and economic factors to be considered in ensuring safe and efficient intersection operation will be examined.

Sight Distance
Participants will learn how to calculate intersection sight distance under different traffic control conditions. The importance of providing a sufficient sight triangle at an intersection and the difference between the various measurements of sight distance will be explained.

Design Controls and Criteria
Participants will learn how to establish a suitable alignment and profile for intersecting roads based on the determination of appropriate design speeds. The rationale for selecting a proper cross-section, corner radius and edge of pavement treatment based on an appropriate design vehicle will be explained.

Tapers, Auxiliary Lanes and Channelization
Participants will learn how to improve the safety and efficiency of an intersection through the use of tapers, auxiliary lanes, and channelization. Participants will learn when and how to apply these approaches and their implications when designing new or retrofit at-grade intersections. Design methods, including determining taper lengths, deceleration distances, storage requirements, and island configuration, will be explored.

Design Project
Participants will have the opportunity to determine requirements for turn lanes, channelization, tapers, deceleration, acceleration and storage lane lengths based on different intersection controls. Participants will be required to illustrate their design plan and pertinent design parameters and to justify the specific decisions that were made while completing this final project.