10 - Introduction

11 January 2022 08:58

CE774 Traffic Management and Design (2022)

I. Traffic Impact

1. Toll operation: Design and configuration, queuing characteristics, operation and maintenance issues.
2. Congestion studies: Performance measures, intensity, duration, extent of congestion, traveler perception, remedial measures, congestion pricing.
3. Parking Studies: Parking inventory, statistics, parking surveys; in-out, license palate, on-street and off-street parking.
4. Fuel Consumption and vehicle operating cost.
5. Vehicular emission and Air quality modelling.
6. Traffic safety: Accident studies, Accident data analysis, Statistical methods.
7. Transportation noise: standards, measurements and mitigation strategies.

II. Capacity and LOS Analysis for Design of Traffic Facilities

1. Signalized Intersection
2. Expressways and Freeways
3. Urban Streets, Two Lane and Multilane Highways
4. Transit route selection and design
5. Pedestrians and bicycles facilities
6. Intersection, roundabout configuration and design
7. Interchange design, Freeway Operations and design
8. Uncontrolled intersection: critical gap, capacity, queue, and delay.

III. Traffic Management

1. Discrete simulation models: Cellular automata concepts, discretization of time and space, rules for acceleration, deceleration, randomization, and vehicle updating.
2. Cell transmission models: Flow conservation, flow transmission.
3. Traffic progression models: Robertson progression model, platoon movement, dispersion index, applications.
4. Traffic Management Strategies, Traffic Management Techniques
5. Work zone traffic management
6. Traffic calming

IV. Automated Data Collection Systems

1. Intrusive systems such as loop detectors, pneumatic, etc.,
2. Non-Intrusive systems such as video, infrared
3. In-vehicle systems: GPS, Mobiles, Tracking; Positioning systems for location services
4. Geographical information systems

V. Intelligent Transportation System

1. ITS: User services and architecture
2. ITS: Standards and evaluation
3. Public transport and bus priority
4. Travel time estimation methods
5. Artificial intelligence in advanced traffic and ITS

Evaluation