

CE819

## HIGHWAY DESIGN AND SAFETY

Highway Functions - Driver and Vehicle Characteristics - Cross Sectional Design - Design Speeds - Horizontal Alignment - Vertical Alignment - Sight distance - At-Grade intersections - Grade Separated Intersections - Signing, Marking and Islands - Traffic calming

Measurement of Road Safety - Human factors in road safety - Safety performance functions - Data analysis. Road safety audit - Applications - Process - Check lists - Effectiveness. Accident Modification Factors - Safety effects of speed - Traffic volume and composition - Highway Design Elements - Traffic Control and Operational Elements, other Elements.

Safety effects of Design Elements - Traffic Control, Operational Elements and other Features. Pedestrian and Bicycle Safety on Roadway Segments - Pedestrian and Bicycle Safety at Intersections - Safety Effects of Design - Traffic Control and Operational Elements at Interchanges - Intersection manoeuvres - Star rating of roads.

Predictive methods for segments and intersections for Rural Two-Lane Roads - Rural Multilane Highways - Urban and Suburban Arterials. Accident Modification Factors for Roadway Segments - Intersections - Interchanges - Special facilities.

Road Safety Measures - Road Design and Road Equipment - Road Maintenance - Traffic Control - Vehicle Design and Protective Devices - Driver Training - Regulation of Professional Drivers. Public Education and Information - Police Enforcement and Sanctions.

### REFERENCES

1. AASHTO, *A policy on Geometric Design of Highways and Streets*, AASHTO, 2004
2. Rune Elvik, Alena Høye, Truls Vaa, & Michael Sørensen, *The Handbook Of Road Safety Measures*, Emerald Group Publishing Limited, 2009
3. Ogden, K.W, ' *Safer Roads: A Guide to Road Safety Engineering*', Avebury Technical, Cambridge.
4. Babkov, V.F, ' Road Conditions and Traffic Safety', Mir Publishers, Moscow
5. ITE, *Highway Safety Manual*, ITE, 2010
6. PEDSAFE: *Pedestrian Safety Guide and Countermeasure Selection System*, USDOT .
7. Ezra Hauer, *Observational Before-After Studies In Road Safety*, Pergamon, 2002
8. Relevant IRC codes