Applying Traffic Simulation for WSDOT

ITE Quad Meeting
Lynnwood, WA,
April 18, 2011

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WSDOT

Presentation Overview

- WSDOT’s Use of Traffic Analysis, Forecasting & Simulation
- WSDOT Analysis Guidelines
- Simulation Protocol and Guidelines
- Project Examples

WSDOT Traffic Analysis

- Several Tools available for analysis:
  - HCM
  - Synchro/SimTraffic
  - CORSIM
  - Sidra
  - VISSIM
  - VISUM
- Goal: Match the Tool with the Need

Different Levels of Analysis

- Travel Demand Forecasting:
  - High-Level Planning
  - Relies heavily on Land Use & Employment
  - Provides starting point for detailed analysis
- Stochastic Modeling:
  - Data Intensive Simulation Modeling
  - More Detailed
- Deterministic Modeling:
  - Less Data intensive
  - Typical methods for most analysis

WSDOT Traffic Analysis

- Traffic Analysis used to Support:
  - Corridor Studies
  - IJR Process
  - Design and Implementation
  - ITS Strategies
  - Congestion Pricing/Tolling
  - NEPA, Environmental Impact Statements

Analysis Guidelines

- WSDOT Guidance Resources:
  - Design Manual
  - Environmental Procedures Manual
  - Traffic Manual
  - Developer Review Manual
  - Experienced Engineers & Planners Community
**Analysis Guidelines**

- Applied on Project-by-Project Basis
  - Based on Needs, Funding, Previous Studies
- Finding Most Appropriate Method based on Project Elements
  - Project Size
  - Project Budget
  - Local/Regional/Statewide Importance
  - Technical Capabilities
  - Tool Selection (Simulation?, Forecasting?, etc.)

**Traffic Simulation Guidelines**

- WSDOT Guidelines coordinate with ODOT Simulation Protocol
  - Will be developed using input from other sources
    - Peer Reviews/Simulation Roundtable
    - FHWA Guidelines
    - ODOT Guidelines
- Meant to provide guidance on the simulation modeling process
  - Data requirements
  - Alternatives Analysis
  - Model Calibration/Validation
  - Selection of Traffic Analysis/Simulation Model Tools
  - Measures of Effectiveness

**VISSIM Guidelines**

- Problem Statement and Modeling Objectives
  - Purpose and Need
  - Methods and Assumptions
- Step-by-Step Process will address the following
  - Scoping
  - Base Modeling Development
  - Alternatives Development
  - Reporting/Documentation
  - QA/QC Process

**Objectives for Simulation**

- Transparent, Replicable Analysis based on Documentation
  - Calibration/Validation Process documented
  - Flexibility of Applications (Scale, Size, Duration, etc.)
  - Goals and Objectives tied with Project Problem Statement
  - Measures of Effectiveness tied together with Project Goals
  - Other Thoughts?

**In Conclusion**

- Traffic Simulation key aspect of project analysis
- Short-Term and Long-Term planning applications
- Stochastic modeling just one component of analysis toolbox
  - Deterministic modeling (HCS, Synchro)
  - Mesoscopic Modeling (Dynameq, Dynus-T)
  - Integration with Travel Demand Forecasting
- Guidance is necessary to maintain consistency in approach

**Questions?**