



CAMBRIDGE
SYSTEMATICS

Think  Forward

Aimsun Model Review Training

Day 1: Model Review Checklist

Caltrans On-Call Traffic Simulation Training

presented to

Caltrans District 7



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Model Review Checklist

- Overview of items that may need check for a robust Aimsun Model review
- Still not exhaustive
- All not always applicable

Geometry

➤ Geometry

- » Network / lane connectivity via diagnostic runs or scripting
- » Section settings
 - Functional Types
 - Maximum speed on
 - Capacity
 - User-defined costs
- » Turn/U-turn prohibitions

Geometry

- Microscopic driving behaviors parameters
 - » Cooperation
 - » Aggressiveness
 - » Breaking intensity, etc.
- Mesoscopic parameters
 - » Jam density
 - » Reaction time factors

Vehicles

- Vehicle Dimensions
 - » North American?
- Vehicle Speeds
- Micro and Meso parameters
- Acceleration & Deceleration
- Car-Following Parameters

Signals & Controls

- Physical movements coded for each phase
- Phases correspond to correct movements
- Detectors correspond to correct phases
- Signal Timing parameters
 - » Cycle length, Green time, Amber time, All red time

Signals & Controls

- Signal Actuated settings and detectors
 - » Recall mode
 - » Min green, Max-out, Passage time, Gap reduction, etc.
 - » Coordination and Offsets
- Ramp Meters & Parameters
- Master control plans
 - » By time of day, By scenario
- Stop/yield controls

Demands

- Centroids and connectors
 - » Loading points
 - » Review location with significant virtual queues
- Review how OD trip tables were developed in regional demand model (model documentation)
- Review how demand profiles were developed (model documentation)
- Review ODME process (model documentation)
 - » Trip Length Distributions
 - » Short Trips

Public Transit

- PT Routes
- Timetables / schedules
- Transit plans
- Stops
- Bus Lanes
 - » Reserved Compulsory
 - » Reserved Optional

ITS, Traffic Management

- ITS elements
 - » Variable speed signs
 - » Dynamic Message Signs
- Traffic management strategies
 - » Activation conditions (time/trigger)
 - » Scenario-based settings
 - » Any used in odd circumstances?

Scenario Model Setup

- Simulation settings
 - » Simulation period
 - » Traffic demand
 - » Transit plans
 - » Input path assignment
 - » Master control plans
 - » Real Data Sets for validation
- Outputs to be generated
- Strategies and conditions to be included

Experiment Settings

- Behavior Settings
- Reaction Times
- DTA Settings
 - » DUE vs SRC
 - » Route choice logic and parameters

Model Calibration

- Review validation results vs. observed field data (RDS)
 - » Time series
- Review model calibration parameters
 - » Jam density
 - » Reaction times and factors
 - » User costs
 - » Capacities and/or attractiveness
 - » Route preference/restrictions
 - Cost Functions Used

Model Calibration

- Review calibration performances
 - » Areas of poor fit to RDS
 - » Low speeds
 - » High densities
 - » Low flow rates
 - » Prolonged queuing
 - » Unintuitive routes

Visual Checks

- Congestion at loading points
- Signals that are not work properly
 - » Actuated signals not responding to vehicle calls
 - » Conflict movements operate concurrently
- Vehicle behaviors that don't reflect field conditions
 - » Car following / lane changing
 - » Overly aggressive or conservative

Visual Checks

- Preference on certain routes that is not consistent with the field conditions
- Overused / underused routes
- Bottlenecks
 - » Causation
 - » Duration