

<p style="text-align: center;">SIMULATION MODELING SUBCOMMITTEE TRB FREEWAY OPERATIONS COMMITTEE</p>
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Task 5 – Develop two freeway simulation application case studies in terms of assembling data, developing simulation, and undertaking investigations

Panos Prevedouros, Bill Halkias, Mousa Abbasi

January through March 2004

- Identified two freeway segments for case studies:
 - (1) A section of west-bound H-1 Freeway in Honolulu, Hawaii between the Airport and the split between H-1 and H-2 freeways. This is a 4 to 8 lane facility. 7.5 miles (12 km) in length. This facility experiences LOS F for over two hours in the afternoon period. A lane addition and other measures are planned.
 - (2) A section of the Attica Tollway in Athens, Greece of similar length including 4 to 6 interchanges. This is a relatively uncongested facility which may be tested with "base", "Olympics 2004" and other demand scenarios.
- Identify good data and inspect for quality.
 - (1) Geometry data are taken from as-builts, digital photologs and odometer surveys.
 - (2) Ramp and mainline data are taken from loop count stations supplemented with near-by piezoelectric or hose counters. For some locations, additional volume verifications will be made using videotapes from CCTV surveillance (manual and Autoscope counts). For freeway mainlines where data may be affected by congestion, upstream counts are available to generate a capacity-unrestricted traffic demand profile over time.
 - (3) Data collection for the for H-1 facility is complete and inspection has commenced.
- Procure software such as **FREQ** and **VISSIM** or **PARAMICS**.
- Planned simulations with microscopic software **Integration** and **VISSIM** or **PARAMICS** and macroscopic software **FREQ** and **KRONOS**. The models will be tested on their ability to output measures of effectiveness that are comparable with field-observed performance data (e.g., comparisons of speed profiles, actual and model-generated at various cross sections).

April through June 2004

- Complete data inspections for H-1 freeway.
- Collect and examine data from Attica Tollway.
- Develop base case (existing conditions) simulations for the H-1 freeway with at least two of the listed software.
- Model parameters will be calibrated so that model outputs match actual freeway performance measures. In most cases it is expected that model defaults will yield a mediocre fit which can be improved to a good fit with proper parameter adjustments. Typically, microscopic models require more and more complex adjustments than macroscopic ones.