

# 20<sup>th</sup> International Emme Users' Conference

Montreal, October 18 to 20, 2006



## CALL FOR PAPERS

An Approach for Base Transit Trip Matrix Development: Sound Transit EMME/2 Model Experience

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**Title of the paper**

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### **BIOGRAPHICAL SUMMARY FOR MAIN AUTHOR** (100 words mini-CV)

I did my Masters at the University of Minnesota, Minneapolis. I have been with Parsons Brinckerhoff for 4.5 years now. My work is concentrated on travel demand modeling with emphasis on model applications. My other areas of interest are micro-simulation and traffic operations.

### **AUDIOVISUAL SUPPORT NEEDED**

(A PC with Office XP, a projector, and a microphone will be provided. Please mention any other needs.)

**ABSTRACT** (500 words)

**An Approach for Base Transit Trip Matrix Development:  
Sound Transit EMME/2 Model Experience**

BY

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**An Approach for Base Transit Trip Matrix Development:  
Sound Transit EMME/2 Model Experience**

**ABSTRACT**

Sound Transit (ST) is a regional transit service agency in the central Puget Sound Region that serves the urbanized areas of King, Pierce and Snohomish counties, including the cities of Seattle, Bellevue, Tacoma and Everett. Sound Transit has maintained and periodically updated an incremental transit model as new survey and count data have become available.

Although on-board transit surveys provide the most accurate origin-destination data, it is difficult and costly for transit agencies to establish “observed” transit travel patterns solely from survey data. Typical on-board transit surveys are able to collect origin and destination data for only small percentages of riders. Furthermore, survey experience indicates that most transit surveys include strong sample biases that cannot easily be corrected. These sample biases compromise the accuracy of base trip tables based solely on survey responses.

Because of these shortcomings, an alternative approach to building base year trip tables was developed using ridership counts, as well as survey data. The survey data was primarily used to establish a “seed” transit trip table embodying representative cells (i.e., zone-interchanges) in the matrices, thus ensuring that important transit markets were represented in the base trip tables.

Passenger load profiles from the Automated Passenger Counts (APC) database and other counts provided segment level counts by direction and time period on each route. The frequency of segment-load points required for each route in the trip development process depended on the variability of the load profile for that route. About 1700 passenger volumes were hand-coded into a 2004 database for matrix estimation.

The EMME/2 demand adjustment macro “DEMADJT.MAC” developed by INRO was used to develop the demand matrices. The base trip table development process was very dependent on a validated base transit network as well as supplementary ridership count data, control totals, and actual average trip length measures. This process and the validation of the resulting demand estimates are discussed in this paper.

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