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GIS and Statewide Functional Classification System Reevaluation in Minnesota

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GIS tools and increased desktop computing capacity allowed the Minnesota Department of Transportation to conduct its first truly statewide evaluation of the functional classification system of all Minnesota roads during 2005-2006.

In previous decades, functional classification system reevaluation required breaking the roadway system into areas the size of 4-10 counties. Each area was then evaluated separately, by hand, on paper maps, by a small army of staff. A new approach was used this time.

Using recent transportation-related studies and comprehensive, up-to-date, GIS-linked data sets –base map line work, AADT, major freight generators, recreational and other major travel generators, county seats, population centers – we developed a provisional statewide functional classification based on the primary screen of AADT and secondary screens of other factors. Using FHWA's Guideline ranges for Miles and VMT, provisional functional classification for each roadway was assigned.

Statewide application of FHWA's Miles and VMT Guidelines, based on AADT as the primary screen, resulted in a provisional Functional Classification System that was significantly different from the current system. Less populated rural areas of the state were allocated a smaller percentage of arterial and collector routes than they currently have. Conversely, more populated rural areas of the state were allocated a greater percentage of collector and arterial routes than they currently have.

The statewide application of traffic volume/mileage Guidelines was, therefore, not used to define a new provisional statewide functional classification system because the statewide results would have forced too much change from the current functional classification system. Instead, the results of the analysis were used to set goals for incremental changes to the system. Over time, less populated areas of the state will have a smaller percentage of arterial and collector mileage while still maintaining adequate access to all areas of the state.

This project began in July 2005, and the technical analysis will be completed by February 2006. Stakeholder input will be considered for refinements to the system through approximately June 2006. Mn/DOT expects to adopt the new Functional Classification System in Summer 2006.