

Bus Only Shoulders in the Minneapolis/St. Paul Area

The Minnesota Department of Transportation has collaborated with Metro Transit, suburban opt-out transit providers, the Metropolitan Council and cities and counties to form Team Transit. The purpose of Team Transit is to initiate deployment of transit related enhancements within the Metro area. By encouraging these enhancements, such as park and ride lots, ramp meter bypasses, and bus-only shoulders, Team Transit hopes to encourage current single-occupant drivers to choose transit and to offer incentives to keep current transit riders.

Since the bus-only shoulder began in 1992 there has been 295 miles of bus-only shoulders added to the roadways. Out of the 295 miles of bus-only shoulders, approximately 9 miles are located on City and County roads. The segments range from 0.3 to 9.0 miles in length. The segment lengths vary depending on location. Guidelines have been developed by Team Transit and approved by the Federal Highway Administration. The bus-only shoulders are operational at any time when traffic in the adjacent mainlanes is moving at less than 35 MPH. Buses may not travel more than 15 MPH faster than the mainline and the maximum speed allowed on the shoulder is 35 MPH. The geometric design standards are available on the Team Transit web at:

<http://www.dot.state.mn.us/metro/teamtransit/>

Along with the guidelines above, the Metropolitan Council and MnDOT authorize the transit operators eligible to use the bus-only shoulders. The director of Team Transit furnishes the Minnesota State Patrol East and West Metro captains with the list of authorized transit operators. The Minnesota State Patrol is responsible for enforcement. The director of Team Transit is also responsible for providing transit providers with operating instructions and the guidelines. Bus drivers are encouraged to use their best judgment when operating on the shoulder. Buses must yield to any vehicle that enters the shoulder as well as vehicles merging or exiting at interchanges.

Bus-only shoulders are typically located on the outside shoulder and the segment is signed as such. Signs warning of buses on shoulders are placed at intersections within the segment to alert drivers entering the roadway to watch for buses on the shoulder.

Costs

Construction costs for these projects may vary depending on whether a shoulder is being converted or is part of new construction project. Table 2 indicates different scenarios and the associated costs for implementation on a freeway or expressway. Operating and maintenance costs include the additional cost of snow and debris removal in these areas. There are also increased costs to repair, resurface or reconstruct damaged shoulders.

Table 2. Costs Associated with Implementing Bus-Only Shoulders

Condition	Costs plus signing and striping
Shoulder width and bituminous depth are adequate. Catch basins do not need adjustment. Signing and striping are only requirements.	\$ 1,500 per mile – Freeway \$ 2,500 per mile - Expressway

Shoulder width and bituminous depth are adequate. Minor shoulder repairs and catch basin adjustments are needed.	\$ 5,000 per mile – Freeway \$ 5,000 per mile – Expressway
Shoulder width is adequate but bituminous depth requires a 2” overlay. This assumes shoulder and roadway can be overlaid at the same time.	\$ 12,000 per mile – Freeway \$ 12,000 per mile - Expressway
Same as above but adjacent roadway is not being overlaid. Shoulder must be removed; granular base adjusted and increased bituminous depth replaced.	\$ 80,000 - \$ 100,000 per mile
Shoulder width and depth replacement are required.	\$ 42,000 - \$ 66,000 per mile for both freeway and expressway
Installing a 12 ft shoulder rather than a 10 ft shoulder in a new construction project.	\$ 30,000 per mile for both freeway and expressway

Time Savings and Ridership

A study of bus-only shoulders in the Twin Cities area completed in June 1997 indicated that travel time savings was highly variable. The completed travel time runs resulted in a maximum time savings of nine minutes for buses using the shoulder compared with 10 minutes utilizing the ramp meter bypass and 17 minutes utilizing the high-occupancy vehicle (HOV) lane.

The study analyzed ridership over nine routes and found that, overall there was a 9.2 percent increase in ridership over a two year period. Total system ridership experienced a 6.5 percent decrease over the same time period. A majority of riders felt that the bus-only shoulders resulted in travel time savings.

SRF Consulting also surveyed bus drivers on routes with bus-only shoulder use to determine driver reaction and use of the shoulders. Sixteen drivers were interviewed and results indicate that most of the drivers use the shoulders during congested periods. The drivers perceived a travel time savings of 5-20 minutes.

Safety

~was this info taken from the SRF study? If so, please state so.

None of the drivers had been involved in a crash nor did they know of any other drivers involved in crashes while using the shoulders. However, many drivers felt that they would use the facilities more often if the shoulders were wider. In fact, on I-35W the shoulder is only 9.5 ft wide.

In January of 2001, MnDOT also conducted additional crash analysis on the 175 miles of bus-only shoulders. Crash data over the last 10 years has been analyzed and there have only been 20 crashes involving buses and each crash resulted in property damage only.

Conclusions

The use of bus-only shoulders is an integral part of the Team Transit partnership to quickly deploy transportation improvements that support moving more people more quickly on congested roadways.

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While the effectiveness is highly variable, bus-only shoulder use is perceived by the public to result in time-savings and trip predictability. As this application is applied in new construction, optimal specifications may be implemented. This will increase bus driver participation that could result in more utilization. Additionally, the Minnesota legislature is currently considering legislation that will allow registered vanpools and charter buses to use the bus-only shoulders.

References

1. SRF Consulting Group, *Study of Bus-Only Shoulders*, Minnesota Department of Transportation Report 1998-06U.
2. Minnesota Department of Transportation and Team Transit, *Team Transit Market Research: Bus-Only Shoulder Evaluation*. January 1998.
3. Lott, Heather. Minnesota Department of Transportation, Phone Conversation, March 18, 2002. (651) 582-1722