



Bus priority measures

Number 26, 2010

1. Bus and rail transit preferential treatments in mixed traffic

Danaher, AR

TCRP synthesis no. 83

Transportation Research Board, Washington DC, 2010.

This synthesis provides a review of the application of a number of different transit preferential treatments in mixed traffic, and offers insights into deciding which preferential treatment might be the most applicable in a particular location. The synthesis is offered as a primer on the topic area for use by transit agencies, as well as state, local, and metropolitan transportation, traffic, and planning agency staff.

Online [accessed 8 Dec 2010]. [Click here](#) to view.

2. Buses: bus lanes and priority measures [briefing paper for U.K. MPs on measures in the U.K.]

Butcher, L

Standard note SN/BT/32

House of Commons Library, 2010.

This note sets out the law and practice on introducing and enforcing bus lanes and other priority bus measures, including London's 'red routes'. Further information on bus-related matters can be found on the [Buses Topical Page](#) of the Parliament website.

Online [accessed 8 Dec 2010]. [Click here](#) to view.

3. Bus lanes/bus rapid transit systems on highways: review of the literature

Miller, M

California PATH working paper UCB-ITS-PWP-2009-1

Institute of Transportation Studies, University of Berkeley, California, 2009.

Presents a literature review of bus lanes and bus rapid transit (BRT) systems, focusing on their use of conventional highways and their consideration to BRT systems practice in California. Three common themes are highlighted, including: 1) running way classifications; 2) bus priority treatments; and, 3) planning and implementation guidelines. The different types of bus rapid transit examined include: mixed traffic flow, concurrent flow bus lanes, contra flow bus lanes, and busways.

Online [accessed 3 December 2010]. [Click here](#) to view.

4. Bus rapid transit systems: a comparative assessment

Hensher, DA and Golob, TF
Transportation, 2008
Volume 35, Number 4, pages 501-518.

This paper evaluates the status of 44 bus rapid transit systems in operation throughout the world as a way of identifying the capability of moving substantial numbers of passengers, using infrastructure whose costs overall, and per kilometre, are extremely attractive. Seeks to answer the question: what type of public transport system can deliver value for money?

5. Bus rapid transit: a public transport renaissance

Built Environment, 2010
Volume, 36, Number 3.

Special issue of the journal Built Environment, on international BRT, including coverage of Australia. Includes the following articles:

1. BRT in Latin America – high capacity and performance, rapid implementation and low cost;
2. Bus rapid transit in the United States;
3. The European bus with a high level of service (bhls): concept and practice;
4. Africa: transforming paratransit into BRT;
5. Bus rapid transit in Australasia: an update on progress;
6. BRT's influence on public transport improvements in Indonesian cities;
7. Bus rapid transit projects in Indian cities: a status report;
8. Bus rapid transit in China.

6. Capacity analysis of weaving sections on an urban expressway with exclusive bus lanes using microscopic traffic simulation

Chen, X, Yu, L and Zhu, L
Transportation Research Board 88th annual meeting, 2009
Paper #09-0535.

This paper is intended to present a microscopic traffic simulation approach to the capacity analysis of weaving sections caused by the installation of exclusive bus lanes on urban expressways. The paper first identifies three different kinds of exclusive bus lane configurations in Beijing, including median bus lane with off-on-ramp, curbside bus lane with on-off-ramp, and curbside bus lane with off-on-ramp. Then, the weaving section length, headway, mainline volume, and off-ramp and on-ramp volumes for general traffic are considered as the primary parameters in designing simulation scenarios.

7. Deploying underutilized bus lanes at key nodes in a road network

Guler, I and Cassidy, M
California PATH working paper no. UCB-ITS-VWP-2010-2
Institute of Transportation Studies, University of Berkeley, California, 2010.

Systematically explores ideas for setting aside travel lanes to serve low bus demand in dedicated fashion, initially on small scale design, and then how the ideas might be scaled-up to a city-wide road network. This work considers only bus priority strategies which impose little to no delay on bus traffic.

Online [accessed 8 Dec 2010]. [Click here](#) to view.

8. Evaluation of cost-effective planning and design options for bus rapid transit in dedicated bus lanes

Li, J-Q

California PATH research report no. UCB-ITS-PRR-2009-14

Institute of Transportation Studies, University of Berkeley, California, 2010.

Proposes an optimization model to describe the synchronization requirements of rapid transit buses in order to minimize the total travel and dwell time. The computational results show that a BRT system with a single dedicated lane yields similar total travel time to a BRT system with double dedicated lanes when the headway is not very short (e.g., more than 20 minutes). In addition, to compensate for possible delays at intersections, a simple speed control algorithm is implemented to adjust the bus speed in real-time.

Online [accessed 8 Dec 2010]. [Click here](#) to view.

9. Exclusive median bus lanes: the Seoul experience: with suggestions and comments on extensibility

Kim, B and Souleyrette, RR

Transportation Research Board 89th annual meeting 2010.

Paper #10-1370.

In 2004, the Seoul Metropolitan Government began installing exclusive median bus lanes to improve travel speed, quality of bus service, and the overall flow of traffic. Discusses Seoul's experience and quantifies the demand and performance of the service. Policies for improved performance are recommended. The paper also suggests characteristics of cities where exclusive median bus lanes may work best.

10. Impacts of motorcycles in Westminster bus lanes

York, I, Webster, D and Sakamoto, K

Report no. PPR365

Transport Research Laboratory (TRL), 2008.

This study examines motorcycle riders permitted to use eight bus lanes in the City of Westminster, London. A number of survey techniques were combined to assess impacts on bus operations, motorcycle journey times and the safety of motorcyclists and other road users. See also [Trial to allow motorcycles in red route bus lanes: interim report](#) (Nov 2009).

11. Microscopic traffic simulation approach to the capacity impact analysis of weaving sections for the exclusive bus lanes on an urban expressway

Chen, X, Yu, L, Zhu, L, Guo, J and Sun, M

Journal of Transportation Engineering, 2010

Volume 136, Number 10, pages 895-902.

This paper presents a microsimulation approach to the capacity impact analysis of weaving sections caused by the installation of exclusive bus lanes (XBLs) on urban expressways. Three typical configurations of XBL in Beijing are identified, including median bus lane with off-on-ramp, curbside bus lane with on-off-ramp, and curbside bus lane with off-on-ramp.

12. New developments for bus priority at traffic signals in London using iBus

D'Souza, C, Gardner, K, Hounsell, NB and Shrestha, BP

Road transport information and control conference and the ITS United Kingdom members' conference (RTIC), 25-27 May 2010, IET, London, UK.

Summarises the status of bus priority at traffic signals in London at the point a new automatic vehicle location (AVL) system for the bus fleet (iBus) was introduced in 2007–09. Has a summary of the R&D process so that best use can be made of the new facilities in iBus for bus priority, once its 'basic' operational functioning has been confirmed. In broad terms, the new opportunities concern enhanced bus detection and new priority strategies.

13. A novel bus lane enforcement system with vehicular sensor networks

Li, X, Cao, T, Huang, H, Li, M, Shu, W and Wu, M-Y

Wireless communications and networking conference (WCNC), 18-21 April 2010, Sydney, NSW, 5 pages.

Proposes a cooperative violator identification scheme, DoubleChecking, with which bus lane violators can be sorted out from traffic flow with high accuracy. It identifies not only the violator immediately in front of the bus, but also the violators whose number plates cannot be read directly because of sight blocking of bus-mounted cameras.

14. Review of bus priority at traffic signals around the world

Gardner, K, D'Souza, C, Hounsell, N, Shrestha, B and Bretherton, D
UITP Bus Committee, 2009.

This aims to be a state-of-the art worldwide review of the topic, and to identify lessons learnt from different cities/applications. Includes coverage of signal control systems and strategies, priority system architectures, and detection methods.

Online [accessed 8 Dec 2010] [Click here](#) to view. See also associated [PowerPoint](#)

15. Strategies and methods of bus lanes implementation in Shanghai

Wu, R-J, Wu, J and Wang, Y

Traffic Information and Safety, 2009
Number 5.

Planning and implementation for the bus lane process, using measured data and research results at home and abroad. The Shanghai bus lane is proposed to set the conditions and type of bus lanes and service levels for urban road network expansion and traffic demand changes, proposed bus lane building strategy, and road conditions when the bus lane is implemented.

16. Transit signal priority: systems application and technology investigation

Hedden, CG

Final Report FHWA-NJ-2009-001

New Jersey Dept. of Transportation, 2009.

This report describes the process and results of research to develop an evaluation process that will assist NJ Transit in quickly determining which intersections are good candidates for Transit Signal Priority (TSP). This evaluation process is applicable for passive and active TSP and could be applied to a variety of roadways, including urban arterials, state routes and county roads.

Online [accessed 8 Dec 2010]. [Click here](#) to view.

17. Triple-ring phase representation scheme for exclusive median bus lane signals

Kim, J-T

Canadian Journal of Civil Engineering, 2010

Volume 37, Number 8, pages 1117-1124.

Recognizing the need for exclusive bus signals, this paper proposes a triple-ring phase representation scheme to harmonize the non-bus phases and exclusive bus phases at exclusive median bus lane (EMBL) intersections. The proposed triple-ring phase representation scheme increases the efficiency of traffic signal operation on EMBL corridors.

18. Use of high performance concrete on rigid pavement construction for exclusive bus lanes

Tsai, C-T, Kung, G T-C, and Hwang C-L

Construction and Building Materials, 2010

Volume, 24, Number 5, pages 732-740.

This study presents a case study to introduce the application of rigid pavement on the exclusive bus lanes in Taipei City. Specifically, the jointed reinforced concrete pavement (JRCP), in which high performance concrete (HPC) and high performance steel fiber reinforced concrete (HPSFRC) are used, is adopted in the construction of the intended rigid pavement. This successful case study provides a basis to draw up a transportation policy in Taipei City that the rigid pavement is strongly recommended to substitute for the conventional flexible pavements of exclusive bus lanes in the bus stops.

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