



Planning for Special Treatment of Trucks in Traffic



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This White Paper is one in a series developed as part of the Tampa Bay Regional Goods Movement Study. The purpose of this series of White Papers is to provide background and information for the freight community in the Tampa Bay Region.

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INTRODUCTION

Special treatment of trucks in traffic can advance multiple objectives. The primary focus of this White Paper is on the separation of trucks into dedicated or exclusive facilities in order to facilitate truck movement, minimize congestion, and improve safety. In addition, there is a brief discussion of restriction of trucks to certain highway lanes or to certain roadways to promote safety and to minimize adverse impacts on sensitive land uses.

MOTIVATIONS FOR EXCLUSIVE OR DEDICATED TRUCK FACILITIES

Several national organizations representing industry, research, and the federal government have identified potential benefits related to the provision of special treatment of trucks in traffic, particularly for exclusive or dedicated facilities. The American Road and Transportation Builders Association (ARTBA) has been a strong advocate for the creation of a national Critical Commerce Corridor program which would focus on freight transportation.¹ As envisioned, the Critical Commerce Corridors might include the Interstate Highway System, other elements of the National Highway System, new multi-modal trade corridors, and truck-only lanes providing new capacity. ARTBA proposes to finance this system through freight-related user fees and taxes such as bill of lading taxes, customs fees, mileage taxes, freight transaction fees, and segregated diesel fuel fees that are maintained in a separate account from the Highway Trust Fund, and the revenues dedicated exclusively to freight improvements. In testimony to the U. S. Senate Environment and Public Works Committee, ARTBA has also proposed a new federal excise tax, the Highway Transportation Services Tax, which would be levied on the value of transportation services provided.²

The Federal Highway Administration (FHWA) publication *Public Roads* included an article about exclusive truck facilities.³ The authors indicate there is increasing interest in a number of states in the possibility of separating trucks and passenger vehicles.

They summarize potential benefits to trucks, as including:

- Much less risk of car-truck crashes, which are the most serious crash type
- More efficient operations for trucks with lower traffic volumes in the truck lanes
- Reduced congestion for trucks and passenger vehicles, resulting in considerable savings attributable to the value of time

¹ American Road and Transportation Builders Association, <http://www.artba.org/government-affairs/policy-statements/ports-and-waterways-policy/>

² William R. Buechner, Ph.D., Testimony to the U.S. Senate Committee on Environment and Public Works, March 3, 2010.

³ David J. Forkenbrock and Jim March, *Issue in the Financing of Truck-Only Lanes; Public Roads*, September-October 2005, Federal Highway Administration.

- Greater acceptance of longer combination vehicles (LCVs), which would improve the economics of freight movement by trucks

They also cite potential benefits for passenger vehicles:

- Safer travel conditions from reduced truck-passenger vehicle crashes
- Improved comfort and quality of passenger vehicles by not being intimidated by large trucks
- Improved highway speed by removing trucks, with their lower acceleration and braking performance, from general traffic

In 2010 the Transportation Research Board published a report on commercial vehicle lanes.⁴ The study conclusions cite the following primary motivations for developing long-haul exclusive truck lanes:

- Increase efficiency of freight movement by reducing travel time and delay
- The monetized value of benefits may exceed the costs
- Provide increased freight mobility
- Increase safety by reducing interactions between trucks and passenger vehicles
- Encourage economic development by drawing industries for which freight transportation is significant
- Provide dedicated facilities that allow LCVs that might include various combinations of more than one trailer being towed by a single truck.

The Reason Foundation has attracted much attention with their proposals for LCVs operating on reserved truck facilities paid for by truck tolls. The Foundation has long been a proponent and has advocated for a national system of truck tollways. They have proposed facilities with two lanes in each direction in existing freeway corridors, separated by reinforced concrete Jersey barriers. They contend that the travel time savings would be sufficient to overcome resistance to paying a toll.⁵ They do an effective job of noting the positives of longer combination vehicles, e.g. primarily significant savings in shipper costs, and also the negatives, e.g. safety concerns of LCVs operating in mixed traffic, and particularly on facilities that were not designed for them. Their solution for overcoming the objections is to segregate LCVs on a system of toll truckways. The Reason study also reported I-75 from Tampa to Toledo as meeting some of the basic criteria to be considered for an exclusive truck facility.

⁴ Transportation Research Board, *NCHRP Report 649/NCFRP Report 3; Separation of Vehicles—CMV-Only Lanes*, Prepared by Cambridge Systematics, 2010.

⁵ P. Samuel, R.W. Poole, Jr, and J. Huguin Veras, *Toll Truckways: A New Path toward Safer and More Efficient Freight Transportation*, Reason Foundation, June 2002.

Examples of Reserved Truck Lanes and Dedicated Truck Roadways

A good local example of dedicated truck lanes in the Tampa Bay region are those incorporated into the I-4/Selmon Expressway Connector. The I-4/Selmon Expressway Connector is an elevated north-south toll road that connects I-4 with the Selmon Expressway. The Connector includes exclusive truck lanes to provide direct access to Port Tampa Bay and remove commercial traffic from local roads in Ybor City⁶.

A number of reports over the last ten years have dealt with exclusive or dedicated truck facilities. These reports include one by the Center for Urban Transportation Research (CUTR) at the University of South Florida,⁷ the Federal Highway Administration⁸ and the California Department of Transportation⁹. Collectively, these studies found no examples of long distance truck-only facilities. However, the New Jersey Turnpike, which operates parallel roadways, one limited to passenger vehicles, substantially operates as a separated truck facility.

Figure 1 shows the parallel roadways on the New Jersey Turnpike. The Federal Highway Administration notes that the dual roadway portions of the New Jersey Turnpike have lower crash rates than the sections where commercial traffic is not separated.

Figure 1: Dual Roadway Section of New Jersey Turnpike



Source: Federal Highway Administration, *Freeway Management and Operations Handbook*

⁶ Federal Highway Administration, *Innovative Program Delivery, Project Profiles*; http://www.fhwa.dot.gov/ipd/project_profiles/fl_i4_selmon_expressway_connector.aspx

⁷ Center for Urban Transportation Research, *The Potential for Reserved Truck Lanes and Truckways in Florida*, Prepared for Florida Department of Transportation, 2002.

⁸ Federal Highway Administration, *Freeway Management and Operations Handbook*, September 2003, updated June 2006, pp. 8-1 to 8-10.

⁹ California Department of Transportation, *I-5 HOV/Truck Lanes Project, SR-14 to Parker Road, Draft Environmental Impact Report/Environmental Assessment*, December 2008; Also California Department of Transportation, *Truck-Only Lanes*, <http://www.dot.ca.gov/hq/traffops/engineering/trucks/ops-guide/truck-only-lanes.htm>

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These same sources have identified a number of shorter truck roadways, typically in close proximity to ports or other major freight generators.

- The Port of New Orleans Tchoupitoulas Roadway – a two-lane exclusive truck roadway, 3.5 miles in length, with a direct connection between the Port of New Orleans and the Interstate System.
- The Laredo, Texas World Trade Bridge – an eight-lane truck-only bridge connecting Laredo, Texas and Nuevo Laredo, Mexico, one of the busiest entry locations for trucks moving between the US and Mexico. The bridge incorporates weigh-in-motion technology and electronic toll collection.
- The South Boston Haul Road – a short 1.5 miles two-lane road exclusive truck roadway approaching Boston Harbor (**Figure 2**). It was originally built in an underutilized railroad alignment during the reconstruction of the Boston Central Artery project, but has remained as a truck-only facility. The South Boston Haul Road is a two-lane undivided roadway with no shoulders.

Figure 2: The South Boston Haul Road



Photo by Alice Kane

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A recent example of a dedicated port access road is the Port of Seattle, which is currently constructing the 1500' long, 16' wide Argo Yard Truck Roadway, a dedicated one-way truck roadway providing a safer and faster truck freight route from the port marine terminals to the Union Pacific Argo Yard rail gate.¹⁰

New Jersey DOT has undertaken a massive planning and construction effort to improve access to the Port of Newark. Several truck-only facilities are planned, and construction is underway to include New Jersey Turnpike Interchange 15W to the Kearny and Croxton yards, a truck-only ramp from Port Street to the Turnpike Interchange 14 toll plaza, and from Interchange 14A to Port Jersey.¹¹

Southern California and Portland, Oregon have implemented dedicated truck climbing lanes through interchanges. The purpose of these lanes is to separate slower trucks from the faster general traffic in weaving sections with vertical grade issues, resulting in improved traffic operations at the interchange.

Figure 3 shows the truck bypass climbing lane on I-5 in Southern California. The bypass lanes are over nearly three miles in length and feature roadway grades of approximately five percent. Average daily traffic on this segment ranges from 100,000 to 200,000, with truck volumes accounting for 10 to 20percent of the daily traffic. This truck-only facility has been in place for 30 years.

Figure 3: I-5 Truck Bypass, Los Angeles



Source: Federal Highway Administration, *Freeway Management and Operations Handbook*

¹⁰ Port of Seattle, <http://www.portseattle.org/Supporting-Our-Community/Regional-Transportation/Pages/Argo-Yard-Truck-Roadway.aspx>

¹¹ New Jersey Department of Transportation, *Portway Extensions Concept Study*, 2003

Caltrans also reports a short truck lane of approximately one-third of a mile on Southbound I-5 at the intersection with State Route 99, for the purpose of placing truck merges further downstream of the auto traffic merge of I-5 and SR 99. Caltrans also has a project under construction at the interchange of I-15 and I-215 near San Bernardino. Truck bypass lanes will be added to provide a physical separation of trucks from passenger vehicles to eliminate weaving between slower moving truck and faster moving auto traffic.

PLANNING STUDIES OF SPECIAL TREATMENTS FOR TRUCKS

There have been a number of large scale project proposals incorporating exclusive truck facilities, many of which have not been implemented, for lack of resources or for lack of political support. The Trans Texas Corridor Project, which was proposed in 2001, was envisioned as one of the largest public works project ever proposed. It envisioned a massive corridor of up to 1,200 foot width, with three passenger vehicle lanes in each direction, two exclusive truck lanes in each direction, six rail tracks to accommodate freight and passenger movement, and a 200 foot wide utility corridor¹². The concept became a major political point of contention, and in 2010 the project was formally abandoned.

In 2001 the Southern California Association of Governments did a study of truck-only toll lanes on a 38-mile segment of SR 60 with trucks accounting for 15 percent of the total traffic volume. They estimated a cost of \$4.3 billion and estimated that tolls could cover only about 30 percent of the cost¹³. In 2005, jointly with CALTRANS and another MPO, 45 miles of I-15 were studied for the feasibility of truck-only toll lanes. This study also concluded that truck tolls would not be sufficient to totally pay for a dedicated truck facility¹⁴.

An evaluation of the Southern California experiences planning for truck-only lanes was presented at the 2003 TRB Annual Meeting.¹⁵ The authors took note of early efforts to separate trucks and autos, including early auto parkways, such as those in the greater New York City area (e.g. the Merritt Parkway). They also cite early studies of truck-only roadways between Winnipeg and Duluth and in the Seattle area, but neither of these studies resulted in the implementation of a truck-only lane or roadway. They also cite the New Jersey Portway project, which is noted elsewhere in this White Paper. Following their analysis of the I-710 and SR 60 truck lane projects in Southern California, the authors identify a number of key issues in planning for truck-only facilities:

¹² Dan Middleton, Steve Venglar, Cesar Quiroga, Dominique Lord, and Debbie Jasek, Texas Transportation Institute, *Strategies for Separating Trucks from Passenger Vehicles: Final Report*, November 2006.

¹³-Southern California Association of Governments, *SR-60 Truck Lane Feasibility Study, Final Report*, KAKU Associates, Feb 2001.

¹⁴ SCAG, CALTRANS, SANBAG, I-15 Truck-only Toll corridor Study, 2005

¹⁵ Michael J. Fischer, Dike N. Ahanotu, and Janine M. Waliszewski, *Planning Truck-Only Lanes: Emerging Lessons from the Southern California Experience*, presented at the 2003 Annual Meeting of the Transportation Research Board.

- Decisions about the number of truck-only lanes in each direction have an enormous impact on cost, requiring serious tradeoffs against flexibility of operations.
- Decisions about the number of access points need to account for the tradeoffs between costs associated with interchanges and demand.
- Barrier separation of truck lanes from general purpose lanes offers the best, albeit costly, traffic operations.
- Time of day variations in truck movements differ from those of automobiles. Anticipated travel time savings may not materialize for off-peak truck movements. This is particularly relevant if toll financing is anticipated. [On the other hand, capacity devoted to trucks may allow truckers and shippers to better optimize their operations.]
- For toll-financed truck-only facilities, tradeoffs between willingness to pay and travel time savings might make it difficult to fully finance them with tolls.

The California Department of Transportation did a study of adding dedicated truck lanes to an 18-mile segment of I-710, where trucks account for 20 percent of the total traffic. That study identified a locally preferred strategy consisting of ten general purpose lanes and four dedicated truck lanes. In 2012 CALTRANS completed an Environmental Impact Statement that recommended the same configuration, at an estimated cost of approximately \$5 billion¹⁶.

Based on their extensive series of studies, the Southern California Association of Governments, has included truck-only lanes in their 2035 Regional Transportation Plan.¹⁷ Their plan includes a massive system of truck-only lanes extending from the Ports of Los Angeles and Long Beach to downtown Los Angeles, along I-710, and finally reaching I-15 in San Bernardino County. They indicate that significant progress continues as evidenced by continuing work on environmental impact studies. They estimate this corridor will carry between 58,000 and 70,000 daily trucks—undoubtedly the greatest truck volume in the U.S.

A study by the University of Virginia noted that exclusive truck facilities on I-81 would produce a positive net present value.¹⁸ The I-81 STAR (Safer Transport and Roadways) proposal was envisioned as a public-private partnership using toll revenues from the truck lanes. The STAR Solutions consortium, headed by Kellogg Brown and Root was selected in 2003 as the concessionaire. Interstate 81 in Virginia has extremely high truck volumes, approaching 30,000 per day in the Roanoke area. The plan included separated truck and auto lanes, with dual interchanges and truck-only flyovers. However, according to *TOLLROADSnews*, truckers were “fiercely opposed” to the project, as it required them to use the truck toll

¹⁶ California Department of Transportation, *I-710 Environmental Impact Statement*, 2012.

¹⁷ Southern California Association of Governments, *Regional Transportation Plan 2012-2035: Sustainable Communities Strategy*, Adopted 2012.

¹⁸ Lester Hoel and Joseph Vidunis, *Exclusive Lanes for Trucks and Passenger Vehicles on Interstate Highways in Virginia: an Economic Evaluation*, Virginia Transportation Research Council, June 1997.

lanes with little apparent direct benefit. Amid threats by truckers to overwhelm parallel local roads, in 2008 Virginia DOT announced it was terminating the agreement with STAR Solutions and the project was killed¹⁹.

In 2005, the Georgia State Road and Tollway Authority performed a study of the potential of truck-only toll roads in the Atlanta region.²⁰ The study found that the implementation of truck-only toll roads in metropolitan Atlanta would reduce total vehicle hours travelled, significantly reduce congestion in general purpose lanes, save considerable amounts of time for truck traffic, and that “respectable” toll revenues could be generated to cover operating and maintenance costs. They estimated that a regional TOT network could generate nearly \$200 million a year in toll collections and yield nearly \$2 billion annually in travel time savings for trucks and other vehicles. They do recognize some significant challenges, including implementing an equitable toll structure, and finding adequate right-of-way.

In 2008 Georgia DOT performed a Study of Potential Managed Lanes on the I-75 South Corridor, which explored a wide range of managed lane alternatives, including several that included truck-only toll (TOT) lanes. One of the alternatives included only TOT lanes, while others included both TOT lanes and High Occupancy Toll (HOT) lanes. They concluded the TOT alternative does not provide the same level of benefits as HOT lane alternatives. The alternatives that included both HOT and TOT lanes was seen to require such a wide right-of-way and numbers of lanes that costs would be prohibitive.

The I-10 Freight Corridor Study was a major multistate analysis by eight state DOTs, from California to Florida. Among other actions, it examined the separation of truck and auto traffic, including separate facilities, dedicated lanes, and truck and auto restrictions. It also considered the use of urban truck bypass routes. The project team ultimately concluded that, separated facilities and truck bypasses are feasible in some portions of the corridor, but these alternatives were not financially affordable.²¹ A similar study, the I-35 Trade Corridor Study examined alternatives to improve freight movement from Laredo, Texas to Duluth, Minnesota. The study recommendations included the provision of separated lanes for trucks for a portion of the route between Dallas and Laredo.²²

In 2011 a Final Feasibility Study of I-70 Dedicated Truck Lanes was adopted by the Indiana, Ohio, Illinois and Missouri departments of transportation. The study investigated the feasibility of constructing dedicated truck lanes along an 800-mile corridor between Ohio and Missouri, concluding the Columbus, Ohio, to Indianapolis, segment has the most truck traffic (more than 5,000 trucks per day) of any

¹⁹ TOLLROADnews, *VDOT issues death notice on I-81 truck toll lanes concession proposal*, January 16, 2008.

²⁰ Georgia State Road and Tollway Authority, *Truck-only Toll Facilities: Potential for Implementation in the Atlanta Region*, performed by Parsons Brinckerhoff, Inc., July 18, 2005.

²¹ Middleton, et. al., op.cit.

²² Federal Highway Administration, *I-35 Corridor Study*, Executive Summary

segment. This corridor is heavily populated with logistical operations that retain and attract jobs due to the accessibility of such a major east-west national corridor.²³

A recent update from Indiana DOT indicated the concept continues to be very much under consideration. It was indicated that all four states continue to plan for the I-70 Dedicated Truck Lanes, but funding constraints have limited the implementation. Indiana legislation prevents the tolling of existing Interstate lanes and they are convinced dedicated truck lanes as a toll option are not practical if there are non-tolled lanes on the same facility unless there are special incentives such as higher weight allowances, higher speeds, and guaranteed reliability. This is believed to be especially the case in rural areas.²⁴

Considerations for Implementing Exclusive Truck Facilities

One of the most complete economic analyses of exclusive truck facilities was performed by University of Colorado – Denver researchers Bruce Janson and Anju Rathi.²⁵ They applied an economic evaluation methodology of exclusive truck facilities across a wide range of traffic situations, construction cost conditions, and crash characteristics. They evaluated benefits for both personal travel and freight, including:

- Travel time savings
- Vehicle operating cost savings
- Accident cost savings resulting from a reduction in severe crashes
- Reduced delays caused by accident blockages

Their analysis also considered costs associated with construction and right-of-way, and also periodic facility maintenance and resurfacing. Their study has been referenced repeatedly by more recent TRB studies, FHWA studies, and other regional studies of exclusive truck facilities.

Their conclusions indicated that exclusive facilities are expected to be most warranted in major metropolitan areas, because benefits increase with overall traffic volumes and truck volume percentages. They also note that with lower right-of-way and construction costs in rural areas, exclusive facilities might be economically justified in some rural highway sections with high accident rates caused by truck-car interactions.

They also generalized their findings by noting key factors that are generally needed for barrier-separated facilities to be economically feasible. They cited peak hour volumes of 1,800+ vehicles, off-peak volumes of 1,200, and heavy vehicles making up 30 percent or more of the traffic, as criteria for warranting a

²³ HNTB Corp., *Investing in Indiana's Future*, 2012.

²⁴ Personal email communication with Roy Nunnally, Director of the Asset Planning & Management Division, Indiana Department of Transportation, October 3, 2014.

²⁵ B. N. Janson and A. Rathi, *Economic Feasibility of Exclusive Vehicle Facilities*, Transportation Research Record 1305, 1991

separate truck lane. They also note that exclusive facilities without barrier separation may be warranted for a wider range of conditions and truck lanes restrictions can be a cost-effective solution.

In 2002 Battelle Memorial Institute did a study of exclusive truck facilities for FHWA and slightly modified the Janson and Rathi criteria, indicating potential locations in which traffic volumes exceed 100,000 per day with a truck percentage of 25 percent. They also cited highway level of service, truck related fatal crash rate, and proximity to intermodal facilities as relevant criteria.²⁶

CALTRANS guidance on truck-only lanes also concludes that truck lanes are most feasible when truck volumes exceed 30 percent of total traffic, peak hour volumes exceed 1,800 per lane, and off peak volumes exceed 1,200 per lane²⁷. While they don't include a reference, it does appear they are simply placing reliance on the Janson and Rathi study previously cited.

The Transportation Research Board in 2010 published a report on commercial vehicle lanes.²⁸ The report synthesized considerable amounts of earlier work on the subject. They also cited the Janson paper, which suggested rules of thumb for implementing exclusive truck facilities, of peak hour volumes of 1,800 per lane, off peak of 1,200, and 30 percent truck volumes.

The FHWA publication *Public Roads* included an article that focused on issues of how the costs of construction and operating exclusive truck facilities should be distributed.²⁹ The authors cite a feasibility study by the Southern California Association of Governments (SCAG), and note the specific conditions that would indicate suitability of truck lanes. However, further research indicates the SCAG study was merely citing the 1991 Jansen and Rathi study, which has gained widespread acceptance as a means of identifying likely locations for exclusive truck facilities.

The Role of Tolls for Funding Exclusive Truck Facilities

A number of reports, including the FHWA *Public Roads* article expect that truck-only facilities would be at least partially funded with toll revenues. Referring back to the SCAG study, they note it was reported that only 30 percent of the costs could be recovered through tolls.

In 2009 the Oregon DOT sponsored a study of the development of exclusive truck lanes supported by toll revenues.³⁰ The study concluded that truck-only toll lanes do not offer major advantaged for Oregon.

²⁶ Battelle Memorial Institute, *Evaluation of the Potential Safety and Other Benefits of Exclusive Facilities for Trucks*, Prepared for FHWA, 2002.

²⁷ California Department of Transportation, Truck-Only Lanes, <http://www.dot.ca.gov/hq/traffops/engineering/trucks/ops-guide/truck-only-lanes.htm>

²⁸ Transportation Research Board, *NCHRP Report 649/NCFRP Report 3; Separation of Vehicles—CMV-Only Lanes*, Prepared by Cambridge Systematics, 2010.

²⁹ David J. Forkenbrock and Jim March, *Issue in the Financing of Truck-Only Lanes; Public Roads*, September-October 2005, Federal Highway Administration.

³⁰ Oregon Department of Transportation, *White Paper #7: Truck-only Toll Lanes*, prepared by Cambridge Systematics, February 2009.

Some of the reasons are specific to Oregon. One significant point that was made is that it is unlikely trucks would be willing to pay a toll premium during off peak periods, when the transportation system is uncongested. If the financial feasibility hinges on generating sufficient toll revenues to pay for the facility, the report argues this is unlikely to occur, at least in Oregon. However, it could also be argued that for virtually any toll facility, the value is likely to be much greater during peak congestion periods, yet many toll facilities have been highly successful.

The previously mentioned TRB study reports on a toll-sensitivity analysis of the I-710 urban corridor project serving the Ports of Long Beach and Los Angeles. The I-710 project estimated that a dedicated truck facility with no tolls would divert as much as 90 percent of truck traffic; a toll of seven cents per mile would divert as much as 70 percent, and a toll of fifteen cents per mile would divert a maximum of 30 percent of truck traffic. The TRB study rightly notes that exclusive truck facilities could be built with or without allowance for LCVs, and with or without tolls, although in the current economic environments it is likely tolls would need to be part of the solution.

Although there are no long-distance exclusive truck tolled facilities currently in operation, as previously mentioned there have been strong advocates, notably The Reason Foundation, for a system of exclusive truck facilities paid for by toll revenues and permissive of LCVs. The issue of tolling is a difficult one with the trucking community.

A recent TRB study³¹ performed surveys and interviews with trucking industry stakeholders to determine their attitudes toward tolls. Over 1,000 on-line surveys were conducted in addition to interviewing drivers and industry representatives at various trade shows. It was noted that many drivers are sufficiently opposed to tolling they would not pay a toll unless there were no comparable alternative routes. These findings are not surprising as they mirror the general opposition to tolls expressed by the American Trucking Associations.³² It might be expected that independent operators would be the most sensitive to tolls.

If there are considerations of entirely new facilities on new alignment including tolls for both reserved truck lanes and for general purpose lanes might be found to be economically and politically feasible. Of course this is dependent on the role and purpose of the new facility and the available time savings.

Adding truck-only toll lanes to an existing freeway corridor without tolling the other lanes may have difficulty generating substantial toll revenues. As congestion increases on the free lanes, some trucks may shift to a reserved truck lane in order to maintain their operational speeds and save time, dependent on the toll structure. However, the decision by truckers whether or not to use toll lanes will be highly

³¹ Transportation Research Board, *NCFRP Web-Only Document 3/NCHRP Web-Only Document 185, Truck Tolling: Understanding Industry Tradeoffs When Using or Avoiding Toll Facilities*, Prepared by Howard Wood, Parsons Brinckerhoff, October 2011

³² <http://www.trucking.org/Search.aspx?q=tolls>

dependent on the level of those tolls. In an era of variable-priced toll lanes, tolls rates might be commensurate with the time savings offered, making their use much more likely by trucks.

Another concept that has been suggested is managed/shared use toll lanes that could be used by both trucks and autos using variable tolls to control access and maintain a guaranteed level of service. However, trucks have not been commonly permitted in variable-priced toll lanes, as their operating characteristics are different from passenger vehicles and their presence might dissuade auto drivers from the use of managed lanes. Trucks are also prohibited from HOV lanes, even if they have team drivers. Traditional variably-priced managed lanes have been shown to divert sufficient autos that traffic in remaining lanes, including truck traffic, experiences reduced congestion.

A hybrid that may be feasible would be to add two separated lanes —one for autos and one for trucks, both independently managed with variable pricing. During off peak periods, the toll could be minimal, so that trucks would be encouraged to use the truck-only toll lane. During peak periods, congestion in free lanes would be sufficient to motivate trucks to use the toll lanes.

While it is desirable for tolls for managed lanes to significantly contribute to their cost of construction, there is an enormous efficiency in traffic operations capabilities, irrespective of the accumulated toll revenue.

THE POTENTIAL FOR RESERVED TRUCK LANES AND TRUCK ROADWAYS IN THE TAMPA BAY REGION

The study performed by the USF Center for Urban Transportation (CUTR) on behalf of Florida DOT identified intercity corridors and urban freight routes for possible consideration of reserved truck facilities³³. The study made use of an extensive group of project advisors, including numerous Florida DOT staff and staff from several public agencies in Boston, Laredo, New Orleans, and New Jersey, who facilitated site visits of existing facility examples. Factors that were used to identify facilities for consideration included truck crashes, truck volume, percentage of trucks, highway level of service, and proximity to airports, seaports or other intermodal facilities.

The CUTR study referenced earlier studies of exclusive truck facilities in Florida. The first was for a 1979 study jointly undertaken by Florida DOT and Georgia DOT for an Interstate 75 Preferential Heavy Vehicle Lanes Evaluation Project³⁴. The study proposed to develop a single reserved truck lane in each direction, but the project was abandoned for lack of funding.

³³ Center for Urban Transportation Research, *The Potential for Reserved Truck Lanes and Truckways in Florida*, Prepared for Florida Department of Transportation, 2002.

³⁴ Florida Department of Transportation and Georgia Department of Transportation, *Interstate 75 Preferential Heavy Vehicle Lanes Evaluation Project*, April 1979.

Subsequently, the study noted that at the request of the Florida Transportation Builders Association, in 1987 Florida DOT undertook a study of an exclusive truck toll motorway along the alignments of US 27 and US 301 from south Florida to I-10. Ultimately, the conclusion was that the project could not be supported by toll revenue, which was seen as the only viable funding source.

Florida DOT is currently planning for future statewide corridors. The corridors under study include both enhancements to existing facilities and in some cases construction of new facilities on new alignments. If entirely new tolled facilities on new alignments are considered, the prospect of including both reserved truck lanes and general purpose lanes might be found to be economically and politically feasible. One prospective candidate would be the Tampa-Jacksonville Corridor, which could provide relief to the heavily traveled I-75 and also provide a more direct route between the two major cities. Moreover, portions of the I-75 corridor have high truck percentages.

Florida DOT recently released their I-75 Transportation Alternatives Study, which was a conceptual evaluation of various alternatives in the corridor, including exclusive truck facilities. While it noted pros and cons of various alternatives for the corridor it did not recommend a specific solution. The Florida DOT study states that primary freight movements are between Tampa and South Florida, noting that most freight movement on I-75 is intrastate; however, it then goes on to say that Georgia is expected to be Florida's largest trading partner, with total tonnage expected to increase by 175 percent in the next twenty years.³⁵

The CUTR study explored three decision support alternatives to identify potential exclusive truck facilities. It ultimately retained two: a "between cities model" and a "within cities model" to identify potential consideration for exclusive truck facilities. . The between cities model emphasized high truck volume (75%) and low level of service (15%), with percentage of trucks and truck crash rate each weighted at five percent. For each variable, numerical scores were assigned, ranging between one and nine, to correspond to the intensity of each measure.

The application of the between cities model identified six potential corridors, two of which are part of the Tampa Bay region:

- I-4 from Tampa through Orlando to Daytona Beach—for which key measures based on year 2000 data included an AADT of 179,000 in Orlando, truck volumes of 22,000 through downtown Tampa, and a high truck percentage of 21 percent in the east side of Lakeland.
- I-75 from Venice to the Georgia State Line—for which key measures based on year 2000 data included an AADT of 110,000 at the I-4 interchange, truck volumes as high as 14,700 in Sumter

³⁵ Florida Department of Transportation, *I-75 Transportation Alternatives Study*, undated, post 2010.

and Marion Counties, and truck percentages ranging from ten percent in Manatee County to over 40 percent north of I-10.

The within cities model prioritizes potential locations based on level of service, truck volume, percent trucks, truck crash rates, and distance to truck terminals, transfer facilities, airports and seaports. The within cities model identified three potential locations for exclusive truck facilities, one of which was a connection from Port Tampa Bay to I-4/I-275. The first impetus for the inclusion of a dedicated truck lane in the Selmon Expressway—Interstate 4 Connector project owes its start to the recommendation in the CUTR report.

The approach used by CUTR to prioritize consideration of exclusive truck facilities was reinforced by a later TRB study³⁶ that considered three distinct applications of exclusive truck facilities:

- long-haul intercity corridors,
- urban corridors with high truck traffic volumes, and
- major corridors providing access to ports and intermodal terminals.

More recently, considerations of truck-only lanes within the Tampa Bay region have been addressed as part of Florida DOT's managed lane program. Florida DOT policy currently forbids truck traffic in managed lanes.

TRUCK LANE AND ROUTE RESTRICTIONS

As noted earlier, the primary focus of this White Paper is on the separation of trucks into dedicated or exclusive facilities, but there are also special conditions in which it may be desirable to restrict trucks to certain highway lanes or to certain roadways to promote safety and to minimize adverse impacts on sensitive land uses.

On limited access facilities, trucks are sometimes restricted from using certain lanes of the highway. A Texas Transportation Institute study noted that 26 states employ truck lane restrictions.³⁷ A Florida A&M University study³⁸ of truck lane restrictions reported that the most common safety and operational benefits cited by many state agencies following the implementation of a lane use restriction for trucks include reduced crashes, improved highway speeds, and improved safety in construction zones. They also reported that studies of truck lane restrictions show some psychological benefits to automobile drivers, finding that auto drivers feel less squeezed in when trucks are limited to certain lanes.

³⁶ Transportation Research Board, *NCHRP Report 649/NCFRP Report 3: Separation of Vehicles—CMV-Only Lanes*, Prepared by Cambridge Systematics, 2010.

³⁷ Dan Middleton, Steve Venglar, Cesar Quiroga, Dominique Lord, and Debbie Jasek, Texas Transportation Institute, *Strategies for Separating Trucks from Passenger Vehicles: Final Report*, November 2006.

³⁸ Florida Department of Transportation, *Evaluating the Effectiveness of Various Truck Lane Restriction Practices in Florida—Phase II*, performed by Ren Moses, FAMU-FSU College of Engineering, November 2007.

The Federal Highway Administration notes that lane restrictions generally prohibit trucks from using the far left lane of a freeway. At least three travel lanes are typically needed to implement lane restrictions. Many states have adopted this type of lane restriction because it promotes a more orderly mix of traffic and thereby improves throughput, increases sight distance in leftmost lanes, generally improves safety, and still permits the orderly movement of trucks. Lane restrictions through construction zones can be used to shift trucks into lanes that are away from construction workers. Sometimes truck restrictions are implemented on entire corridors to limit trucks by weight, number of axles, or to completely prohibit them from using a corridor³⁹.

There are currently two major sections of truck lane restrictions on limited access facilities within the Tampa Bay region. The first requires trucks to use the two right lanes on I-75 from milepost 202 (east of Temple Terrace) to milepost 263 (south of Sarasota). The second, prohibits trucks from the left lane on I-4 from milepost 10 (slightly east of the I-75 interchange) to milepost 72 (the Beachline Expressway). Outside the immediate Tampa Bay region, there are also truck lane restrictions on I-75 from Wildwood to the Georgia state line and from Fort Myers to North Naples. The purpose of the left lane restrictions is to improve general traffic flow by placing slower moving trucks in the right and center lanes. Additionally, by reducing the number of lane changes by trucks highway safety is enhanced.

In addition to lane restrictions on limited access facilities, it is relatively common for local governments to restrict truck movements on local streets based on size, weight, safety and noise. Several local governments in the Tampa Bay region, have designated truck route plans and ordinances that require trucks to use those facilities to the maximum extent practical. These local governments include Pinellas, Hillsborough and Pasco Counties; the Cities of Tampa, St. Petersburg, Clearwater, Dunedin, Largo, Pinellas Park, Sarasota, Zephyrhills, Holmes Beach, Northport, and Anna Maria; and the Town of Lake Hamilton. As noted in the City of Tampa Truck Route Study:

The purpose of a truck route system is to provide rules that balance the needs of commerce and truckers with the desire to minimize the impacts of trucks on sensitive land uses. As such, the system does not prohibit trucks from using any road within the City, but does require they use roads most suitable to the greatest extent possible, and limit their intrusion into the sensitive areas to the minimum possible.⁴⁰

³⁹ Federal Highway Administration, *Freeway Management and Operations Handbook*, September 2003, updated June 2006, pp. 8-1 to 8-10.

⁴⁰ City of Tampa, *Citywide Truck Route Study*, Prepared by Tindale-Oliver & Associates, February 2011.

SUMMARY AND CONCLUSIONS

This White Paper has summarized information about existing exclusive truck facilities, various planning studies that have examined the potential for such facilities, and factors for identifying corridors for more detailed evaluation.

A number of organizations have advocated for a national network of exclusive truck facilities. The Reason Foundation has made a case for a network that would substantially be paid for by tolls. They believe a national network that allows LCVs could generate substantial amounts of toll revenues.

The American Transportation Builders Associations has advocated for a national network of exclusive truck facilities as part of its Critical Commerce Corridors legislative positions. They envision exclusive truck facilities being paid for by dedicated user fees such as a bill of lading taxes, customs fees, mileage taxes, freight transaction fees, and segregated diesel fuel fees.

Both The Reason and ARTBA proposals include widespread allowance of longer combination vehicles on these facilities, which would provide an incentive for their use and would provide economies of scale in freight movement. To really achieve the benefits of these proposals, a national or at least regional program of exclusive truck facilities would need to be created. Both of these proposals have merit for consideration by future federal transportation authorizations.

However, in the absence of a system with national reach and allowance of LCVs, Florida may be well advised to proceed with its aggressive program of managed lanes including consideration of special treatments for trucks where warranted.