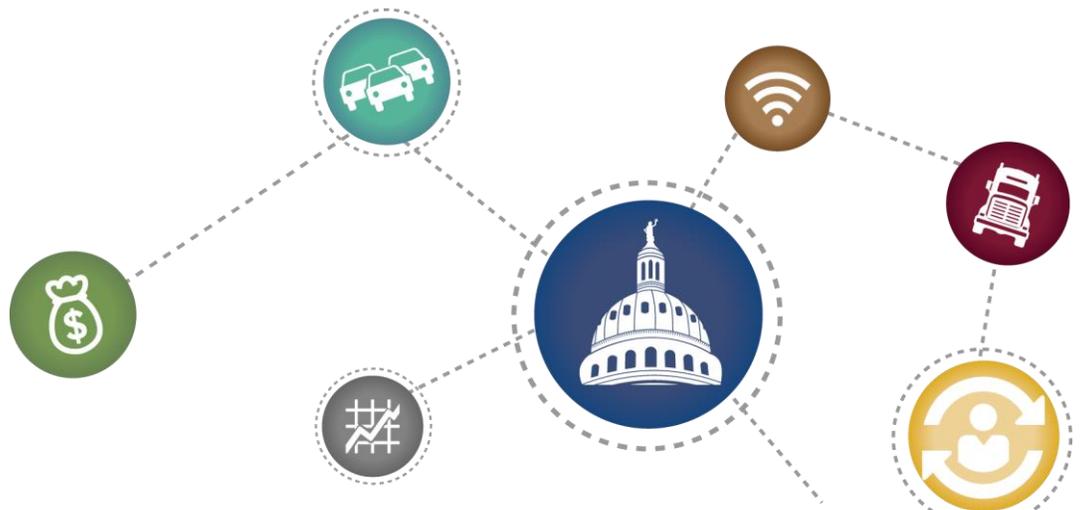


Oversize/Overweight Vehicle Research Priorities

Final report

PRC 14-10-F



Oversize/Overweight Vehicle Research Priorities

Texas A&M Transportation Institute

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Authors

Jolanda Prozzi

Andrew Wimsatt

Anol Mukhopadhyay

Emmanuel Fernando

David Newcomb

Dan Middleton

John Walewski

Table of Contents

List of Tables	4
Executive Summary	5
Literature Review	6
Oversize/Overweight Vehicle Industry Forum	6
Introduction	9
Background	10
Impact of OS/OW Vehicles.....	10
Size and Weight Regulations	11
Infrastructure Mitigation Strategies.....	11
Financial Mitigation Strategies	11
Operational Mitigation Strategies	12
Research Needs	12
Oversize/Overweight Vehicle Industry Forum	13
Forum Participants	13
Industry Forum	16
Research Needs	25
Concluding Remarks	29
Appendix A – Forum Agenda	30
Appendix B – Industry Forum Presenter Bios	31
Appendix C – Group Discussion Documentation	32
References	48

List of Tables

Table E1: Identified Research Needs.....	8
Table 1: Forum Participants by Agency/Company.....	14
Table 2: Summary of Group Discussions	17
Table 3: Identified Research Needs	25

Executive Summary

The impacts of oversize/overweight (OS/OW) vehicles have been the subject of numerous state and national legislative sessions. States face many challenges related to these types of vehicles, including roadway preservation, capacity, safety, environment, industry productivity, and economic impact.

In Texas, several bills have been enacted during past legislative sessions calling for additional information regarding the infrastructure impacts of OS/OW vehicles. The result has been a substantial number of studies that have investigated the impacts of OS/OW vehicles, the most recent being the Texas Department of Transportation (TxDOT) Rider 36 OS/OW Vehicle Fee Study that was conducted by The University of Texas at Austin and The University of Texas at San Antonio in 2012.

In order to determine next steps in OS/OW research, the Texas A&M Transportation Institute (TTI) initiated a study to assess the issues associated with OS/OW trucks. As an initial step in this assessment, TTI conducted a review of the existing literature and hosted a one-day industry forum with industry representatives and stakeholders to review the following:

- Issues associated with OS/OW trucks.
- Feasibility of various infrastructure, operational, and funding strategies.
- Research needs (what issues or aspects have been neglected), as well as the priority of the future research needs.

The highest priority research (as identified by four of the five discussion groups) is a review of the rationale and enforcement of size and weight regulations in Texas, as well as the documentation of the restrictions imposed on OS/OW loads. Other priority research needs (as identified by three of the five discussion groups) were:

- Research on the use of innovative technology and systems to enhance enforcement.
- A quantification of the benefits to the Texas economy associated with OS/OW loads.
- A quantification of the cost of higher design standards (more resilient roads) to accommodate OS/OW loads.

This document summarizes the salient findings of the literature review and provides additional information about the format of the Oversize/Overweight Vehicle Industry Forum, the participants, insights obtained, and the research priorities identified during the discussions.

Literature Review

TTI researchers reviewed literature published over the past 10 years under six general categories:

- Impact of OS/OW Vehicles.
- Size and Weight Regulations.
- Infrastructure Mitigation Strategies.
- Financial Mitigation Strategies.
- Operational Mitigation Strategies.
- Research Needs.

There are numerous studies that address and assess the impact of OS/OW vehicles, including areas such as safety, enforcement, pavement design, and energy consumption and associated emissions. Similarly, there are international and U.S. state examples of truck size and weight policy development and pilot programs. Infrastructure mitigation strategies included innovative infrastructure designs, the prohibition of certain truck configurations and Gross Vehicle Weights (GVWs) to prevent damage to bridge components, and improved OS/OW vehicle enforcement.

In terms of financial mitigation strategies, the literature seemed to emphasize the revenue collected from permit fees and the inadequacy of these revenues in covering the damages imposed. The exception is a study for the Indiana DOT that argued that the fee structure in Indiana, Ohio, and Illinois resembles that of a weight-distance fee structure. In terms of operational mitigation strategies, a TTI study developed criteria for assigning current and projected OS/OW configurations to a future road network, identified impediments of efficient routing, and developed more optimal alternate roads for high priority loads on high density travel corridors.

Finally, the literature revealed a number of research needs related to the benefits (transportation cost savings) of increased weight limits, privatizing components of the commercial vehicle inspection program, road design changes (specifically roundabouts), simplifying truck size and weight regulations, pavement damage of different OS and OW movements, and the need for additional data on the travel patterns of trucks permitted under HB2060.

Oversize/Overweight Vehicle Industry Forum

TTI hosted the Oversize/Overweight Vehicle Industry Forum on Tuesday, May 6, 2014. The TTI study team invited 72 companies (representing the OS/OW haulers, the exempt haulers, the weight tolerance permit users, and time and annual permit users), the 40 members of the Texas Department of Motor Vehicle's (TxDMV) OS/OW Working Group, and representatives from TxDOT's Maintenance and Bridge Divisions, TxDMV, and law enforcement agencies to participate in the forum. In total, 58 stakeholders participated in the Industry Forum.

The forum included three guest presentations that:

- Provided an overview of the national and international studies that have been funded on the topic of OS/OW vehicles and loads.
- Presented the literature findings of the TTI study team and the state-of-the practice in OS/OW research.
- Outlined how OS/OW movements are addressed in the Texas Freight Mobility Plan and provided a brief overview of TxDOT research on OS/OW issues.

The Industry Forum attendees participated in group discussions. Attendees were pre-assigned to one of five groups to ensure a diverse perspective and to gather input on research needs and priorities.

A member of the study team facilitated the group discussions, and inputs were documented. Examples of comments and concerns raised during the afternoon session include:

- Many roads in Texas (specifically county roads) were never designed for the current truck volumes.
- OS/OW vehicle enforcement is inadequate and inconsistent.
- There is a need for a statewide policy on escorts (i.e., pilot car driver certification) in Texas.
- There is a need to educate the public on how to share the roads with OS/OW vehicles.
- OS/OW loads should be allowed to operate on toll roads.
- There is no uniformity in the imposed rules (i.e., OS/OW routing, lane restrictions, and time-of-day restrictions) on OS/OW loads by TxDOT, the counties, or cities – so there is a need for a more holistic and uniform approach.
- OS/OW and truck-only corridors are not supported, because products do not move only along designated corridors, but also on state, county, and city networks to reach their final destinations.
- Revenues from permit fees and vehicle registrations need to be dedicated to transportation infrastructure (i.e., road improvements, maintenance, and rehabilitation) instead of going to the general fund.
- A larger share of the revenues from permit fees and vehicle registrations needs to be allocated to the counties.

Finally, a substantial part of the discussion was focused on identifying research needs and priorities. Table E1 summarizes the research priorities identified by discussion group.

Table E1: Identified Research Needs

Research Need	Group 1	Group 2	Group 3	Group 4	Group 5
Review rationale and enforcement of size and weight regulations, as well as restrictions imposed on OS/OW loads	•	•		•	•
Study on use of innovative technology and systems to enhance enforcement	•	•	•		
Quantify the benefits to the Texas economy associated with OS/OW loads		•	•	•	
Quantify the cost of higher design standards (more resilient roads)	•		•		•
Document trends in manufacturing and the feasibility of establishing limits for super loads			•	•	
Study on the efficient use of existing infrastructure by OS/OW vehicles		•		•	
Identify options to enhance planning between state and local government agencies, and the industry sector to better manage the impact of OS/OW movements		•	•		
Study on sustained funding for road improvements	•				
Review/develop industry education programs to help carriers and drivers understand the public cost of illegal OW loads			•		
Evaluate alternative vehicle configurations (i.e., allow additional weight if carriers operate vehicles with tridem axles)			•		
Develop guidance on available safety data for private sector use					•
Evaluate the impacts of distracted passenger vehicle driving on the safe movement of OS/OW vehicles					•
Determine the costs and benefits associated with increased fines for OS/OW violations					•
Quantify the damage to the infrastructure imposed by OS/OW loads					•

Introduction

The impacts of oversize/overweight (OS/OW) vehicles have been the subject of numerous state and national legislative sessions. Challenges faced by states related to these types of vehicles include those related to roadway preservation, capacity, safety, environment, industry productivity, and economic impact.

In Texas, several bills have been enacted during past legislative sessions calling for additional information regarding the infrastructure impacts of OS/OW vehicles. The result has been a substantial number of studies that have investigated the impacts of OS/OW vehicles, the most recent being the Texas Department of Transportation (TxDOT) Rider 36 OS/OW Vehicle Fee Study that was conducted by The University of Texas at Austin and The University of Texas at San Antonio in 2012. In 2013, following the results of the 2012 study, the Texas Legislature passed and the Governor approved a new permit fee structure. There are currently 27 permit types in Texas that have fees ranging from \$10 for an annual hay cylindrical bales permit to \$4,000 for an annual permit for OS/OW loads. There are other permit-related fees established based on weight and the need for vehicle supervision.

In order to determine next steps in OS/OW research, the Texas A&M Transportation Institute (TTI) initiated a study to assess the issues associated with OS/OW trucks. As an initial step in this assessment, TTI conducted a review of the existing literature and hosted a one-day industry forum with industry representatives and stakeholders to review the following:

- Issues associated with OS/OW trucks.
- Feasibility of various infrastructure, operational, and funding strategies.
- Research needs (what issues or aspects have been neglected), as well as the priority of the future research needs.

This document summarizes the salient findings of the literature review and provides information about the format of the Oversize/Overweight Vehicle Industry Forum, the participants, insights obtained, and the research priorities identified during the discussions.

Background

The team reviewed literature published over the past 10 years under six general categories:

- Impact of OS/OW Vehicles.
- Size and Weight Regulations.
- Infrastructure Mitigation Strategies.
- Financial Mitigation Strategies.
- Operational Mitigation Strategies.
- Research Needs.

The following are findings of particular interest from the literature review.

Impact of OS/OW Vehicles

- There are numerous studies that address and assess the impact of OS/OW vehicles on existing pavements and bridges.
- An FHWA study concerning highway safety and truck crashes indicated that crash and exposure data to support policy decisions is typically lacking (1).
- An AASHTO synthesis indicated that, in general, crash rates decrease but crash severity increases as vehicles become larger and heavier. However, the study indicated that no existing truck crash data set had sufficient information for a scientific analysis of this issue (2).
- A study for the Arizona DOT from Straus and Semmens indicated that mobile enforcement is useful for detecting and deterring overweight vehicle travel (3).
- A study for the Kansas Department of Transportation examined the impact of OS/OW vehicles on roundabouts and presented design strategies. The authors identified ground clearance as a particular issue that needs more attention (4).
- An Australia National Transport Commission study estimated costs and benefits for their National Heavy Vehicle Enforcement Strategy for a five year period. They found benefits in terms of heavy vehicle crash reduction, reduced road damage from overloading, and improved enforcement cost efficiencies. The study estimated a benefit range from \$38 million to \$246 million (5).
- A European study on Heavy Goods Vehicles' Weights and Dimensions predicted that energy consumption (and thus emissions) can be reduced by using the European modular

concept (longer and heavier vehicle combinations). The study also predicted a decrease of traffic on rail and inland waterways using this concept (6).

Size and Weight Regulations

- A study on Canadian truck size and weight policy development indicated that their regulations were inconsistent and outdated. Canada established a formal body, which included both federal and provincial representatives, to develop size and weight policy based on scientific analysis. A size and weight study recommended specific vehicle configurations that could operate on the Canadian roadway network (7).
- A study from Maine documented a pilot program for Maine and Vermont that allowed three-axle truck tractors with a three-axle semi-trailer (100,000-pound Gross Vehicle Weight [GVW]) on their Interstate Highway System. According to a Maine DOT white paper that summarized the study results, “*MaineDOT is confident that allowing 100,000-pound GVW six-axle semi-trailers on Maine’s Interstate System results in a net benefit to the entire transportation system, far beyond the infrastructure benefits alone.*” That pilot program led to changes in Maine state law to allow those vehicles on the Interstate (8).
- A paper from the Abu Dhabi Emirate discussed the development and status of a heavy vehicle control system that included weigh bridges, WIM, remote digital video surveillance, and electronic data transfer (9).

Infrastructure Mitigation Strategies

- A study from the Canadian Province of Alberta described innovative infrastructure designs to accommodate high loads and oversize loads. These designs included widened right travel lanes, high load bypasses, and a removable interlocking median Vulcan gate barrier system (10).
- A study on bridges in Louisiana recommended that a six-axle truck configuration with a GVW of 120,000 lb should not be used to haul sugar cane in that state due to the damage such a vehicle could inflict on bridge components (11).
- A study from Oklahoma contains recommendations for the construction of port-of-entry facilities, mobile enforcement, and virtual enforcement in that state (12).

Financial Mitigation Strategies

- A report from the National Center for Freight and Infrastructure Research and Education (CFIRE) indicated that permit fees are not designed to be a cost recovery mechanism for many agencies (13).
- A 2002 paper concerning the 1989 Texas House Bill 2060 annual permits (which allowed vehicles to operate above general weight limits) recommended “*returning some control*

over the permit system to the counties and an increased emphasis on economic efficiency in designing truck-related taxes and charges.” The report also stated, “The costs of this damage are likely to far exceed the revenues from permit fees” (14).

- The Texas Department of Transportation Rider 36 OS/OW study recommended a new permit fee rate structure. The study authors estimated that the new permit fee rates would generate an estimated \$521,390,308 in annual permit revenue; and using the new fee structure on currently exempted vehicles would generate an estimated \$149,662,775 in revenue (15).
- A study for the Indiana DOT stated, *“it was observed that no Midwest state has adopted explicitly the weight-distance [fee] concept for its overweight trucks. However, in the states of Indiana, Ohio, and Illinois, the fee structures for overweight vehicles include weight levels and extents of travel; thus their fee structures resemble that of a weight-distance fee structure” (16).*

Operational Mitigation Strategies

- A TTI study on the impact of route restrictions on the movement of OS/OW loads in Texas developed, *“criteria for assigning current and projected OS/OW groups to a future road network, identification of impediments to efficient routing for such loads, and the development of optimal and alternate routes for priority load groups between the most common origins and destinations” (17).*
- A study from Kansas stated, *“there is an economic benefit to the State of Kansas to allow OS/OW loads and this should be balanced with the economic burden of providing this ever increasing demand on public roads” (18).*

Research Needs

- Examining freight transportation cost savings due to increases in weight limits (19).
- Options to privatizing some aspects of the commercial vehicle inspection program (20).
- Accommodating OS/OW vehicles in roundabouts (4).
- A need for simplifying commercial vehicle truck size and weight regulations so they are easier to interpret (21).
- Additional and site specific research to determine the impact and associated cost of pavement damage due to single trip, oversize and overweight movements (13).
- Collection of additional data on the travel patterns of Texas HB 2060 permitted trucks to better determine the menu of prices and options that the permit should offer (14).
- Developing a pilot car training and certification program (22).

Oversize/Overweight Vehicle Industry Forum

TTI hosted the Oversize/Overweight Vehicle Industry Forum on Tuesday, May 6, 2014.

Forum Participants

The TTI study team invited 72 companies, the 40 members of the Texas Department of Motor Vehicle's (TxDMV) OS/OW Working Group, and representatives from TxDOT, TxDMV, and enforcement agencies to participate in the forum.

The company invitation list came from the Rider 36 study¹ that TxDOT funded in 2012, and consisted of a randomly selected list of companies from the Texas Permitting & Routing System (TxPROS) database, the TxPROS Customer Work Group, and the Texas Super Load Common Interest Group. The sample was stratified to include OS/OW haulers that have worked with TxDOT on permitting issues and to account for different types of users in terms of number of permits used and annual expenses on permits. This list was supplemented with company names that were received from the Texas Department of Motor Vehicles (TxDMV) to account for the exempt haulers, the weight tolerance permit users, and time and annual permit users.

The TxDMV OS/OW Working Group members that were invited represent a number of associations, including:

- Association of Energy Service Companies.
- National Cottonseed Products Association, Inc.
- National Truckers Association.
- Specialized Carriers & Rigging Association.
- Texas Aggregates & Concrete Association.
- Texas Cattle Feeders Association.
- Texas Construction Association.
- Texas Good Roads/Transportation Association.
- Texas Produce Association.
- The Associated General Contractors of Texas.

¹ The 82nd Texas Legislature required the Texas Department of Transportation (TxDOT) to conduct a study to evaluate the increased pavement and bridge consumption by oversize and/or overweight vehicles (OS/OW) – including, exempt oversize and/or overweight vehicles carrying loads such as agricultural products, solid waste or recycled materials, ready mix concrete, and milk. The study, referred to as ‘Rider 36’ also required TxDOT to provide recommendations for permit fee and fee structure adjustments to the Governor and the Legislative Budget Board by December 2012. TxDOT commissioned the Center for Transportation Research (CTR) at the University of Texas at Austin to undertake this study.

- Texas Trucking Association.
- Texas Precast Concrete Manufacturers’ Association.
- Texas Association of Structural Movers.
- Texas Propane Gas Association.
- Lumbermen’s Association of Texas & Louisiana.
- Texas Oil & Gas Association.
- Texas Manufactured Housing Association.
- Texas Farm Bureau.
- Texas Forestry Association.
- The Wind Coalition.
- Texas Alliance of Energy Producers.
- America’s Natural Gas Alliance.
- Texas Food & Fuel Association.

Finally, the study team invited a number of representatives from law enforcement agencies, TxDOT’s Maintenance and Bridge Divisions, and the TxDMV.

Email invitations were sent to approximately 120 stakeholders. In total, 58 stakeholders participated in the Industry Forum. Table 1 provides the names of the Forum participants and the agency/company that they represented.

Table 1: Forum Participants by Agency/Company

Participant Name	Agency/Company
Mark Borskey	Borskey Government Relations LLC
Garrett Countryman	HOLTCAT
Brad Everett	J. D. Abrams
Les Findeisen	Texas Trucking Association
Randy Frerich	Bexar Concrete
Norman Garza	Texas Farm Bureau
Charlie Gee	Texas Forestry Association
Deb Hastings	Texas Oil and Gas Association
Ron Hufford	Texas Forestry Association
Dave Jacoby	Wagner Equipment Company
David Johnson	Colorado Materials, LTD.
Chris Lechner	Precast Concrete Manufacturers' Association of Texas
Cindy Linares	Bexar Concrete

Participant Name	Agency/Company
Deputy Clay Marker	Bexar County Sheriff Dept.
Mark McDaniel	TxDOT
Magdy Mikhail	TxDOT
Captain Martin Molina	Bexar County Sheriff Dept.
Ted Moore	TxDOT
Don Mouser	J. D. Abrams
John Pellizzari	Energy Service Company
Sherry Pifer	SH 130 Concession Company
Mike Plei	Commercial Metals Company
Jodi Poujardieu	Bexar Concrete
Martha Raney-Taylor	TTI - Policy Research Center
Jody Richardson	Allen Boone Humphries Robinson LLP
Rich Rogers	Cement Council of Texas
Bubba Rous	Palletized Trucking, Inc.
Pat Tinsley	Austin Bridge and Road
Jonathan Sierra-Ortega	Senate Committee on Transportation
Capt. Andrew Sitgreaves	Texas Department of Public Safety - Commercial Vehicle Enforcement
Ed Small	Texas Forestry Association
Lee Taylor	Associated General Contractors of Texas
Rick Thomas	Webber LLC
Rick Thompson	Texas Association of Counties
Michael Vasquez	Texas Conference of Urban Counties
Donald Ward	Travis County
Clint West	Gate Precast
Tony Williams	Texas Cotton Ginners' Association
Anthony Zertuche	Heldenfels Enterprises, Inc.
Alex Hernandez	APAC -Texas, Inc.
Fenzy Leon	Tejas Safety Advantage
Dianne Carlson	Tx DMV
Jodi Stearns	Tx DMV
Kyle Yandell	Tx DMV
Ronnie Kastner	APAC -Texas Wheeler
Mark Proctor	Ramming Paving
J.R. Garcia	Ramming Paving
Duwayne Murdock	Tx DMV
Wendell Jones	Jones Escort
Curtis Brown	Ramming Paving
Betty Wachsmaur	Tx DMV
Amy Jeter	Senate Committee on Transportation
Katharine Chambers	Tx DMV
Mike Murphy	UT Center for Transportation Research
Ken Dalton	APAC -Texas Wheeler

Participant Name	Agency/Company
Robert Bass	County Judges & Commissioners Association of Texas
Jess Tippie	Travis County Sheriff's Office

Industry Forum

Three presentations comprised the morning session:

- Mark Berndt (Olsson Associates) provided an overview of some of the national and international studies that have been funded on the topic of OS/OW vehicles and loads.
- Dr. Andrew Wimsatt (TTI) presented the literature findings of the TTI study team and the state-of-the practice in OS/OW research.
- Marc Williams (TxDOT) outlined how OS/OW movements are addressed in the Texas Freight Mobility Plan and provided a brief overview of TxDOT research on OS/OW issues.

The final agenda and presenter bios are included in Appendices A and B, respectively.

Following the presentations, the Industry Forum attendees participated in group discussions. Attendees were pre-assigned to one of five groups to ensure a diverse perspective on the information presented in the morning sessions and to gather input on research needs and priorities. Participants were asked to provide input and respond to the following:

- Challenges (infrastructure maintenance, enforcement, safety, and capacity) associated with OS/OW vehicles.
- Feasibility of infrastructure strategies.
- Feasibility of operation strategies.
- Feasibility of funding strategies.

A member of the study team facilitated the group discussions, and inputs were documented. Table 2 provides a summary of the discussion by group. Appendix C provides a detailed record of the group discussions.

Table 2: Summary of Group Discussions

Topic	Group 1	Group 2	Group 3	Group 4	Group 5
Impact of OS/OW Vehicles					
Infrastructure Maintenance	<ul style="list-style-type: none"> • All road classes in all areas of Texas are falling apart • Roads not designed for current traffic • May not be weight of trucks, but number of trucks • Need improved designs for roads (and need to build them) • Confusing permit structure for bridges 	<ul style="list-style-type: none"> • Interstates built to higher design standards, but truckers often routed to roads not built for OS/OW loads 	<ul style="list-style-type: none"> • Large permitted trucks exceed roadway design - roads (specifically county roads) under designed for current truck volumes • Rural counties use oil top coat that does not stand up to truck traffic • Bexar county restricts many larger/heavier loads to state highways 	<ul style="list-style-type: none"> • Trade-off between infrastructure preservation and safety - to protect interstates OS/OW loads diverted to Farm-to-Market roads not designed for these loads • Vertical bridge clearance major concern for OS/OW haulers • Manufacturers not considering Texas law when designing and manufacturing equipment – some manufactured products cannot be legally moved in Texas 	<ul style="list-style-type: none"> • Economic prosperity resulted in many issues - infrastructure development will never catch up • Infrastructure damage and associated costs need additional research

Topic	Group 1	Group 2	Group 3	Group 4	Group 5
Enforcement	<ul style="list-style-type: none"> • Not uniform across state • Federal policy needs to be studied and revised – e.g., divisible vs. non-divisible load 	<ul style="list-style-type: none"> • Inadequate and problematic enforcement mechanism • Use of scales cumbersome and needs constant calibration • Many operators do not buy permits – easy for operator shut down for violations to get DOT license number and start new trucking company • Usually illegal operators involved in accidents – accident records appear not to be a factor in issuing license to operate trucking company • Bonds of OS/OW violators seldom revoked 	<ul style="list-style-type: none"> • Most illegal timber operations (OW/ no permit) result from need to compete • Inconsistent enforcement (local judges often throw out fines) • Route restrictions change daily – companies burdened to keep track of restrictions • Specific restrictions sometimes not well communicated with field enforcement (restricted only for width; not weight or length) • No uniformity in logbook requirement for timber haulers 		<ul style="list-style-type: none"> • DPS Commercial Vehicle Enforcement Service not well staffed – ~400 officers in Texas • Troopers must document all violations – one/two most severe processed as violations; remainder become warnings • Technology used at ports of entry could be used for enforcement (weight, tracking)

Topic	Group 1	Group 2	Group 3	Group 4	Group 5
Safety	<ul style="list-style-type: none"> • Need to certify escorts • Need statewide policy on escorts 	<ul style="list-style-type: none"> • Safety a problem with trucks using narrow roads • Young, untrained passenger car drivers cause accidents trying to pass trucks or long vehicle trains on narrow roads • Need for better driver certification – current high demand for truck drivers result in anyone with trucker’s license getting hired 	<ul style="list-style-type: none"> • Safety an issue on lower volume roads • No pavement edge aggravated safety concerns on narrow roads • Speed differential between trucks and passenger vehicles an issue 	<ul style="list-style-type: none"> • Driver interaction with OS/OW vehicles major concern – often drivers are distracted 	<ul style="list-style-type: none"> • Lack of OS/OW safety data – need standards/metrics for current data input/output • Private sector unfamiliar who collects data, what is collected, why, how, etc. • Different safety requirements for OS/OW by state – companies required to spend lots of time on compliance • No requirement for pilot car driver certification in Texas • DPS tracks OS/OW incidents by permit • Brake issues are top concern • Need to educate public on sharing roads with OS/OW vehicles

Topic	Group 1	Group 2	Group 3	Group 4	Group 5
Capacity	<ul style="list-style-type: none"> • OS/OW loads should be allowed on toll roads 			<ul style="list-style-type: none"> • OS/OW vehicles compete for infrastructure capacity – TxDOT Districts limit/restrict roads that can be used by OS/OW vehicles • OS/OW vehicles often diverted to Farm-to-Market roads not designed for these loads • Need to look at how roads for OS/OW loads are designated 	
Mitigation Strategies					
Size and Weight Regulations	<ul style="list-style-type: none"> • Many unpermitted loads • Fines are high, but need more enforcement • Local enforcement by untrained/uncertified officials • Improper use of 			<ul style="list-style-type: none"> • No uniformity in imposed rules on OS/OW loads by TxDOT, counties, and cities – need to harmonize within Texas • Rational behind regulations on divisible and non- 	

Topic	Group 1	Group 2	Group 3	Group 4	Group 5
	portable scales – questionable calibration <ul style="list-style-type: none"> • Need more WIM stations with scan tags • Need to recognize private certified scales in enforcement 			divisible loads questionable – clarify law so easier for haulers to understand	
Infrastructure	<ul style="list-style-type: none"> • Truck only lanes enhance safety, traffic flow, and freight flow • Freight corridors no benefit for OS/OW loads 	<ul style="list-style-type: none"> • Concerns about truck lane restrictions – inside lane is safest, but truckers also need to exit, while outside lane creates more conflicts with other users • OS/OW truck corridors would minimize conflicts with other road users – paying tolls might be issue • Federal law prevents haulers from using 	<ul style="list-style-type: none"> • Signs often direct regular trucks to two right lanes, but permitted loads required to use left lane – passenger vehicle drivers get upset thinking hauler is violating law • Permitted loads not allowed on toll roads • Dedicated truck lane to move heavier loads reduce the expense of having to strengthen all 	<ul style="list-style-type: none"> • OS/OW and truck only corridors were not well supported – products do not move only along corridors, but move on state, county, and city networks • Interstate system designed for OS/OW loads • Illegally loaded standard 18 wheeler trucks cause most damage – not permitted OS/OW loads 	<ul style="list-style-type: none"> • Determine cost of higher design standards – more resilient roads

Topic	Group 1	Group 2	Group 3	Group 4	Group 5
		<p>interstates and toll roads to move OW divisible loads – need to make better use of existing facilities</p> <ul style="list-style-type: none"> • Difficult to distribute some loads – need allowance on axle weight limits if gross vehicle weight limits are met 	<p>lanes</p> <ul style="list-style-type: none"> • Dedicated truck lanes do not benefit all operations – timber haulers operate over short distances and production sites can change overnight 		
Funding	<ul style="list-style-type: none"> • Permits cost high in Texas relative to adjacent states • Permit revenues go to general fund – not to address trucking concerns, highways, etc. 	<ul style="list-style-type: none"> • Lack of pro-active county planning for impact of oil/gas development on county roads – property tax collection lags year behind when counties need funds to repair damaged roads • Cost of preserving existing infrastructure not kept pace with revenue generated 	<ul style="list-style-type: none"> • Counties need more maintenance funding • Substantial increase in permit fees three years ago, but still about one-third the permit fees in Oklahoma • Increased fees will be passed on to product owner, who will become less profitable 	<ul style="list-style-type: none"> • Texas one of most expensive states to operate in • Need for uniform in-state, as well as multi-state regulations • Differences in how infrastructure is paid for by states – considered state’s right, but presents significant challenge for industry 	<ul style="list-style-type: none"> • For some, fines part of cost of doing business – others can be put out of business • Recent state (DPS, TxDOT) focus on weight violations • Local justice of peace dictates severity (dollar amount) of fines – not uniform across state • Fine revenues go

Topic	Group 1	Group 2	Group 3	Group 4	Group 5
		<p>from gas tax</p> <ul style="list-style-type: none"> • Permit fees never intended to cover cost of damage to infrastructure • Need to revisit existing Texas permit fees • Need to dedicate revenues from permit fees and vehicle registrations to infrastructure – limited amount of revenue from permit fees and vehicle registrations go to counties • Passage of Proposition 1 will divert money from rainy day fund to infrastructure 	<ul style="list-style-type: none"> • Many violations are for not having permit – potentially because trucking is low margin business • Relevant Evidence Law – enforcement based on review of three months’ bills of lading – can result in high enough fines to put carrier out of business • Most OS/OW carriers do not have GPS equipped trucks to allow for implementation of weight-distance taxes 	<ul style="list-style-type: none"> • Some commodities (e.g., roll on and roll off containers) require surety bonds – should be required to purchase permits • Need to index fuel tax to appropriate cost index • Some haulers feel already paying through permit fees • Funding infrastructure is political and not policy question 	<p>to general fund – not road improvements, maintenance or rehabilitation (big issue for counties)</p> <ul style="list-style-type: none"> • DMV targeting some shippers (often the source/origin of violations) – need for shipper training on violation/enforcement issues
Operational	<ul style="list-style-type: none"> • Regional (inter-state) approach needed for load configurations – not uniform with 		<ul style="list-style-type: none"> • Sometimes restricted routes in construction areas best and safest option - but 	<ul style="list-style-type: none"> • Fragmented approach to OS/OW routing, lane restrictions, and time-of-day 	<ul style="list-style-type: none"> • Some see time-of-day/day-of-week restrictions as economic burden • Difficult to

Topic	Group 1	Group 2	Group 3	Group 4	Group 5
	<p>adjacent states</p> <ul style="list-style-type: none"> • Need to study use of six-axle and double trailers for better load distribution and efficiency • State routing – need real time updating (work zones, incidents, etc.) 		<p>TxDOT district or central permit office will not route load through construction zone</p> <ul style="list-style-type: none"> • Restricted routes change constantly • Differences in restrictions by locality – TxDOT restricts permit loads on roads with new seal coat; large urban areas have rush hour or night time restrictions • Some cities and counties require permits 	<p>restrictions (different rules and restrictions imposed by TxDOT districts, counties, and cities on OS/OW loads in Texas) – need more holistic and uniform approach</p> <ul style="list-style-type: none"> • Most counties do not allow OS/OW loads to move at night – haulers advocated for using roads at night 	<p>compare economic benefits of OS/OW loads to cost of damage to network/ infrastructure</p>

Research Needs

A substantial part of the discussion was focused on identifying research needs and priorities. Table 3 summarizes the research priorities identified by each discussion group. From Table 3 it is evident that four of the five discussion groups identified a review of the rationale and enforcement of size and weight regulations, as well as the documentation of the restrictions imposed on OS/OW loads, as a priority. Other priority research needs (as identified by three of the five discussion groups) were:

- Research on the use of innovative technology and systems to enhance enforcement.
- A quantification of the benefits to the Texas economy associated with OS/OW loads.
- A quantification of the cost of higher design standards (more resilient roads) to accommodate OS/OW loads.

Table 3: Identified Research Needs

Research Need	Group 1	Group 2	Group 3	Group 4	Group 5
Review rationale and enforcement of size and weight regulations, as well as restrictions imposed on OS/OW loads.	●	●		●	●
– Document different restrictions imposed by TxDOT Districts, Texas counties, and Texas cities on the movement of OS/OW loads and calculate the costs imposed to industry.					
– Evaluate rationale behind one breach resulting in invalidation of entire permit and multiple violations.					
– Evaluate costs and benefits of allowing more variance while maintaining gross vehicle weight					
– Document costs and benefits (e.g., safety) associated with enhanced enforcement.					
– Document benefit of strengthening licensing requirements to discourage illegal truck operators setting up new businesses.					

Research Need	Group 1	Group 2	Group 3	Group 4	Group 5
<p>Study on use of innovative technology and systems to enhance enforcement.</p> <ul style="list-style-type: none"> – Use of WIM stations with scan tags and use of virtual weight stations. – Use of equipment, such as lasers, to measure axle weights. – Use of technology, such as GPS transponders, to determine non-invasively if vehicles stay on their assigned routes. – Use of certified scales for self-weight and as the first document on enforcement. – Improved system for use of portable scales, scale calibration requirements, and education on scale calibration procedures and use of scales (certification for local officers). 	●	●	●		
<p>Quantify the benefits to the Texas economy associated with OS/OW loads.</p> <ul style="list-style-type: none"> – Need better understanding of the value to Texas’ economy brought by industries that operate OS/OW vehicles. 		●	●	●	
<p>Quantify the cost of higher design standards (more resilient roads).</p> <ul style="list-style-type: none"> - Determine the need for updating county pavement design practices. - Review low-volume road research to determine if technical assistance programs for counties could improve road durability. 	●		●		●
<p>Document trends in manufacturing and the feasibility of establishing limits for super loads.</p> <ul style="list-style-type: none"> – “How big do we allow industry to go”? 			●	●	

Research Need	Group 1	Group 2	Group 3	Group 4	Group 5
<ul style="list-style-type: none"> – Should we discourage increases in loads at a certain point? 					
<p>Study on the efficient use of existing infrastructure by OS/OW vehicles.</p> <ul style="list-style-type: none"> – “How to best take advantage of what we have?” – “How to address any concerns?” – Include night time operations, existing toll roads, dedicated truck lanes at night, feasibility of different lane usage, and options such as additional escorts and or adding additional lights on the vehicles to address safety concerns associated with night time operations. 		●		●	
<p>Identify options to enhance planning between state and local government agencies, and the industry sector to better manage the impact of OS/OW movements.</p> <ul style="list-style-type: none"> – Explore the effectiveness of regional industry meetings between OS/OW stakeholders and TxDOT districts to communicate concerns and allow for better planning and responses to road construction and maintenance, etc. 		●	●		
<p>Study on sustained funding for road improvements.</p> <ul style="list-style-type: none"> – Gas tax increases. – Dedicate funds to preserve the existing infrastructure. 		●			
<p>Review/develop industry education programs to help carriers and drivers understand the public cost of illegal OW loads.</p> <ul style="list-style-type: none"> – Include training and technical 				●	

Research Need	Group 1	Group 2	Group 3	Group 4	Group 5
assistance for better truck specifications.					
Evaluate alternative vehicle configurations (i.e., additional weight if carriers operate vehicles with tridem ² axles).			●		
Develop guidance on available safety data for private sector use. <ul style="list-style-type: none"> – Document data collected, why, how, how to obtain access, and how to use available safety data. – Develop standards/metrics for current safety data input/output. 					●
Evaluate the impacts of distracted passenger vehicle driving on the safe movement of OS/OW vehicles.					●
Determine the costs and benefits associated with increased fines for OS/OW violations. <ul style="list-style-type: none"> – Include the impact on improving safety. 					●
Quantify the damage to the infrastructure imposed by OS/OW loads.					●

² A tridem axle refers to a group of three axles connected by a common suspension system and whose extreme centers are not more than 144 inches apart.

Concluding Remarks

At the conclusion of the OS/OW Industry Forum, a participant from each discussion group was asked to share a highlight of/take-away from the day. The following ideas were shared:

- Determine appropriate funding strategies for road improvements.
- Allow OS/OW vehicles to travel during night or other non-peak hours.
- Develop and determine the cost of higher design standards for OS/OW vehicles.
- Have the appropriate county planning for the impact of oil/gas development on county roads.
- Train and retain experienced Commercial Vehicle Enforcement (CVE) personnel.

Appendix A – Forum Agenda

Oversize/Overweight Vehicle Industry Forum

Agenda

Tuesday, May 6, 2014
Austin, Texas

- 9:30 – 10:00 Arrival and Registration
- 10:00 – 10:15 Welcome / Introductions / Study and Forum Objectives
- 10:15 – 11:30 Presentations / Remarks
- OS/OW Impacts and Initiatives
 - National Studies and Activities
 - OS/OW State-of-the-Practice
 - Texas Freight Mobility Plan and OS/OW Research
 - Remarks and Industry Input
- 11:30 – 1:00 Lunch*
- 1:00 – 3:00 Discussion Groups
- Literature Review Findings
 - Challenges associated with OS/OW trucks
 - Feasibility of infrastructure strategies
 - Feasibility of operation strategies
 - Feasibility of funding strategies
 - Research Gaps and Barriers
 - Research Needs and Priorities
- 3:00 – 3:30 Group Reports
- 3:30 Adjourn

* Lunch on your own. List of local eateries will be available at the Registration Desk.

Appendix B – Industry Forum Presenter Bios

Mark Berndt is the Corporate Freight Planning program leader for Olsson Associates. He has 32 years of professional experience related to freight transportation and truck policy. Prior to consulting, he worked for 20 years in Minnesota state government, including seven years in MnDOT's Office of Motor Carrier Services. During his MnDOT tenure he chaired the Truck Size and Weight Taskforce for the AASHTO Subcommittee on Highway Transport.

Mark is currently vice-chair of the Transportation Research Board (TRB) Agricultural Transportation Committee. He is also a member of, and for six years was chairman of the TRB Truck Size and Weight Committee.

In 2013 Mark was the recipient of the *William K Smith Distinguished Service Award* given by the Center for Transportation Studies at the University of Minnesota in recognition of outstanding leadership and contributions in private sector freight transportation.

Dr. Andrew Wimsatt joined the Texas A&M Transportation Institute (TTI) in 2006. after working at the Texas Department of Transportation (Texas DOT) for 18 years, most recently as the Fort Worth District Pavement Engineer and manager of the District's Pavement Management and Bridge Inspection Section from February, 1996 to August, 2006. He earned B.S., M.S., and Ph.D. degrees in Civil Engineering from the University of Texas at Austin and is a Registered Professional Engineer in Texas. As head of the Materials & Pavements Division of the Texas A&M Transportation Institute (TTI), Dr. Wimsatt oversees a \$9 million annual research program that covers 5 areas of study: flexible pavements, rigid pavements, pavement management, materials chemistry, and recyclable materials. He manages a staff of 27 research engineers and scientists, 6 research technicians, 3 clerical, 15 graduate assistants, and several undergraduate students.

Marc Williams, P.E., serves as director of Planning within TxDOT's Planning and Projects Office. He is responsible for directing statewide multimodal planning and environmental programs with oversight of the Transportation Planning and Programming, Environmental Affairs, Public Transit, Rail and Maritime divisions.

Williams' career experience in transportation planning and program efforts includes public- and private-sector organizations involving state, county, and local jurisdictions. He has served in leadership positions with two state departments of transportation and has worked with national, private-sector transportation engineering organizations. His professional assignments have included directing statewide transportation planning and programming efforts, as well as managing project-specific highway and multimodal transportation plans and programs.

He has worked extensively with public and agency outreach, transportation plans of various modes, regional and corridor-level plans and programs, environmental planning and approval, economics and finance, project design and development, along with work in the areas of construction management, operations, and maintenance.

Appendix C – Group Discussion Documentation

Group 1

Facilitator: David Newcomb

Participants: Bubba Rous – Palletized Trucking
Garrett Countryman – HOLTCAT
Anthony Zertuche – Heldenfels Enterprises, Inc.
Lee Taylor – Associated General Contractors
Ed Small – Texas Forestry Association
Mark Borskey – Borskey Government LLC
Jonathan Sierra-Ortega – Senate Committee on Transportation
Steve Polunsky – Policy Research Center
Brad Everett – J.D. Abrams
Jodi Stearns - Texas Department of Motor Vehicles
Mark Proctor – Ramming Paving
Katharine Chambers – Texas Department of Motor Vehicles

Impact of OS/OW Vehicles

- Roads of all classes and in all areas of Texas (especially Eagle Ford and Permian Basin) are falling apart – everything from county roads to interstates.
 - Roads inadequately designed for current traffic.
 - May not be so much OW trucks as the number of commercial trucks.
 - Increasing the fees for OW will not pay for the damage.
 - Need improved designs for roads (and need to build them).
 - Seal coats are a performance issue in East Texas.
- Bridges
 - Permit structure is confusing – under the 2060 permit it is perfectly OK for OW loads to run on bridges.
- Enforcement – not uniform across the state.
- Federal policy needs to be studied and changed – e.g., divisible vs. non-divisible load.
- Toll roads should be used in OS/OW movements – avoid congestion on main routes.
- Safety – escorts should have certification for traffic control – Need statewide policy on escorts (no changing at county lines).

Mitigation

- Size and Weight
 - Many unpermitted loads.
 - Fines are high enough, but need more enforcement.
 - There is enforcement at local levels by untrained/uncertified officials.
 - Portable scales often used improperly by untrained local officers – questionable calibration.
 - Need more WIM stations with scan tags – troopers can focus more on loads circumventing scales.
 - Need recognition of private certified scales in enforcement.
- Infrastructure
 - Truck only lanes are great for safety, traffic flow, freight flow.
 - Freight corridors would not much help OS/OW issues.
- Financial
 - Permits cost enough – Texas fees are much higher than those in adjacent states.
 - Permit fees go to General Fund, not trucking issues, highways, etc.
- Operational
 - Configuring loads – regional (interstate) approaches needed – not uniform across adjacent states.
 - Study use of six-axle and double trailers for better load distribution and efficiency.
 - State routing – need more real time updating (work zones, incidents, etc.).

Research Needs

- Weight Enforcement
 - Study use of WIM stations with scan tags – Increased enforcement.
 - Need to have first stop at a weigh station for “check weight” – if OW, then require adjusting load or permit.
 - Need certified scales for self-weight and as the first document on enforcement.
 - Need improved system for use of portable scales.
 - Local officers with proof of certification.
 - Calibration requirements.
 - Education on calibration procedures and use of scales.

- Policy on Enforcement
 - There is multiple jeopardy – if one aspect is out, then the whole permit is invalid and multiple violations result.
 - Allowing more variance on axles – some loads shift in transit (aggregate, asphalt mix, concrete) – Keep the gross the same and allow 5% variance on axles.
 - Allow use of toll roads – make all permits apply to toll roads.
- County pavement design practices need updating.
- Need to study on how to get funding for road improvements – gas tax, for instance.

Group 2

Facilitator: Emmanuel Fernando

Participants: Rick Thompson – Texas Association of Counties
Mike Murphy – Center for Transportation Research
Bob Bass – County Judges and Commissioners
Charles Gee – Texas Logging Council
Norman Garza – Texas Farm Bureau
Ronnie Atkinson – HOLT CAT
John Pellizzari – Energy Service Company
David A. Johnson – Colorado Materials/Hunter Industries
Martha R. Taylor – Texas A&M Transportation Institute

Impact of OS/OW Vehicles

Enforcement Issues

Enforcement was the main concern of the government and industry representatives in this group. The following were issues raised regarding enforcement:

- Enforcement mechanism is a problem. There is not enough enforcement. The use of scales is cumbersome and the equipment itself needs constant calibration. The current enforcement method is time-consuming.
- Many truck operators are not buying permits. In one instance, a county increased the penalties on illegally operated trucks. However, this action failed to motivate truck operators to get permits. A suggestion was made to impound non-permitted, illegally operated vehicles.
- There is a problem keeping illegal truckers from operating a business since it is easy to get a DOT license number. An operator who is shut down due to violations can easily start another trucking company.
- Illegal operators make it tough on everyone according to one of the truckers. Accidents are usually associated with illegal operators. Records of carrier accidents are kept but do not appear to be a factor in issuing a license to operate a trucking company.
- Bonds of OS/OW violators are very seldom revoked.

Infrastructure Improvements

Providing the pavements and bridges needed to carry OS/OW truck traffic did not evoke as much interest as expected from the group. The following issues were raised mainly by the truckers:

- Where will the truck only lanes be located? According to one trucker, the safest lane would be the inside lane. However, truckers also need to get to their exits. Putting the trucks on the outside lane creates more conflicts with other users.
- OS/OW truck corridors would minimize conflicts with other road users. However, one trucker mentioned that he does not want to pay tolls. Another representative from county governments also made a reference to the ill-fated Trans-Texas corridor. He remarked whether OS/OW corridors would also be called by a similar name.
- Still, another trucker brought up that current federal law prevents them from using interstates and toll roads to move overweight divisible loads. Interstates are built to higher standards, but the truckers are routed instead to highways that are not built to handle OS/OW loads. There is a need to make better use of existing facilities.
- A representative from the logging industry also commented that it is difficult to distribute their loads on trucks to meet existing OS/OW regulations. He asked whether an allowance could be made if gross vehicle weight limits are met. [I understood this to mean an allowance on the allowable axle weight limits.]

Permit Fees and Revenue Generation

- A representative from county governments cited the lack of planning to cope with the effects of oil/gas development and production on county roads. While the existence of the Eagle Ford Shale has been known for some time, lack of planning has made it difficult for counties to cope with the damage being done on county roads. The counties rely on property taxes but tax collection lags a year behind when the counties need funds to repair roads damaged by oil/gas development and production. Is there a more timely way to get needed dollars?
- One member of the group commented that the gas tax has not been raised since the early 1990s. The cost of preserving the existing infrastructure has not kept pace with the revenue generated from the gas tax. He commented that he's willing to give up his expenses for Starbucks coffee to pay for a gas tax increase.
- Someone from the group noted that permit fees were never intended to cover the cost of damage to the infrastructure. There was also a suggestion that the existing Texas permit fees need to be re-visited. Someone noted that it only costs \$40 per trip to move a mobile home. However, these loads generally take up more than one lane. These moves raise a safety issue as vehicles try to pass these loads on the highway.
- There is a need to dedicate money collected from permit fees and vehicle registrations to the infrastructure. At this time, there are limits on the amount of permit fees and vehicle registrations given back to the counties. Beyond these limits, the money is

transferred to the general revenue fund. There was hope that passage of Proposition 1 would help put money from the rainy day fund back to the infrastructure.

Research Ideas

- Improve existing enforcement operations – There is a need to review existing regulations and practice to identify where changes can be made to provide more effective enforcement. A specific example is strengthening licensing requirements to discourage illegal truck operators from setting up business. There is also a need to develop better equipment to measure axle weights and identify permitted trucks non-invasively. Someone from the group mentioned the use of transponders to identify permitted vs. non-permitted and possibly illegally operated trucks. Another mentioned whether axle weights can be determined using some form of a laser gun similar to what officers used for speed detection.
- Evaluate the benefits that truckers bring to the Texas economy – This need was raised during the Rider 36 forum where the industry pointed out that too much emphasis has been placed on the pavement and bridge consumption side of the OS/OW issue. Someone from the group indicated that this research would be challenging.
- Review existing policies and practice to identify where changes are needed to:
 - Bring about better planning between state and local government agencies, and the industry sector to better manage the impact of OS/OW moves.
 - Dedicate funds to preserve the existing infrastructure.
 - Make better use of the existing infrastructure.

Group 3

Facilitator: Dan Middleton

Participants: Cindy Linares – Bexar Concrete

Clint West – Gate Precast

Jody Richardson – Allen Boone Humphries Robinson, LLP

Ron Hufford – Texas Forestry Association

Ted Moore – Texas Department of Transportation

Captain Martin Molina – Bexar County Sherriff Department

Tony Williams – Texas Cotton Ginners’ Association

Diane Carlson – Texas Department of Motor Vehicles

Curtis Brown – Ramming Paving

Amy Jeter – Senate Committee on Transportation

Industries represented and nature of OS/OW operations

- Timber: Primary operations in 24 counties in East Texas. Most OS/OW issues stem from competitive nature of the industry and weight allowances carriers in neighboring states have. Load equalization is another issue, since the butt end of full length logs tends to be much heavier than the tops – haulers are most often challenged by overweight tandems at the front of the semitrailer. Full length logs are extra long.
- Precast Architectural Components: Mostly haul under overdimension permits where weight is not an issue. Primarily over-width movements that operated under 30 day blanket permits. Some over-height as well which move under trip permits.
- Concrete bridge beams: Require overweight permits which are expensive. However, the primary clientele is TxDOT or contractors working for TxDOT. Permit costs are passed on to the customer, so as permit fees go up, so does the cost to the state.
- Cotton Industry: No permits required for first haul. Cotton carriers use “module trucks” – a single unit vehicle with a rear tandem that can be loaded to 45,000 lbs. These vehicles are not allowed to operate on the interstate system. The industry is changing – new harvesters are coming that produce large round bales that can be loaded on to a flatbed. These bales are 6 ft. to 8 ft. in diameter.

Impact of OS/OW Vehicles

Safety

From a public perspective, the Lubbock District has a lot of small roads where safety is an issue. The speed differential between trucks and passenger vehicles is also an issue (usually passenger cars driving too fast, so it is an issue even with trucks in regular

operations). Due to the narrow lanes, many roads have lost the pavement edge, adding to safety problems.

Road Design

Basically big trucks exceed the roadway design – more so for permit vehicles. (It was noted that vehicle fleets in regular operation have not changed much in 30 years aside from slightly longer trailers.) The bigger issue may be that roads were under designed for the volume of trucks they experience today.

Timber haulers have a very difficult time estimating their weight in the field – it is basically a visual judgment. Most timber trips are within 75 miles of a mill. Some drivers carry portable scales, but they are difficult to use and less accurate on unpaved roads or in the forest when there is not a hard, level, flat surface. The industry has attempted to educate carriers on the need to preserve low volume roads and the feeling is that most of the very high weight loads (120K+) have been eliminated. The bottom line is that most county roads were not built to handle the volume of heavy trucks we see today so they fail. Rural counties use an oil top coat that doesn't stand up to truck traffic. Counties need more money for maintenance.

Enforcement Issues

- For the timber industry, most illegal operations (overweight or lack of a permit) result from the need to compete with carriers in neighboring states. If the industry in Texas cannot keep costs down, the mills move to other states where operations are less expensive.
- Local judges often throw out fines, so enforcement is inconsistent.
- Bexar County restricts a lot of larger/heavier loads to state highways.
- Another issue for industry is that route restrictions change daily – so companies operating under blanket permits have to keep track constantly of restrictions. In addition, sometimes the particular restriction is not well communicated with field enforcement, e.g., a route may be restricted only for width, but a vehicle might be operating under a weight or length permit and still be stopped and ticketed.
- Timber haulers do get cross-state reciprocity for not requiring log books.

Would truck-only lanes or lanes dedicated for truck operations be of help?

- Truck lanes have pros and cons.
- Signs often direct trucks in regular operations to the two right hand lanes, but loads operating under permit are required to use the left hand lane (e.g., over length loads). Passenger vehicles get upset thinking the driver is violating the law, so they honk, use hand gestures and cut-off drivers.
- Loads under permit are not allowed on toll roads, when it seems like that might be the best place for them, so long as the tolls would not be outrageous.

- One advantage of a dedicated truck lane is that it could be over built to handle heavier loads, and reduce the expense of having to beef up all lanes.
- For timber haulers dedicated truck lanes probably don't make sense – most are short hauls, and production sites can change overnight depending upon what mills need logs.

What about permit fees and revenue generation?

- Permit fees in Texas took a big jump three years ago, but they are still about one-third the permit fees in Oklahoma.
- In all industries the fees get passed on to the product owner – so if fees go up for timber haulers, the outcome is that there is less incentive for land owners to reforest their plots, as it becomes less profitable.
- Since many of the violations are for not having a permit – it's likely that cost is the primary reason – for many it's a low margin business.
- Fine structures need to be reviewed: The relevant evidence law – where enforcement can be taken by reviewing bills of lading (3 months)—can result in tens of thousands of dollars in fines – enough to put a carrier out of business.
- What about weight-distance taxes? Most carriers in the OS/OW industry do not have GPS equipped trucks – they are either instructed to follow a specific route, or they are independent carriers operating in ag or timber industries.

Operational Issues: Routing, lane restrictions, temporal restrictions

- Sometimes restricted routes in construction areas are the best and the safest option. There are examples where the on-site contractor has given permission to move loads through a construction zone because it is the most direct route – but district or central permit offices will route a load around town through traffic congestion to come into a site from the other side.
- Restricted routes change constantly – TxDOT does not want permit loads to use a road with fresh seal coat, causing a restriction for several weeks.
- All the large urban areas have rush hour or night time restrictions.
- Some cities and counties require permits also – sometimes these are issued through TxDOT.
- There are different curfews by locality.

Research Ideas

- Need a better understanding of the value to Texas' economy from industries that operate OS/OW vehicles. What is the cost/benefit?
- Explore low-volume road research in other areas with similar issues and determine if technical assistance programs for counties could improve road durability.

- Explore industry education programs that help carriers and drivers understand the public cost of illegal-overweight loads – offer training and technical assistance for better truck specifications.
- Explore alternative vehicle configurations (i.e., offer some additional productivity in terms of weight if carriers operate vehicles with tridem axles: see studies in Wisconsin and Minnesota for timber and ag industry vehicles).
- Is there or should there be an upper limit to super loads?
- What technology solutions could improve communications about route restrictions and other issues? The use of GPS on permit trucks could assist enforcement to determine if vehicles stay on their assigned routes, and the use of Virtual Weigh Stations could help monitor weights. Enforcement would need access to the DMV permit database in real time to make this work.
- Explore the effectiveness of regional industry meetings between OS/OW industries and TxDOT districts to communicate concerns and allow for better planning and responses to road construction and maintenance, etc.

Group 4

Facilitator: Jolanda Prozzi

Participants: Randy Frerich – Bexar Concrete
Dave Jacoby – Wagner Equipment Company
Rick Thomas – Webber LLC
Mike Plei – Commercial Metals Company
Rich Rogers – Cement Council of Texas
Les Findeisen – Texas Trucking Association
Mark McDaniel – Texas Department of Transportation
Deputy Clay Marker – Bexar County Sherrif Depot
Ronnie Kastner – APAC - Texas Wheeler
Duwayne Murdock – Texas Department of Motor Vehicles

Impact of OS/OW Vehicles

Infrastructure Maintenance (Pavement, Bridges, and Highway Appurtenances)

- There seems to be a trade-off between infrastructure preservation and safety. Many TxDOT districts will protect the Interstate infrastructure by diverting OS/OW loads to Farm-to-Market roads. Farm-to-Market roads were, however, not designed to move these loads.
- Vertical clearance is a big concern for OS/OW haulers. Manufacturing is building bigger and bigger pieces of equipment that require movement. TxDMV reported that they are currently issuing 180 permits for moving super loads (i.e., loads in excess of 235,000 lbs). Everything is getting bigger because it is cheaper to ship a large piece of equipment than to deliver many components and to assemble it at the site. Participants expressed concern that some manufacturers are not considering the laws of Texas when designing and manufacturing equipment. Haulers have difficulty matching up loads with the capacity of vehicles. At some point, manufacturers will have to be educated, because products are being manufactured that cannot be legally moved in Texas.

Safety

- Driver interaction with OS/OW vehicles are a major concern. Often drivers are distracted. Drivers also do not recognize the stopping distances that these types of vehicles require.

Capacity

- OS/OW vehicles compete with everyone else on the road for infrastructure capacity. TxDOT Districts can put limitations/restrictions on the roads that can be used by OS/OW vehicles. TxDOT publishes the road network that can be used by OS/OW loads. OS/OW vehicles thus often get diverted from the Interstate system to Farm-to-Market roads or roads that are not suitable for these types of loads. For example, Farm-to-Market roads tend to be narrow and often times have no shoulders. Farm-to-Market roads are typically 18 feet wide. A truck is 10 feet wide from mirror to mirror. Two trucks thus have difficulty passing on a Farm-to-Market road, which presents a safety issue. There is a need to look how roads for OS/OW loads are designated.

Mitigation Strategies

Size and Weight Regulations

- There is no uniformity in the rules that are imposed by TxDOT, the counties, and the cities on OS/OW loads. Each TxDOT district has different rules. There is a need to harmonize within Texas.
- The rationale behind the regulations on divisible and non-divisible loads is questionable. The law needs to be clarified so that it is easier for haulers to understand.

Infrastructure

- OS/OW corridors and truck only corridors were not well supported strategies. Participants stated that products don't move only on corridors. At some stage these loads will still have to move on state, county, or city networks.
- Bridge clearance is an issue.
- The Interstate System was designed for the movement of OS/OW loads.
- In most cases it is not the permitted OS/OW loads that cause the most damage to the infrastructure, but rather the illegally loaded standard 18 wheeler trucks that operate relatively short trips.

Funding

- One hauler commented that Texas is one of the most expensive states that they operate in. Texas is, for example, 10 times more expensive than Colorado and they can only use 60% of the vehicle capacity. There is a need for uniform in-state, as well as multi-state regulations. Differences also persist in how infrastructure is being paid for. North Dakota levies user fees, but have no permit fees. This is considered a state's right, but it presents a significant challenge for industry.

- Some commodities (e.g., roll on and roll off containers) require surety bonds. Rather than bonds, these haulers should be required to purchase permits.
- Indexing the fuel tax (as was the case in Florida) was proposed as a financial strategy. The trucking community did not oppose the indexing of fuel taxes, but did not want the fuel tax to be indexed to the construction cost index.
- One participant remarked that TxDMV issued approximately 700,000 OS/OW permits in 2012, so that the OS/OW haulers are already paying.
- It was concluded that funding infrastructure is a political and not a policy question.

Operational

- There are too many rules and regulations that can be imposed by TxDOT districts, counties, and cities on the movement of OS/OW loads. This has resulted in a very fragmented approach to OS/OW routing, lane restrictions, and time-of-day/day-of-week restrictions. For example, Bexar County does not allow for the movement of OS/OW loads during rush hour traffic (6:00 am to 9:00 am and 4:00 pm to 7:00 pm). In the winter, one hauler cannot move between San Antonio and Dallas because of time restrictions. Most counties do not allow for the movement of OS/OW loads at night. Haulers advocated for using existing roads at night. A more holistic and uniform approach is needed for OS/OW shipments in Texas.

Research Needs

- Research on using existing infrastructure (including, night time operations, existing toll roads, dedicating lanes for trucks at night, feasibility of different lane usage) more efficiently by OS/OW vehicles. “How to best take advantage of what we have?” “How to address any concerns?” For example, the safety concerns of allowing OS/OW vehicles to move at night can be addressed by adding escorts and or adding additional lights on the vehicles.
- Document different constraints imposed by TxDOT Districts, Texas counties, and Texas cities on the movement of OS/OW loads and calculate the costs imposed to industry?
- Productivity and economic benefits of OS/OW vehicles, but also the question of “how big do we allow industry to go?” Should we discourage increases in the size of manufactured product at a certain point?

Group 5

Facilitator: Dr. John Walewski

Participants: Ken Dalton – APAC – Texas Wheeler
Don Mouser – J.D. Abrams
Jess Tippie – Travis County Sherriff’s Office
Pat Tinsley – Austin Bridge and Road
Deb Hastings – Texas Oil and Gas Association
Donald Ward – Travis County
Captain Andrew Sitgreaves – Texas Department of Public Safety
Michael Vasquez – Texas Conference of Urban Counties
Chris Lechner – Precast Concrete Manufacturer’s Association of Texas
Fenzy Leon – Tejas Safety Advantage
Betty Wachsmaur – Texas Department of Motor Vehicles
Jodi Poujardieu – Bexar Concrete

Impact of OS/OW Vehicles

Safety

- Agree with the notion presented in the morning session that safety data regarding OS/OW issues is lacking.
- Need for standards/metrics on current data input/output.
- Most private sector organizations are unfamiliar with who has data, what they collect, why, and how.
- Safety requirements for OS/OW vary from state to state. Those that work in many states spend lots of time on compliance.
- Texas does not require driver training (e.g., pilot car driver certification)—some states like Utah do.
- How DPS interfaces with safety varies by District.
- DPS tracks recordable OS/OW incidents by permit – some data available.
- Brake issues are top concern.
- Need for programs to educate public on OS/OW driving safety – big issue for carriers.

Enforcement

- DPS Commercial Vehicle Enforcement Service (CVES) burden is huge – ~400 officers for whole state.

- Troopers must document all violations, most severe (often 1 or 2) proceed as violations, remainder become warnings. As of 2010, warnings treated almost the same as violations. Result has been fewer “clean” drivers and adding to shortage.
- Technology used at ports of entry could be a way to assist with enforcement (weight, tracking).

Fines

- Fine structure for some cost of doing business, for others can put them out of business (Independent contractors highly impacted).
- State (DPS, TxDOT) has recently focused on weight violations.
- Local justice of the peace dictates severity and dollar value of fines. Not equal across the state, e.g., oil and gas production regions less likely to give severe fines to local haulers.
- Fine dollars go to general fund and not road improvements/M&R. Big issue for counties. DPS portion also goes back to general funds and not targeted towards CVES, etc.
- DMV going after some shippers (often a source/originator of violations) – need for shipper training on violation/enforcement issues.

Economics

- Time-of-day/day-of-week restrictions are seen as an economic burden for some.
- Economic development in the state has created many of the issues – “too much of a good thing.” As such, infrastructure development will never catch up.
- Damage to the infrastructure and resulting costs need additional work/research.
- Difficult to compare economic benefits of OS/OW to cost of the damage to the network/infrastructure.
- How much would higher design standard (more resilient roads) cost? Can this be documented?

Research Needs/Summary

- Most private sector organizations are unfamiliar who has safety data, what they collect, why, and how. How can they obtain and use the information?
- Need for standards/metrics on current safety data input/output.
- Distracted drivers are seen as big safety issue – could this impact be studied?
- Cost/Benefit of enhanced enforcement. Could this lead to safety gains?
- Cost/Benefit of increased fines. Does this lead to safety gains?
- Use of technology to enhance enforcement/safety should be explored.
- Damage to the infrastructure and resulting costs need additional work/research.
- How much would higher design standard (more resilient roads) cost? Can this be documented?
- The workshop was well received, nice to be at a forum with those concerned about the direction of the industry. Could the workshop or something like it be held again?

References

- 1 FHWA 2009. Highway Safety and Truck Crash Comparative Analysis, Comprehensive Truck Size and Weight Limits Study, Final Draft Desk Scan. Washington, D.C.: U.S. Department of Transportation, Federal Highway Administration. Retrieved from http://www.ops.fhwa.dot.gov/freight/sw/map21tswstudy/deskscan/safety_dksn.pdf.
- 2 AASHTO 2009. A Synthesis of Safety Implications of Oversize/Overweight Commercial Vehicles. Washington, D.C.: American Association of State Highway and Transportation Officials. Available for purchase at https://bookstore.transportation.org/item_details.aspx?id=1559.
- 3 Straus, S., and Semmens, J. 2006. Estimating the Cost of Overweight Vehicle Travel on Arizona Highways. Phoenix, AZ: Arizona Department of Transportation. Retrieved from <http://azmemory.azlibrary.gov/cdm/ref/collection/statepubs/id/3603>.
- 4 Russell, E., Landman, E., and Godavarthy, R. 2013. Accommodating Oversize/Overweight Vehicles at Roundabouts. Manhattan, KS: Kansas State University Transportation Center. Retrieved from http://www.ksdot.org/PDF_Files/KSU-10-1_Final.pdf.
- 5 National Transport Commission 2009. National Heavy Vehicle Enforcement Strategy Cost Benefit Analysis. Melbourne, Australia: National Transport Commission. Retrieved from <http://ntc.wdu.com.au/filemedia/Reports/HVEnforceStrategyCostBenAnalysis.pdf>.
- 6 Arki, H. 2008. European Study on Heavy Goods Vehicles' Weights and Dimensions. Henley-in-Arden, UK: Association for European Transport. Retrieved from <http://abstracts.aetransport.org/paper/index/id/3161/confid/15>.
- 7 Woodrooffe, J., Billing, J., Middleton, D., and Sweatman, P. 2011. Canadian Truck Size and Weight Policy Development: Are There Lessons for the U.S.? TRB 90th Annual Meeting Compendium of Papers DVD. Washington, DC: Transportation Research Board. Available for purchase at <http://trid.trb.org/view.aspx?id=1093281>.
- 8 Getchell, C. and Sweeney, K. 2011. Engineering Analysis of Maine's Interstate Bridges, 100,000 Pound Six Axle Trucks. Augusta, ME: Maine Department of Transportation. Retrieved from <http://www.maine.gov/mdot/docs/EngineeringAnalysis-of-MaineInterstateBridges8-15-11.pdf>.
- 9 El-Qutob, K., and Sharif, A. 2003. Heavy Vehicle Control System in Abu Dhabi Emirate. Proceedings - Conference of the Australian Road Research Board, Vol.21, pp.613-625. Abstract available at <http://trid.trb.org/view.aspx?id=1211800>.
- 10 Bhanji, F. 2011. Innovative Infrastructure Designs to Accommodate High-Loads and Over-Dimensional Loads through the Fort McMurray Area. Edmonton, AB: Annual Conference of Transportation Association of Canada. Retrieved from <http://conf.tac-atc.ca/english/annualconference/tac2011/docs/g2/bhanji.pdf>.
- 11 Saber, A. and Roberts, F. 2008. Monitoring System to Determine the Impact of Sugarcane Truckloads on Non-Interstate Bridges. Baton Rouge, LA: Louisiana Department of

- Transportation and Development, Louisiana Transportation Research Center. Retrieved from http://www.ltrc.lsu.edu/pdf/2009/fr_418.pdf.
- 12 Ramseyer, C. and Nghiem, A. 2008. Investigation of Cost Effective Truck Weight Enforcement. Norman, OK: University of Oklahoma. Retrieved from http://www.okladot.state.ok.us/hqdiv/p-r-div/spr-rip/library/reports/rad_spr2-i2203-fy2008-rpt-final-ramseyer.pdf.
 - 13 Adams, T., Perry, E., Schwartz, A., Gollnik, B., Myungook, K., Bittner, J., and Wagner, S. 2013. Aligning Oversize/Overweight Fees with Agency Costs: Critical Issues. Madison, WI: National Center for Freight and Infrastructure Research and Education, University of Wisconsin. Retrieved from http://www.wistrans.org/cfire/documents/FR_CFIRE0317.pdf.
 - 14 Luskin, D., Harrison, R., Walton, C., Zhang, Z., and Jamieson, J. 2002. Divisible-Load Permits for Overweight Trucks on Texas Highways. Journal of the Transportation Research Board, Volume 1790. Washington, D.C.: Transportation Research Board. Available for purchase at <http://trb.metapress.com/content/n08pt308h835q561/?genre=article&id=doi%3a10.3141%2f1790-13>.
 - 15 Prozzi, J., Murphy, M., Loftus-Otway, L, Banerjee, A., Kim, M., Wu, H., Prozzi, J.P., Hutchison, R., Harrison, R., Walton, C., Weissmann, J., and Weissmann, A. 2012. Oversize/Overweight Vehicle Permit Fee Study. Austin, TX: Center for Transportation Research, University of Texas. Retrieved from http://www.utexas.edu/research/ctr/pdf_reports/0_6736_2.pdf.
 - 16 Bilal, M. K., Irfan, M., Ahmed, A., Labi, S., and Sinha, K. 2010. A Synthesis of Overweight Truck Permitting. West Lafayette, Indiana: Joint Transportation Research Program, Indiana Department of Transportation and Purdue University. Retrieved from <http://docs.lib.purdue.edu/jtrp/1118/>.
 - 17 Middleton, D. and Li, Y. 2013. Impacts of Route Restrictions on the Movement of Oversize/Overweight Loads in Texas. TRB 92nd Annual Meeting Compendium of Papers. Washington, D.C.: Transportation Research Board. Available for purchase at <http://trid.trb.org/view.aspx?id=1242234>.
 - 18 Russell, E. and Landman, E. 2012. Optimizing the Analysis of Routing Oversize/Overweight Loads to Provide Efficient Freight Corridors. Manhattan, KS: Kansas State University Transportation Center. Retrieved from <http://idmweb.ksdot.org/PublicLib/publicDoc.asp?ID=003820460>.
 - 19 MnDOT 2011. Impact and Analysis of Higher Vehicle Weight Limits on Minnesota's Interstate System. Minneapolis, MN: Minnesota DOT. Retrieved from <http://transportationproductivity.org/templates/files/minnesota-dot.pdf>.
 - 20 Meyer, M. and Rosbury, A. 2011. Institutional and Financial Analysis of Weigh Station Performance in Georgia. Atlanta, GA: Georgia Tech Research Corporation. Retrieved from <http://www.dot.ga.gov/doingbusiness/research/documents/10-19.pdf>.

- 21 Berwick, M. 2010. Truck Size & Weight Education. Fargo, ND: North Dakota State University. Retrieved from http://www.mountain-plains.org/research/projects/downloads/2010_MPC356.pdf.
- 22 Lindly, J., Jones, S., and Wilkes, M. 2010. Feasibility of Developing a Pilot Car Training and Certification Program in Alabama. Tuscaloosa, AL: The University Transportation Center for Alabama, The University of Alabama. Retrieved from <http://utca.eng.ua.edu/files/2011/10/06411-Final-Report.pdf>.