MINUTES OF THE MEETING OF THE HOUSE HIGHWAYS AND TRANSPORTATION COMMITTEE, FEBRUARY 3, 1983

The meeting was called to order by Chairman Abrams on Thursday, February 3, 1983 at 12:30pm, in Room 129, State Capitol. All members of the Committee were present.

HEARINGS

SENATE BILL 10. SEN. J.D. LYNCH, District 44, Silver Bow County, testified as sponsor of the bill, which he said is a product of the Joint Interim Subcommittee on Highways and endorsed by the Montana Highway Commission. He told committee members the bill would empower the Highway Commission to establish priorities and select roads for construction and reconstruction.

PROPONENTS

There were no other proponents of the bill.

OPPONENTS

There were no opponents of the bill.

QUESTIONS

REP. HEMSTAD asked Sen. Lynch if the selection process would remain the same. Sen. Lynch replied the process was presently handled by the Department of Highways which the Commission can veto, adding the bill would give the selection responsibility to the Commission.

REP. KEYSER asked if rules and standards would be set by the Commission. Sen. Lynch replied they would by, in conjunction with the Department.

REP. UNDERDAL asked who would set sufficiency ratings. Sen. Lynch replied after the ratings were set by the Department the Commission would decide which projects would be approved.

REP. UNDERDAL asked what happens to a project in process. Sen. Lynch replied it would be continued as at least three or four directors would remain on the Commission when a new member is appointed.

REP. HARP told the Committee, Commission member John Sullivan of Livingston, wrote a letter wherein he stated the duties of the Commission are vague and he would like to become more involved.

REP. UNDERDAL asked who has authority for construction of secondary roads. Rep. Harp replied the highway districts work in conjunction with county commissioners and the Department on secondary roads.

REP. SOLBERG asked if the Commission were bipartisan. Sen. Lynch replied it is.

REP. LYBECK asked if the bill would create more Commission involvement in Department of Highways projects. Sen. Lynch replied it would.

REP. LYBECK asked if Commission members were out viewing roads as county commissioners do. Sen. Lynch said he would envision the Commission members become familiar with roads in their districts.

REP. ZABROCKI asked if a problem would arise for projects scheduled this Spring, should the bill pass. Sen. Lynch replied he did not see immediate changes in priorities.

REP. ZABROCKI asked Mr. Wicks if projects would change right away. Mr. Wicks explained the bill would probably apply to projects scheduled after 1985, adding he supports the bill.

REP. SHONTZ asked if approved projects would not change. Mr. Wicks replied they would not and told committee members he agrees with the intent of the Interim Subcommittee, adding the Commission has no more than three members from one political party.

The hearing was closed on Senate Bill 10.

HOUSE BILL 437. REP. TED NEUMAN, District 33, Cascade County, testifed as sponsor of the bill and provided committee members with an amendment to page 4, line 13, which clarifies conditions under which special permits may be issued, adding the amendment may or may not be necessary (exhibit). Rep. Neuman said the bill would increase truck length from 85 feet to 95 feet, as recommended by the Governor's Interim Study Council. He told committee members fuel tax increases make the bill a matter of survival in the State, adding no truck can exceed 105,500 pounds under existing statutes, and said spacing of axles and increasing length would mean lower rates for Montana shippers. He advised the Committee triple-trailers would not be allowed as the bill is written.

PROPONENTS

MR. BEN HAVDAL, Montana Motor Carriers Association, provided committee members with information on federal legislation addressing size and weight provisions on the federal level, which allow a maximum of 80,000 pounds on single axles (exhibit). He said federal law strengthens the provision by virtue of a grandfather clause, which Montana already has, adding the House tried to eliminate the clause during the last Congressional Session and the Senate reinserted it. He told the Committee Montana newspapers picked up an article by Tom Wicker, charging that the truck size and weight standards set by Congress in the new highway user tax law, would unleash "killer trucks" on the highways. Mr. Havdal gave the Committee copies of a response to that article, from Mr. Bennett C. Whitlock, Jr., President of the American Trucking Associations, Inc. (exhibit). He also provided committee members with a summary of the Surface Transportation Act of 1982 (HR 6211), the bridge gross weight formula, an explanation of Montana controls on size and weight of truck combinations, information on regulation of maximum weight and lengh combinations in Western states and a truck weight and length comparison for 65, 85 and 95 feet (exhibits).

MR. HAVDAL explained the increase in federal tax by 1988 for a five axle, 18 wheeler would be $4,441 and said the GVW tax increase would add $1,400, totalling $6,480. He said that figure plus existing taxes would equal $10,304 per vehicle by 1988 (exhibit). He advised existing statutes set gross vehicle weight at 80.000, and said a vehicle exceeding that limit must purchase a special permit in Montana. He told committee members gross vehicle weight must be considered individually and in combinations, adding distribution of weight must also be considered, in reference to his diagram (exhibit). Mr. Havdal said a five axle, 80,000 pound truck is at the maximum weight allowed by the state and as an example, explained a nine axle truck with 45 and 40 foot trailers, totalling 85 feet in length would weigh 148,000 with equalization, but axle weights would only be 17,000 or 11,000 pounds lighter than statute mandates. He told the Committee, in essence, if the cap were lifted such a truck would still be under the allowable axle weight limit.

MR. HAVDAL informed committee members if the trailer combination was increased by 10 feet to 95 feet, and gross vehicle weight increased by 126,025 pounds, axle weight would be 20,000 pounds, still 6,000 less than the allowable maximum. He said the cap applies to six axle vehicles and allow maximum weight of 90,000 pounds with front axle weight of 102,000, adding gross vehicle weight would increase to 106,665 pounds if the cap were lifted for a seven axle vehicle, increasing production via payloads. As an example, Mr. Havdal told the Committee the estimated savings in shipping grain would be 10% or 12-15 cents per bushel.

MR. MIKE RICE, Transystems Inc., stated his support of the bill and told committee members, as a grain, sugar beet and petroleum shipper, his business was experiencing its first layoffs in Montana, while new personnel were being hired in other States. He advised the Committee other trucking businesses are up to 40% idle and said truck taxes referred to by Mr. Havdal are "generic" in nature and do not specifically address what's going on in the State. Mr. Rice explained taxes for truckers have increased at the state level as well as the federal level and are up approximately 30% or a total of $5500 per vehicle.

MR. RICE told committee members federal taxes will increase 67% by 1988, for a combined total increase of $11,000. He said consumers and users will end up paying the tax, not the truckers, adding Montana is becoming more remote and more than 60% of its cities are no longer served by rail. As an example, he cited a manufacturer in Great Falls who brings in materials from out of state, as they're cost prohibitive in Montana, and exports his products. He said truckers could raise their prices to alleviate the problem or move to other areas. As another alternative, he said they could increase production proposals to eliminate the artificial cap and create a table from exhibits provided by the Montana Motor Carriers. Mr. Rice advised truckers could add 10 feet to combination trailers, since they have been allowed in the State in the past.

MR. RICE said the economic benefits are 4 1/2% of the cap were raised, which would handle the federal tax increase. He advised committee members actual cents per

gallon federal tax is 15-20 cents and not 5 cents, adding an additional 10 feet of trailer would raise another 6 1/2% for a total increase in production of 11%, saving dollars for sugar beet and grain growers. Referring to the bridge formula, which he said does not differ from that on the federal level, Mr. Rice told committee members truckers are not requesting any new combinations nor any that don't already exist in other states. He advised there would actually be less weight per square inch of brake and axle, adding there have been no vehicle accidents due to configuration.

MR. TED HAWLEY, Staff Engineering Consultant, Western Highway Institute, San Bruno, California, told committee members his was a non-profit, non-aligned, non-lobbying organization. He advised he had been with the Federal Highway Administration for 36 years, his duties including motor carrier safety. He said the Institute has studied longer units since 1966, adding the first tests were made in Montana, and told committee members 22 jurisdictions now authorize long combinations. He explained the State of Utah has operated long combinations since 1968, but there are no statistics upon which to base a report on weight or length, as accidents are so rare.

MR. HAWLEY advised members the accident rate for long combination over 50 million miles is 1.07%, while it stands at 6% for passenger cars and 7% for other trucks. He said Utah has had only four long combination accidents in 12 years and at 95 feet, truckers operating under permits give the State more control over the vehicle and the driver. He explained longer trucks have more axles and thus more brakes, braking power and braking stability, and said it is rumor that one truck does 96 times as much damage as a car to highways. He advised this information came from a field test project in Illinois, which studied depth of pavement and axle loads and gave trucks a 2.4 rating, while rating cars at .0004. He told committee members the intent was not to relate load to damage, but to improve highway descriptions and said after 17 years of evaluation, the Institute has found trucks can carry more goods with a steady, paced impact on roads and bridges, adding fuel savings could be as much as one-third by using longer combinations depending on gross vehicle weight.

MR. GARY WICKS, Director, Department of Highways, stated his support of the bill, adding the Governor's Transportation Advisory Council recommended the GVW cap be lifted and GVW be determined on the bridge formula. He said the Department was concerned with axle load combinations allowed by House Bill 437, adding 85 foot combinations have been allowed since 1971 and he sees no problem with allowing 95 foot combinations, which could be limited by the permit process if they became a problem. He noted both the Montana Motor Carriers and Logging Associations approved of the bill and said the Department was asking for funds in other bills to correlate with House Bill 437.

MR. TERRY MURPHY, Montana Farmers Union, told committee members he supports revision of weight and length and the maintaining of safety standards as set in the bill.

MR. VIGGO ANDERSEN, Montana Citizens Freight Rate Association, stated his support of the bill.

MRS. JO BRUNNER, Women Involved in Farm Economics, stated her support of the bill in prepared testimony (exhibit).

MR. JERRY THUESEN, Montana Grain Growers Association, stated his support of the bill.

MR. PAT UNDERWOOD, Montana Farm Bureau, stated his support of the bill.

MR. JOE SOL, LHC, INC., Thompson Falls, told committee members he supports the bill both as a member of the logging industry and as former head of the Montana Highway Patrol.

MR. MONS TIEGEN, Montana Stock Growers, Wool Growers and Cowbelles, stated his support of the bill.

MR. FRED BROWN, National Farmers Organization, stated his support of the bill.

MR. MIKE FITZGERALD, Montana Trade Commission, stated his support of the bill and presented committee members with the publications, Highways and Railroads in Montana: Problems and Opportunities (December, 1982), and Increased Truck Size and Weight-The Impact on Highways, Safety and Engergy (November, 1982).

REP. RAY LYBECK, Montana Cattlemen's Association, stated his support of the bill.

MR. KEITH OLSON, Montana Logging Association, stated his support in prepared testimony (exhibit).

MR. ROBERT HELDING, Montana Wood Products Association, stated his support of the bill.

OPPONENTS

MR. TOM HARRISON, Montana Automobile Association, told committee members the only benefit would be to truckers and not passenger car drivers, should the bill pass. He provided members with copies of a Summary of the Questionnaire to the General Accounting Office Report to Congress on Excessive Truck Weight and the Resolution adopted by the National Association of Counties, on July 13, 1982, (exhibits). Referring to the AAA Foundation for Traffic Safety report of October 6, 1980, on the impact of trucks on highway accidents he said, as cars get lighter and trucks, heavier, fatalities will increase (exhibit), adding the report contained a supplement to the report of the Comptroller General of the U.S. on excessive truck weight and breakdown of Montana's response in the study.

MR. HARRISON advised committee members be believes there is a gap in logic when it costs $2 billion to rebuild roads and truckers are requesting the GVW cap be lifted to cause more damage to highways, adding length would compound the problem, not provide a solution. Referring to safety, he said passenger cars must travel 10 feet further, at a faster rate of speed and stay on the wrong side of the road longer to pass longer combination vehicles. He said 80% of MAA members responding to an Association poll, were opposed to the bill.

MR. FRANK MURPHY, Enforcement Officer, GVW Division, Department of Highways, told committee members he was testifying as an individual and said Mr. Havdal should have used average weight between axles in referring to the bridge formula, rather than average weight per axle. He advised weight would increase 7,000 pounds between the sixth and seventh axles if the Motor Carriers example were properly computed. Mr. Murphy said even with the cap removed, the remainder of the weight would be in the back of the vehicle, according to the bridge law, adding the majority of weight placed in the first trailer would remain to the last trailer.

MR. MURPHY said Mr. Havdal's example shows 27,000 pounds per axle, which must actually be computed by given dimensions between axles. He explained if figures were based on 81 feet, the weight would be between 9,000 and 10,000 on the first axle and 32,000 and 34,000 on the mid axle, which would actually increase vehicle weight by 12,000 according to the bridge formula. He added the averaging formula used by Mr. Havdal does not show where the weight goes, but in adding 10 feet, weight increases from 105,500 to 123,870 pounds.

IN CLOSING, Rep. Neuman, told committee if productivity were increased, there would be fewer trucks on Montana highways, adding passenger car drivers would benefit by lower fuel costs from trucks bringing fuel into the State and reminding members the longer combinations have demonstrated their safety.

QUESTIONS

REP. KEYSER asked Mr. Harrison if information in the study he provided contained responses from only Eastern states or if it included information relating to Montana. Mr. Harrison said if the information were related to conditions in Montana, the safety factor would worsen since the State has fewer four lane highways.

REP. KEYSER said he would have to disagree, as there is less congestion and traffic in Montana. He then asked Mr. Wicks about conflicting testimony in reference to damage caused to State highways by trucks. Mr. Wicks replied State highways which are 50 years or older were not designed for today's trucks; however, new highways were being designed for present conditions. He said he could not deny heavy trucks damage highways, which is the reason for the GVW enforcement bill, and added the immediate problem is overweight trucks. He told committee members Mr. Murphy was representing himself and not the Department and said his point is that if the cap is lifted, highways won't be any worse off, even with the axle weight problem. He advised an amendment would be proposed to address it.

REP. UNDERDAL asked what the tongue mile tax was. Mr. Rice replied it was rejected by all review committees and is an honor tax, which a trucker does not pay if he doesn't want to, adding it is not true Montana truckers

pay fewer taxes than those in surrounding states, as is stated in the Special Report on Highways and Railroads in Montana (exhibit). He told committee members the Report contains other errors, as well, but did not list them.

REP. STOBIE asked Mr. Hawley what really causes deterioration of State highways. Mr. Hawley replied traffic gradually does, adding it is a complex mix of other contributors, such as water and maintenance. He said illegal loads contribute and strict enforcement is needed to make the program work.

REP. LYBECK asked Mr. Havdal about the confusion on axle weight figures. Mr. Havdal replied it is basically true a load should be heavier in front for proper distribution, adding the statutory maximum cannot be exceeded, as used in examples. He said if the cap were lifted it still could not exceed statutory allowances for axle weight, as all standards must still be met.

REP. KOEHNKE asked Mr. Harrison how products would be transported in and out of the State without trucks. Mr. Harrison replied he recognized the problem, but had no solution.

REP. KEYSER asked if the Montana Motor Carriers would return with its charts for executive session on the bill. Chairman Abrams advised this would be permissible, adding the information would also be in committee members' notebooks.

The hearing was closed on House Bill 437.

HOUSE BILL 539. REP. CLYDE SMITH, District 18, Flathead County, testified as sponsor of the bill, which would allow five axle log trucks to haul 80,000 pounds gross vehicle weight in lieu of the present 78,000 pound limit. He said federal legislation allows 80,000 pounds in all states, as does Idaho, which Montana truckers haul in and out of frequently. He explained there is a 7% gross vehicle weight tolerance, which would be reduced to 5% by the bill, adding it is the intent of the bill to prevent any axle from bearing the full force of accidental overweights. Rep. Smith said the bill would provide increased revenue for the Department of Highways through its special term permit and requested committee support of the bill (exhibit).

PROPONENTS

MR. GARY WICKS, Director, Department of Highways, stated his support of the bill, which he said would basically allow the Department to issue permits to loggers to operate five axles at a maximum of 80,000 pounds instead of the present 78,000 pound limit. He advised there would be increased production for less cost, adding there is good cooperation between the logging industry and the GVW Division, especially in keeping speed down on Highway 35. Mr. Wicks said the amendments were two fold in that the existing 7% tolerance does not require it be restricted to axle weight and trucks would be allowed 39,000 on an axle instead of the 34,000 pounds proposed in the bill. Mr. Wicks said the Department believes the 5% tolerance level is sufficient as it provides 1,700 pounds per axle on tandems, adding the bill gives the Department improved ability to work with the industry.

MR. KEITH OLSON, Executive Director, Montana Logging Association, stated his support of the bill in prepared testimony (exhibit).

REP. SMITH, testifying as President of the Montana Logging Association, told committee members he worked with the Department of Highways on the bill for several months, adding it would partially offset costs recently imposed by federal legislation.

MR. BEN HAVDAL, Montana Motor Carriers Association, stated his support of the bill and the amendments. He commented five axle logging vehicles are often loaded in the country where there are no scales, adding the latitude in the bill would provide for adjustment until the logging truck reached a scale. He said if the truck were then found to be overweight, the driver must purchase a permit to become legal at the first opportunity or continue to his destination if it is nearby.

MR. ROBERT HELDING, Montana Wood Products Association, stated his support of the bill.

MR. LUM OWENS, Owens and Hurst Logging, said sales Montana should be receiving are presently going to Idaho because of the 78,000 pound limit, adding passage of the bill would be advantageous to the State of Montana.

OPPONENTS

There were no opponents of the bill.

IN CLOSING, Rep. Smith told committee members the bill would allow approximately the same load, but will require more care in equalizing weight over axles.

QUESTIONS

REP. HARP asked what percentage of the overweight and length permits come from the logging industry. Mr. Olson replied he did not know, but commented the price of permits increased from $6 to $75 after the 1981 Legislative Session.

The hearing was closed on House Bill 539.

CHAIRMAN ABRAMS advised the Committee executive session would be held, Saturday, February 5, 1983, upon adjournment of the House.

The meeting was adjourned at 2:50pm.

Hubert Abrams
REP. HUBERT ABRAMS, CHAIRMAN

Joann T. Gibson, Secretary

VISITORS' REGISTER

HOUSE Highways COMMITTEE

BILL HB 437 Date 2-3-83

SPONSOR Neuman

NAME	RESIDENCE	REPRESENTING	SUPPORT	OPPOSE
Viggo Andersen	Great Falls	Mont. Citizens Freight Rate Assn.	✓	
Jerry Thuesen	Reserve MT.	Montana Grain Growers Assn	✓	
John Beambeck	Helena, MT.	Mont. Ioma Energy Services Co.	✓	
Ben Havdahl	Helena MT	Mont Motor Carriers	✓	
Mons Teigen	Helena.	Gowlches Mt Stockgrowers, Woolgrowers	✓	
Mike Rice	Gt. Falls	Transystems Inc	✓	
KEITH OLSON	KALISPELL	MT. LOGGING ASSN	✓	
Terry Murphy	Gt. Falls	MT. Farmers Union	✓	
Mike Ingraldi	Helena	MT Trade Com.	✓	
Jog R. Sol	Thomp-Falls, MT	LLLC INC	✓	
Ted NEUMAN	Dist 32		✓	
Jim Brunner	Helena	W.I.F.I.	✓	
Ken Underwood	Bozeman	Mont. Farm Bureau	✓	
Gary Wicks	Helena.	MDOH	✓	
Fred Brown	Whitehall	NFO	✓	
Bob Helding	Missoula	MT. Wood Products Assn	✓	
Leon Cawley	Kalispell	Diamond Hereford	✓	
Gary Hoff	Col Falls	Canyon Logging	✓	

IF YOU CARE TO WRITE COMMENTS, ASK SECRETARY FOR LONGER FORM.

PLEASE LEAVE PREPARED STATEMENT WITH SECRETARY.

Form CS-33
1-81

VISITORS' REGISTER

HOUSE Highways COMMITTEE

BILL SB10 Date 2-3-83

SPONSOR Lynch

NAME	RESIDENCE	REPRESENTING	SUP-PORT	OP-POSE
G Wicks	Helena	MDOH	✓	

IF YOU CARE TO WRITE COMMENTS, ASK SECRETARY FOR LONGER FORM.

PLEASE LEAVE PREPARED STATEMENT WITH SECRETARY.

Form CS-33
1-81

VISITORS' REGISTER

HOUSE Highways COMMITTEE

BILL HB539 Date 2-3-83

SPONSOR Smith

NAME	RESIDENCE	REPRESENTING	SUPPORT	OPPOSE
Ben Havdahl	Helena	Mont. Motor Carriers Assn	X	
Mike Price	Gt Falls	Transystems Inc	X	
Keith Olson	Kalispell	Mt. Logging Assn.	X	
Jos R. Sol	Thompson Falls MT	LHC Inc Kalispell	X	
Gary Wicks	Helena.	MDOH	X	
Bob Helpinstine	Missoula	Mt. Wood Products Assn	X	
Steve Huff	Col Falls	Canyon Lbr Co	X	
Tom Evans	Kalispell	Owens & Hurst	X	

IF YOU CARE TO WRITE COMMENTS, ASK SECRETARY FOR LONGER FORM.

PLEASE LEAVE PREPARED STATEMENT WITH SECRETARY.

Form CS-33
1-81

NAME: Pat Underwood DATE: Feb 3, 83

ADDRESS: 503 S 17th ave, Bozeman, MT. 59715

PHONE: 406-587-3153

REPRESENTING WHOM? Montana Farm Bureau Federation

APPEARING ON WHICH PROPOSAL: HB 437

DO YOU: SUPPORT? ✓ AMEND? _____ OPPOSE? _____

COMMENTS: The Montana Farm Bureau has been aware of the needs of the industry to have this type of legislation for a long while. We have studying the draft proposals of the bill and think it will assist the overall agricultural economics picture by increasing truck productivity. Yet it will certainly not be any more harm to our highways. We recommend a DO PASS!

Pat Underwood

PLEASE LEAVE ANY PREPARED STATEMENTS WITH THE COMMITTEE SECRETARY.

WITNESS STATEMENT

Name James T. Harrison Jr. Committee On Highways

Address 2225 11th Ave. Date 2/3/83

Representing Mont. Auto Assoc. Support

Bill No. 437 Oppose ✓

Amend

AFTER TESTIFYING, PLEASE LEAVE PREPARED STATEMENT WITH SECRETARY.

Comments:

1.

2.

3.

4.

Itemize the main argument or points of your testimony. This will assist the committee secretary with her minutes.

FORM CS-34
1-83

WITNESS STATEMENT

Name [signature] Committee On Highways

Address _____ Date 3 Feb 93

Representing Mt. Truck Com. Support V

Bill No. HB 137 Oppose _____

Amend _____

AFTER TESTIFYING, PLEASE LEAVE PREPARED STATEMENT WITH SECRETARY.

Comments:

1.

2.

3.

4.

Itemize the main argument or points of your testimony. This will assist the committee secretary with her minutes.

FORM CS-34
1-83

WITNESS STATEMENT

Name Mons Teigen

Address Helena

Representing Mt Stockgrowers, Woolgrowers & Cowbelles

Bill No. HB 437

Committee On Hwys & Transp

Date 2/3/83

Support X

Oppose

Amend

AFTER TESTIFYING, PLEASE LEAVE PREPARED STATEMENT WITH SECRETARY.

Comments:

1.

2.

3.

4.

Itemize the main argument or points of your testimony. This will assist the committee secretary with her minutes.

FORM CS-34
1-83

WITNESS STATEMENT

NAME Mike Rice BILL No. HB 437

ADDRESS Box 399 Black Eagle, MT 59414 DATE 2/3/83

WHOM DO YOU REPRESENT Transystems, Inc

SUPPORT X OPPOSE AMEND

PLEASE LEAVE PREPARED STATEMENT WITH SECRETARY.

Comments:

FORM CS-34
1-81

WITNESS STATEMENT

Name Frank E (Ted) Hawley Committee On Highways

Address San Bruno Calif Date 2-3-83

Representing Western Highway Inst Support

Bill No. HB 437 Oppose

Amend

AFTER TESTIFYING, PLEASE LEAVE PREPARED STATEMENT WITH SECRETARY.

Comments:

1.

2.

3.

4.

Itemize the main argument or points of your testimony. This will assist the committee secretary with her minutes.

FORM CS-34
1-83

WIFE Women Involved in Farm Economics

NAME JO BRUNNER BILL NO. HB 437

ADDRESS 565 3rd ST. HELENA DATE FEB. 3/83

REPRESENT WOMEN INVOLVED IN FARM ECONOMICS

SUPPORT X OPPOSE AMEND

COMMENTS:

mr. CHAIRMAN, MEMBERS OF THE COMMITTEE, FOR THE RECORD, MY NAME IS JO BRUNNER AND I SPEAK TODAY FOR THE MEMBERS OF THE WOMEN INVOLVED IN FARM ECONOMICS ORGANIZATION. I WILL GIVE THE TESTIMONY PREPARED BY OUR TRANSPORTATION CHAIRMAN MARY NEILSON FOR THIS BILL.

MR. CHAIRMAN, WE FEEL THAT THE RECENT FEDERAL LEGISLATION WILL MAKE IT MORE DIFFICULT FOR TRUCKS TO BE COMPETITIVE WITH THE RAILROADS IN MOVING OUR COMMODITIES----OUR AGRICULTURAL COMMODITIES---AND BECAUSE WE ARE IN SUPPORT OF THE ENDEAVORS OF THE MONTANA MOTOR CARRIERS ASSOCIATION AND OTHERS, TO COMPENSATE, WE SUPPORT THIS LEGISLATION TO ALLOW THEM TO OPERATE THE LONGER TRUCKS OVER OUR HIGHWAYS.

IT IS VITAL THAT MONTANA'S SHIPPERS HAVE COMPETITIVE MODES OF TRANSPORTATION AVAILABLE TO THEM. PRESENTLY, THOSE OF US WHO MOVE GRAIN TO MARKET OVER THE BURLINGTON NORTHERN TRACKS ARE INVOLVED IN A CLASS ACTION SUIT URGING THE INTERSTATE COMMERCE COMMISSION TO RULE THAT THAT COMPANY HAS "MARKET DOMINANCE" IN THIS STATE.

IN THESE TIMES OF DEREGULATION, IT IS FAIRLY EASY FOR A RAILROAD TO ADJUST ITS RATES DOWNWARD JUST ENOUGH TO MAKE IT IMPOSSIBLE FOR THE TRUCKS TO COMPETE WITH SUCH A LARGE COMPANY, AS HAS BEEN DONE IN THE PAST. ONCE THE TRUCKING COMPETITION IS VIRTUALLY ELIMINATED=-- AND TRUCKERS OUT OF BUSINESS---IT IS THEN THE RAILROADS CAN RAISE THEIR RATES ONCE MORE.

LONGER---AND LARGER TRUCKS WOULD GIVE MONTANA'S GRAIN SHIPPERS NEEDED COMPETITION FOR THE RAILROADS, GIVING US MORE COMPETITIVE RATES, SINCE THESE TRUCKS WOULD BE MORE ECONOMICAL TO OPERATE.

THE STATISTICS GIVEN W.I.F.E. BY THE MONTANA MOTOR CARRIERS ASSOCIA PROVED TO THE MEMBERS SATISFACTION THAT THE LONGER TRUCKS WOULD BE LESS DAMAGING TO THE HIGHWAYS, SINCE THE WEIGHT IS SPREAD OUT OVER MORE AXLES.

OUR CONCERN FOR FURTHER DETERIOATION OF OUR RURAL ROADS, WHETHER

WIFE Women Involved in Farm Economics

THEY ARE OILED OR GRAVELED, IS GREAT, AND WE DO HAVE ROADS THAT WILL BE TRAVELED OR A REGULAR BASIS BY THESE LONGER TRUCKS. WHILE WE REALIZE THAT THIS PROBLEM CANNOT BE ADDRESSED WITHIN THE SCOPE OF THIS PARTICULAR ~~MEETING~~, WE ARE HOPEFUL THAT THIS SITUATION WILL BE TAKEN INTO CONSIDERATION BY THE HIGHWAY DEPARTMENT OR WHATEVER POWERS THAT BE, IN MAKING PRIORITIES IN CONSTRUCTION AND IN RENOVATION OF OUR ROADS, TO FURTHER INSURE THEIR SAFETY AND USEFULNE AGRICULTURAL PRODUCERS ARE IN THE ONE INDUSTRY THAT PAYS THE FREIGHT CHARGES ON ALL THEY PRODUCE AND ON ALL THEY USE. MOST OF US ARE MOR EXPERIENCING SEVERE FINANCIAL DIFFICULTIES AT THIS TIME, AND ARE SYMPATHETIC TO A TRUCKING INDUSTRY THAT IS IN SIMILAR DIFFICULTIES. W.I.F.E. SUPPORTS HB 437 IN ORDER THAT THE TRUCKING INDUSTRY MAY REMAIN VITAL AND COMPETITIVE TO THE RAILROADS WITHIN THIS STATE. WE CONCUR WITH HB 437.
THANK YOU.

WITNESS STATEMENT

NAME KEITH L. OLSON BILL No. HB 437

ADDRESS P.O. BOX 1716, KALISPELL DATE 2-3-83

WHOM DO YOU REPRESENT MONTANA LOGGING ASSN.

SUPPORT YES OPPOSE AMEND

PLEASE LEAVE PREPARED STATEMENT WITH SECRETARY.

Comments:

THE MONTANA LOGGING ASSOCIATION HAS GONE ON RECORD IN SUPPORT OF NUMEROUS LEGISLATIVE PROPOSALS INTENDED TO PROVIDE FUNDING FOR MONTANA'S DEPARTMENT OF HIGHWAYS. OUR EXPRESSED SUPPORT RANGES FROM INCREASING FINES FOR OVERWEIGHT LOADS TO THE DEPARTMENTS PROPOSAL TO INCREASE FUEL TAXES.

IN VIEW OF INCREASED OPERATING EXPENSES AT BOTH THE STATE AND FEDERAL LEVEL, HOWEVER, THE TRUCKING INDUSTRY DESPERATELY NEEDS ASSISTANCE TO INCREASE OUR PAYLOAD CAPACITY IN ORDER TO MINIMIZE THE EFFECTS OF THESE TAXES.

THE LEGISLATION UNDER CONSIDERATION AT THIS TIME PROPOSES TO DO PRECISELY THAT. THE MLA CONCURS WITH THE ELOQUENT TESTIMONY PROVIDED BY MR. HAVDAHL AND WISHES TO RISE IN SUPPORT OF HB 437.

WE RESPECTFULLY SUGGEST THAT PASSAGE OF THIS BILL WILL MINIMIZE THE EFFECT OF RECENTLY PASSED FEDERAL LEGISLATION AND AID THE TIMBER INDUSTRY AS WE STRUGGLE TO RECOVER FROM THE DEPRESSED ECONOMY WHICH HAS GRIPPED US FOR THE PAST THREE YEARS.

Rep. Neuman

HB 437

Page 4.

Following: Line 13

Insert:

"Special permits for vehicle combinations may specify highway routing and otherwise limit or prescribe conditions of operation of the vehicle or combination, including, but not limited to, required equipment, driver qualifications, speed, stability, operational procedures and insurance."

MONTANA MOTOR CARRIERS ASSOCIATION INC.

B. G. HAVDAHL, EXECUTIVE VICE PRESIDENT
P. O. BOX 1714, HELENA, MONTANA 59624
TELEPHONE: AREA CODE 406 442-6600

January 29, 1983

TO : Montana Legislature

FROM: B. G. HAVDAHL, Executive Vice President

RE : Highlights of Surface Transportation Act of 1982 (HR 6211)

Both Houses of Congress adopted the Conference Committee Report on H.R. 6211 and it has been signed into law.

The basic tax provisions of the bill are as follows:

(1) Increase the present Federal tax on gasoline and diesel fuel from $.04 per gallon to $.09 per gallon ($.05 increase or 125%), Effective date April 1, 1983;

(2) Increase the excise tax on tires from present rate, $.0975 per pound on all tires to:

(a) No tax first 40 pounds;

(b) $.15 per pound in excess of 40 pounds;

(c) $4.50 plus $.30 per pound in excess of 70 pounds;

(d) $10.50 plus $.50 per pound in excess of 90 pounds;

Effective date, January 1, 1984;

(3) Repeal the present taxes of $.05 per pound on tread rubber and $.10 per pound on inner tubes, Effective Date, January 1, 1984.

(4) Increase the present excise tax on new trucks over 10,000 lbs. GVW from 10% of manufacturer's price to 12% on retail for trucks over 33,000 lbs. GVW and 12% on retail for trailers over 26,000 lbs. GVW - Effective date, April 1, 1983;

(5) Repeal the present excise tax on truck parts of 8% of manufacturer's price on all truck parts - Effective date, January 7, 1983;

(6) Increase the heavy vehicle use tax from $3 per 1,000# GVW on all vehicles over 26,000# GVW to heavy vehicles with a gross weight of 33,000# GVW and up as follows:

(a) 33,000#, but less than 55,000#, $50 per year plus $25 for each 1,000# over 33,000#;

(b) 55,000#, but less than 80,000#, $600 per year plus applicable rate as per (d) below;

(c) 80,000# or more, the maximum tax per year as per (d) below;

(d) July 1, 1984, applicable rate $40, maximum $1,600;
July 1, 1985, applicable rate $40, maximum $1,600;
July 1, 1986, applicable rate $44, maximum $1,700;
July 1, 1987, applicable rate $48, maximum $1,800;
July 1, 1988, applicable rate $52, maximum $1,900;

(e) The following exemptions and modifications apply to the heavy vehicle use tax - (1) an exemption is applied if truck does not travel in excess of 5,000 miles per year and if tax is paid, is eligible for a refund or credit - (2) In the case of a small owner-operator, with no more than 5 vehicles to which tax is imposed, will be granted an additional year for payment of tax in each category in paragraph (d) above;

(f) The bill requires the Secretary of Transportation by January 1, 1985, to submit a study to Congress on alternative means of taxing heavy trucks; i.e., on a weight distance or ton mile basis;

(g) The tax is to be collected by the State at the time of registration and proof of payment must be shown before registration can be issued. The Secretary of DOT can reduce the State's apportionment by 25% if State does not enforce collection after September 30, 1984;

(7) Repeal the present tax of $.06 per gallon on lubricating oil.

The basic size and weight provisions of the bill are as follows:

(1) States must allow axle weights 20,000# single and 34,000# tandem minimum and maximum on Interstate and Defense Highway Systems (no mention is made of other roads); effective upon enactment.

(2) States must allow gross weight of 80,000# minimum and maximum on Interstate and Defense Highway Systems (no mention is made of other roads) by application of formula B (W=500 (LN/N -1 +12N +36); effective upon enactment

Grandfather Clause - "This section shall not be construed to deny apportionment to any State allowing the operation within such State of vehicles or combinations thereof which the State determines could be lawfully operated within such State on July 1, 1956, except in the case of overall gross weight of any group of TWO OR MORE CONSECUTIVE AXLES, on the date of enactment of the Federal Aid Highway Act of 1974." (Language following "determines", "in consultation with the Secretary of DOT" were stricken from the Act.)

(3) Length of a semitrailer is mandated at not less than 48 feet and no state can impose less than 48 feet on a semitrailer and less than 28 feet on length of any semitrailer or trailer operating in a truck tractor-semitrailer-trailer combination. States must allow access and applies to National System of Interstate and Defense Highways and any other qualifying Federal-aid Primary System Highway. Effective date is 90 days after enactment.

(4) Mandates 102 inch width on Interstate Highways or other qualifying federal-aid highways as designated by Secretary of Transportation with traffic lane designed to be a width of 12 feet or more. States must allow access. Effective date is October 1, 1983.

NOTE: President has not signed H.R. 6211 and is scheduled to Thursday, January 6, 1983. The President has signed an appropriation bill including the 102" width provision with effective date October 1, 1983.

B. G. HAVDAHL

BGH:ap

Taxes paid by a typical 80,000 pound 5-axle tractor semitrailer operating intrastate; comparison unit is a 1980 International tractor, valued at $46,592 and 1980 Trailmobile trailer valued at $13,925 -based on 70,000 miles of annual travel at 4.5 miles per gallon of fuel.

TAX DESCRIPTION	CURRENT TAX	ACTUAL AND PROPOSED ADDITIONAL TAX	TOTAL CURRENT AND PROPOSED TAX	PERCENTAGE INCREASE
*Montana GVW Taxes	$1,774.00	$ 620.90	$2,394.90	35%
Montana Misc. Truck Taxes	139.00	-0-	139.00	-0-
*Montana Diesel Fuel Taxes	1,711.11	547.55	2,258.66	32%
Montana County Property Taxes	1,071.00	-0-	1,071.00	-0-
TOTAL MONTANA TAXES	$4,695.11	$1,168.45	$5,863.56	25%
*Federal Diesel Fuel Taxes	622.22	777.78	1,400.00	125%
**Federal Misc. Truck Taxes	953.00	188.00	1,141.00	20%
***Federal Heavy Truck Tax	210.00	1,690.00	1,900.00	805%
TOTAL FEDERAL TAXES	$1,785.22	$2,655.78	$4,441.00	149%
TOTAL MONTANA & FEDERAL TAXES	$6,480.33	$3,824.26	$10,304.56	59%

*The Montana current diesel fuel tax is 11¢ per gallon and would be increased by 3½¢ per gallon and GVW fees proposed to be increased 35%. The Federal diesel tax is 4¢ per gallon and is to be increased by 5¢ per gallon.

**Federal Misc. Truck Tax	Current	Proposed
Excise Tax	$757.00	$998.00
Tire Tax	99.00	143.00
Retread Rubber Tax	29.00	-0-
Inner Tube Tax	11.00	-0-
Parts & Accessories Tax	48.00	-0-
Lubricating Oil Tax	9.00	-0-
	$953.00	$1,414.00

Annual average for 8 year period

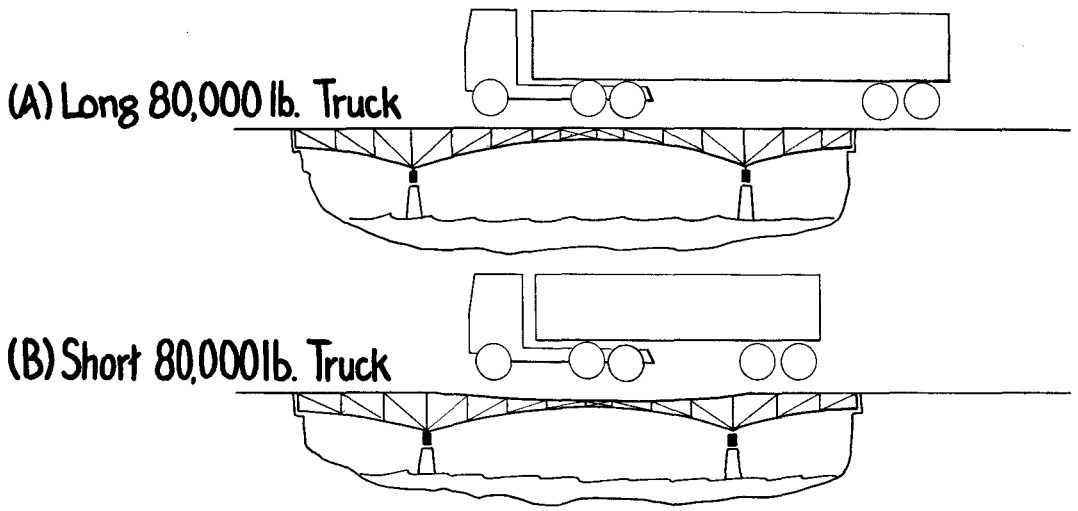
***Federal Heavy Truck Tax (As adopted by Congress 12/82)

The current tax rate is $3 per thousand pounds.
1984 - $1,600
1986 - $1,700
1987 - $1,800
1988 - $1,900

Montana Law Controls Size & Weight of Truck Combinations

(1) FOR HIGHWAYS - Pavement Protection Setting
Axle Weight Maximums (SAME AS FEDERAL)
Single Axles - 20,000 pounds
Tandem Axles - 34,000 pounds

(2) FOR BRIDGES - Bridge Gross Weight Formula "B"
Standard to Control Spacing of Axles on
Vehicles Using Highway Bridges (SAME AS FEDERAL)



(A) *Stress on bridge members from long truck much less than* (B) *with same total weight and axle weights.*

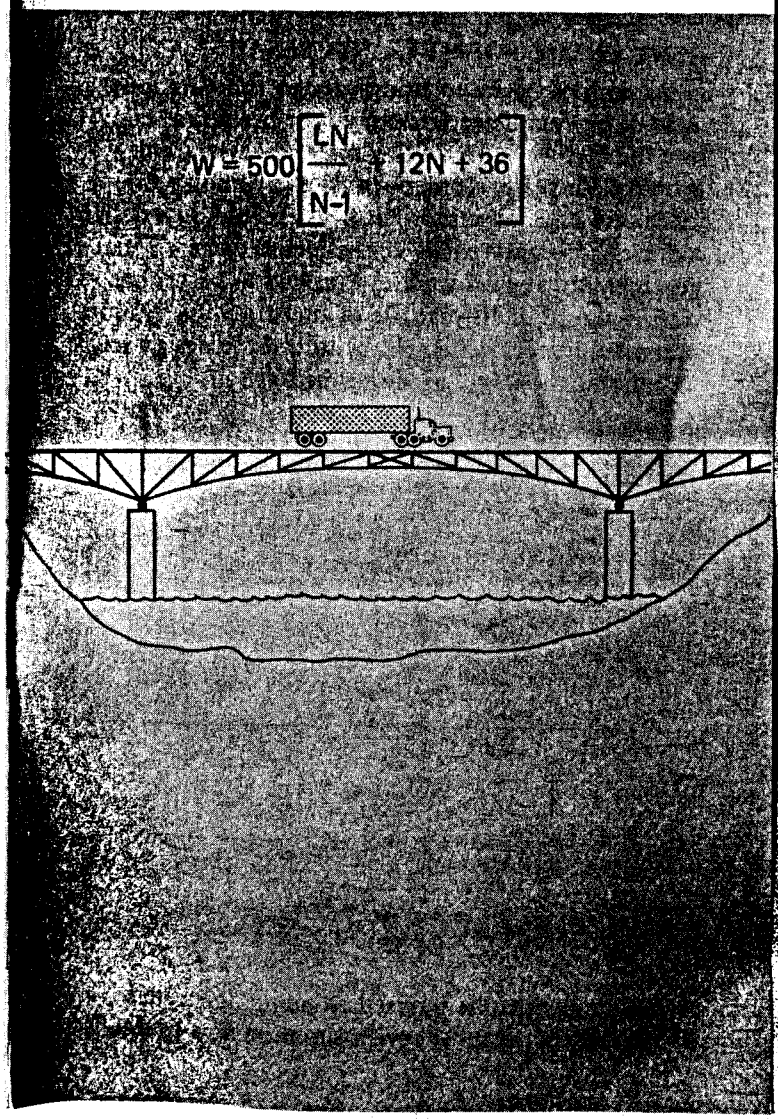
(3) - Gross Truck Weight Limitations 80,000# By Statute
Without Special Permit - Special Permit For
Weights Exceeding 80,000# With Gross Weight
Arbitrarily Capped by Statute

(4) - Both Axle Weights and Gross Weights
Are Applied Together.

BRIDGE GROSS WEIGHT FORMULA

U.S. Department
of Transportation
**Federal Highway
Administration**

March 1982



NOTE—for additional copies contact:
Federal Highway Administration
Office of Traffic Operations, HTO-22
400 7th St., S.W.; Rm. 3103D
Washington, D.C. 20590
(202) 426-1993

HTO-30/5-81(30M)
HTO-33/Rev. 3-82(40M)
HTO-22/R8-82(30M)

Three questions are addressed by this pamphlet with regard to the Bridge Formula. *What is it? Why is it necessary? How is it used?*

WHAT IS IT?

The bridge gross weight formula provides a standard to control the spacing of truck axles on vehicles that use highway bridges.

W = the maximum weight in pounds that can be carried on a group of two or more axles to the nearest 500 pounds.

L = spacing in feet between the outer axles of any two or more consecutive axles.

N = number of axles being considered.

WHY IS THE FORMULA NECESSARY?

An individual set of bridge design computations cannot be completed for every type truck that may use the highways; to do this for every type truck would take years. Consequently, the Nation's bridge engineers have selected what is referenced as a design vehicle. This one vehicle is considered to be representative of *all vehicles* that will use a bridge during the 40 to 50-year life of the structure. A more common description would be to call the design truck an umbrella loading, as shown below:

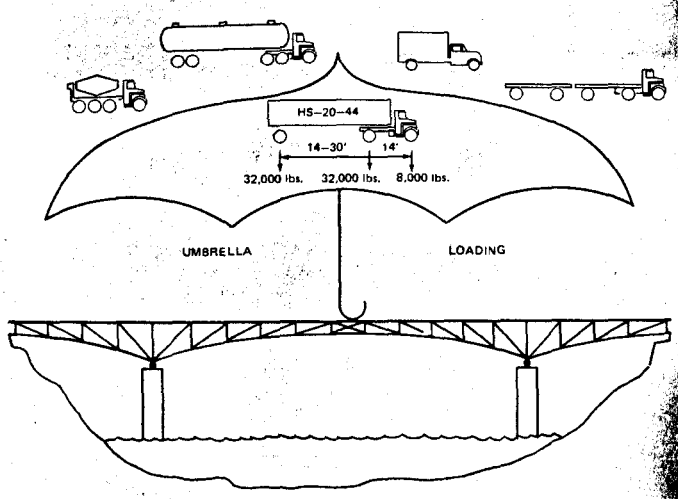


Figure 1

Assuming that the umbrella loading illustrated above creates the most severe situation as a bridge is designed, bridge members are built strong enough to handle the umbrella loading and in effect the bridge is protected from being overstressed by any future truck that may use the structure.

The umbrella loading described in Figure 1, which is used for Interstate highway bridge design, was adopted in 1944 with specific axle weights and spacing as shown. For years enforcement officials have worked to check truck weights to keep the axle loads and gross loads within legal limits. With the passage of the Federal-aid Amendments of 1974, the States also had to become concerned with the spacing of axles when enforcing weight laws on the Interstate System.

The axle spacing is equally as important in design of the bridges as the axle weights. This is illustrated by what happens when a person tries to walk across ice that is hardly thick enough to support his/her weight; the person is likely to fall through. If that person stretched out prone on the same ice and scooted across, it is unlikely that he/she would break through. This is true because the load, or weight, is spread over a larger area in the latter situation. A similar comparison can be made between trucks crossing a bridge:

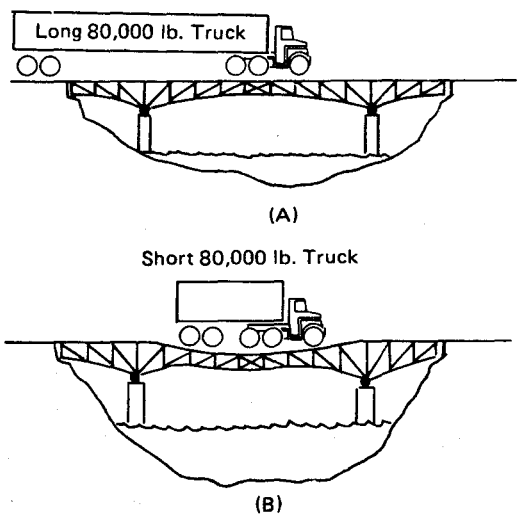


Figure 2

In view (A) of Figure 2, the stress on bridge members as the long truck rolls across is much less than that caused by the short truck in view (B), even though the trucks have the same total weight and individual axle weights. One can see that an extremely long truck would have its load spread out like the

person scooting across the ice. Whereas, the short truck is similar to a person standing up on ice with the total load placed in a limited area.

After the umbrella loading was adopted in 1944, many Interstate bridges were built during the late 1950s and 1960s. Simultaneously, bigger and heavier trucks were being placed into use than had been anticipated in 1944. It was not practical to consider rebuilding all bridges for the newer trucks that either had been or could be placed on the road. The logical and economical action not only was to control the gross and axle weights of trucks but also to control the spacing of the axles. The U.S. Congress concurred with this approach. In 1974, when the higher axle and gross weight limits were adopted for the Interstate System (20,000 pounds—single axle, 34,000 pounds—tandem axle, 80,000 pounds—gross), the Bridge Formula was written into *Section 127 of the *United States Code,* Title 23. The Bridge Formula assures that allowable weight of heavy trucks is correlated with the spacing of axles to prevent overstressing of highway bridges; in other words, preventing an effect similar to a person standing erect on thin ice. The overstressing can occur even when the gross weight and each individual axle weight of a truck are within lawful limits.

** The Federal law does not require application of the Bridge Formula in States that retained the maximum weight limits of 18,000 pounds for single axles, 32,000 pounds for tandem axles, and 73,280 pounds gross weight when the higher limits of 20,000, 34,000 and 80,000 pounds were introduced into law (1974).*

HOW IS THE FORMULA USED?

Some definitions are needed before completing example applications of the Bridge Formula.

- **Gross Weight***—the weight of a vehicle and/or vehicle combination without load plus the weight of any load thereon. The Federal gross weight limit on the Interstate is 80,000 pounds.
- **Single Axle Weight** *—the total weight transmitted by all wheels whose centers may be included between two parallel transverse vertical planes 40 inches apart, extending across the full width of the vehicle. The Federal single axle weight limit on the Interstate is 20,000 pounds.
- **Tandem Axle Weight***—the total weight transmitted to the road by two or more consecutive axles whose centers may be included between parallel vertical planes spaced more than 40 inches and not more than 96 inches apart, extending across the full width of the vehicle. The Federal tandem axle weight limit on the Interstate is 34,000 pounds.

The Federal law states that any consecutive two or more axles may not exceed the weight as computed by the formula even though the single axles, tandem axles, and gross weights are within legal requirements.

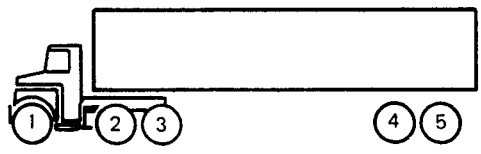


Figure 3

The most common vehicle (axle arrangement) checked for weight limit requirements is shown in Figure 3. While the Bridge Formula law applies to each combination of two or more axles, experience shows that axle combinations numbers 1 through 3, numbers 1 through 5, and numbers 2 through 5 are the critical combinations that must be checked. If these are found satisfactory, others will be satisfactory.

** AASHTO definitions. These weight limits may vary from State-to-State depending on local laws and limits in effect before the Federal limits were established in 1956.*

Permissible gross loads for vehicles in regular operation

Based on weight formula $W = 500\left(\frac{LN}{N-1} + 12N + 36\right)$ modified [1]

[Bridge table B]

Distance in feet between the extremes of any group of 2 or more consecutive axles	Maximum load in pounds carried on any group of 2 or more consecutive axles [2]							
	2 axles	3 axles	4 axles	5 axles	6 axles	7 axles	8 axles	9 axles
4	34,000							
5	34,000							
6	34,000							
7	34,000							
8	34,000	34,000						
9	39,000	42,500						
10	40,000	43,500						
11		44,000						
12		45,000	50,000					
13		45,500	50,500					
14		46,500	51,500					
15		47,000	52,000					
16		48,000	52,500	58,000				
17		48,500	53,500	58,500				
18		49,500	54,000	59,000				
19		50,000	54,500	60,000				
20		51,000	55,500	60,500	66,000			
21		51,500	56,000	61,000	66,500			
22		52,500	56,500	61,500	67,000			
23		53,000	57,500	62,500	68,000			
24		54,000	58,000	63,000	68,500	74,000		
25		54,500	58,500	63,500	69,000	74,500		
26		55,500	59,500	64,000	69,500	75,000		
27		56,000	60,000	65,000	70,000	75,500		
28		57,000	60,500	65,500	71,000	76,500	82,000	
29		57,500	61,500	66,000	71,500	77,000	82,500	
30		58,500	62,000	66,500	72,000	77,500	83,000	
31		59,000	62,500	67,500	72,500	78,000	83,500	
32		60,000	63,500	68,000	73,000	78,500	84,500	90,000
33			64,000	68,500	74,000	79,000	85,000	90,500
34			64,500	69,000	74,500	80,000	85,500	91,000
35			65,500	70,000	75,000	80,500	86,000	91,500
36	Exception (see page 10)		66,000	70,500	75,500	81,000	86,500	92,000
37			66,500	71,000	76,000	81,500	87,000	93,000
38			67,500	72,000	77,000	82,000	87,500	93,500
39			68,000	72,500	77,500	82,500	88,500	94,000
40			68,500	73,000	78,000	83,500	89,000	94,500
41			69,500	73,500	78,500	84,000	89,500	95,000
42			70,000	74,000	79,000	84,500	90,000	95,500
43			70,500	75,000	80,000	85,000	90,500	96,000
44			71,500	75,500	80,500	85,500	91,000	96,500
45			72,000	76,000	81,000	86,000	91,500	97,500
46			72,500	76,500	81,500	87,000	92,500	98,000
47			73,500	77,500	82,000	87,500	93,000	98,500
48			74,000	78,000	83,000	88,000	93,500	99,000
49			74,500	78,500	83,500	88,500	94,000	99,500
50			75,500	79,000	84,000	89,000	94,500	100,000
51			76,000	80,000	84,500	89,500	95,000	100,500
52			76,500	80,500	85,000	90,500	95,500	101,000
53			77,500	81,000	86,000	91,000	96,500	102,000
54			78,000	81,500	86,500	91,500	97,000	102,500
55			78,500	82,500	87,000	92,000	97,500	103,000
56			79,500	83,000	87,500	92,500	98,000	103,500
57	Interstate Gross Weight Limit		80,000	83,500	88,000	93,000	98,500	104,000
58				84,000	89,000	94,000	99,000	104,500
59				85,000	89,500	94,500	99,500	105,000
60				85,500	90,000	95,000	100,500	105,500

Tandem Axle (by definition)

[1] The permissible loads are computed to the nearest 500 pounds. The modification consists in limiting the maximum load on any single axle to 20,000 pounds.

[2] The following loaded vehicles must not operate over H15-44 bridges: 3-S2 (5 axles) with wheelbase less than 38 feet; 2-S1-2 (5 axle) with wheelbase less than 45 feet; 3-3 (6 axle) with wheelbase less than 45 feet; and 7-, 8-, and 9-axle vehicles regardless of wheelbase.

The vehicle with weights and axle dimensions as shown in Figure 4 will be used to illustrate a Bridge Formula check.

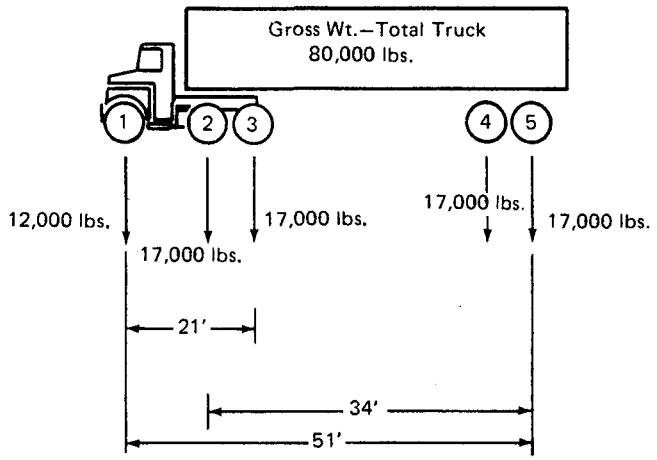


Figure 4

Before checking the axle 1 through 3 combination, a check should be made to see that single, tandem and gross weights are satisfied. The single axle Number 1 does not exceed 20,000 pounds, tandems 2–3 and 4–5 do not exceed 34,000 pounds, and the gross weight does not exceed 80,000 pounds. Thus, these requirements are satisfied so the first Bridge Formula combination is checked as follows:

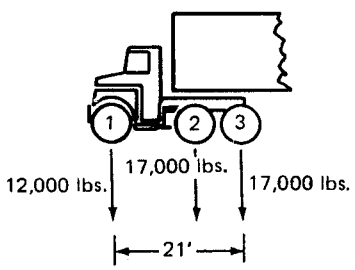


Figure 5

Check of 1 thru 3

W (actual weight) = 12,000 + 17,000 + 17,000 = 46,000 pounds (Figure 5).

N = 3 axles.

L = 21 feet.

$$W \text{ maximum} = 500\left(\frac{LN}{N-1} + 12N + 36\right)$$

$$= 500\left[\frac{(21\times 3)}{(3-1)} + (12\times 3) + 36\right] = 51{,}500\#.$$

W maximum = 51,500# which is more than the actual weight of 46,000# so the Bridge Formula requirement is satisfied.

This same number (51,500#) could have been obtained from Bridge Table B as shown by reading down the left side to L = 21 and across to the right where N = 3.

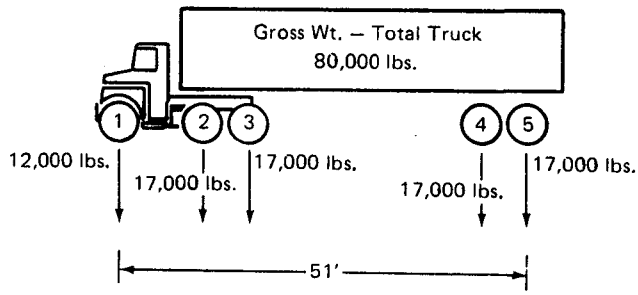


Figure 6

Now check axles 1 thru 5

W (actual) = 12,000 + 17,000 + 17,000 + 17,000 + 17,000 = 80,000# (Figure 6).

W maximum, from Table B for L of 51 feet and N of 5 = 80,000#.

Therefore, this axle spacing is satisfactory.

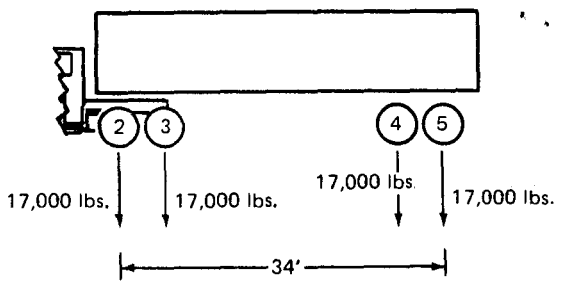


Figure 7

Now check axles 2 thru 5

W (actual) = 17,000 + 17,000 + 17,000 + 17,000 = 68,000# (Figure 7).

W maximum, from Table B for "L" of 34 feet and "N" of 4 = 64,500#.

This is a *"TILT"* or violation in that the actual weight exceeds the maximum allowed weight for the given axle spacing. To correct the situation, some load must be removed from the truck or the axle spacing (34-foot dimension) increased.

Exception to Formula and Table B

There is one exception to use of the formula or Table B—two consecutive sets of tandem axles may carry a gross load of 34,000 pounds each providing the overall distance between the first and last axles of such consecutive sets of tandem axles is 36 feet or more. For example, a 5 axle truck tractor semi-trailer may be used to haul a full 34,000 pounds on the tandem of the tractor (axles 2 and 3) and the tandem of the trailer (axles 4 and 5) provided there is a spacing of 36 feet or more between axles 2 and 5. A spacing of 36 feet or more for axles 2 through 5 is satisfactory for an actual W of 68,000 pounds even though the formula or Table B computes W maximum to be 66,000 to 67,500 pounds for spacings of 36 to 38 feet. This special exception is stated in the Federal law.

Bridge Formula Application to Single Unit Trucks

The same procedure described above can be used to check any axle combinations but as a general rule several axles spaced closely together will usually give the most critical situation.

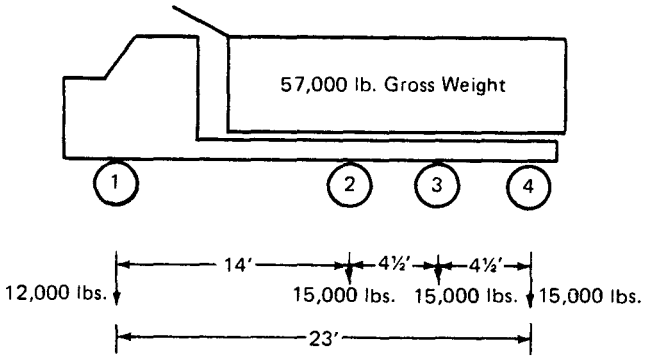


Figure 8

The truck in Figure 8 satisfies single axle restrictions (12,000# is less than 20,000#), tandem axle restrictions (30,000# is less than 34,000#) and gross limits (57,000# is less than 80,000#). With these restrictions satisfied a check will be made for Bridge Formula requirements, axles 1 through 4.

W (actual) = 12,000 + 15,000 + 15,000 + 15,000 = 57,000#.

W maximum for "N" of 4 and "L" of 23 feet = 57,500 from Table "B".

Since axles 1 thru 4 are satisfactory, check axles 2 thru 4:

W (actual) = 15,000 + 15,000 + 15,000 = 45,000#.

W maximum for "N" of 3 and "L" of 9 feet = 42,500# (From Table B).

This a *TILT* or a violation. The load would have to be reduced, axles added, or spacing changed to meet requirements.

CAUTION

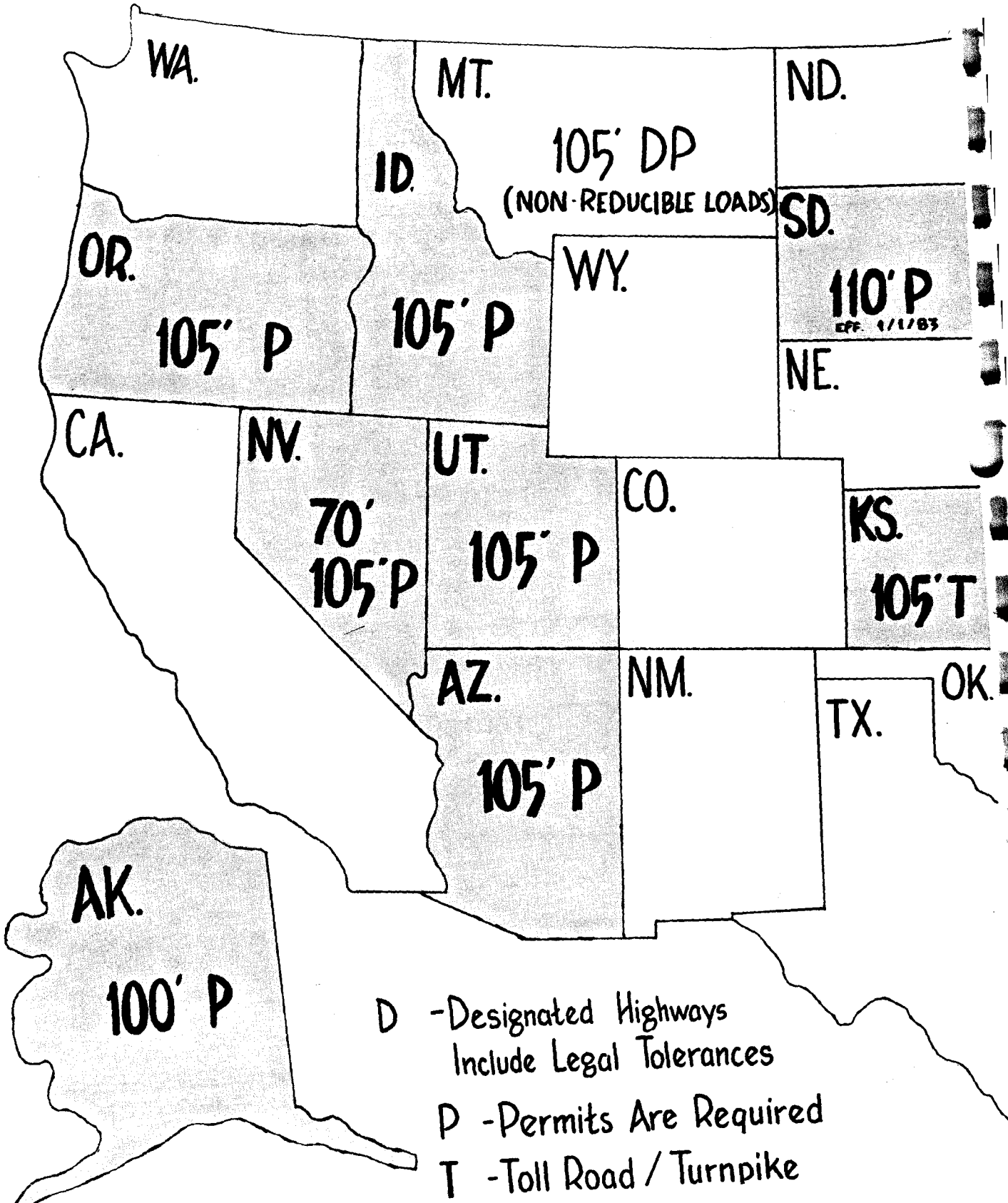
This pamphlet has attempted to explain the purpose of the bridge formula and Federal requirements applicable to the Interstate System, but procedures to determine the related weight limits and axle spacing requirements for specific vehicles may vary from State to State.

FORMULA 'B' $W = 500\left(\frac{LN}{N-1} + 12N + 36\right)$

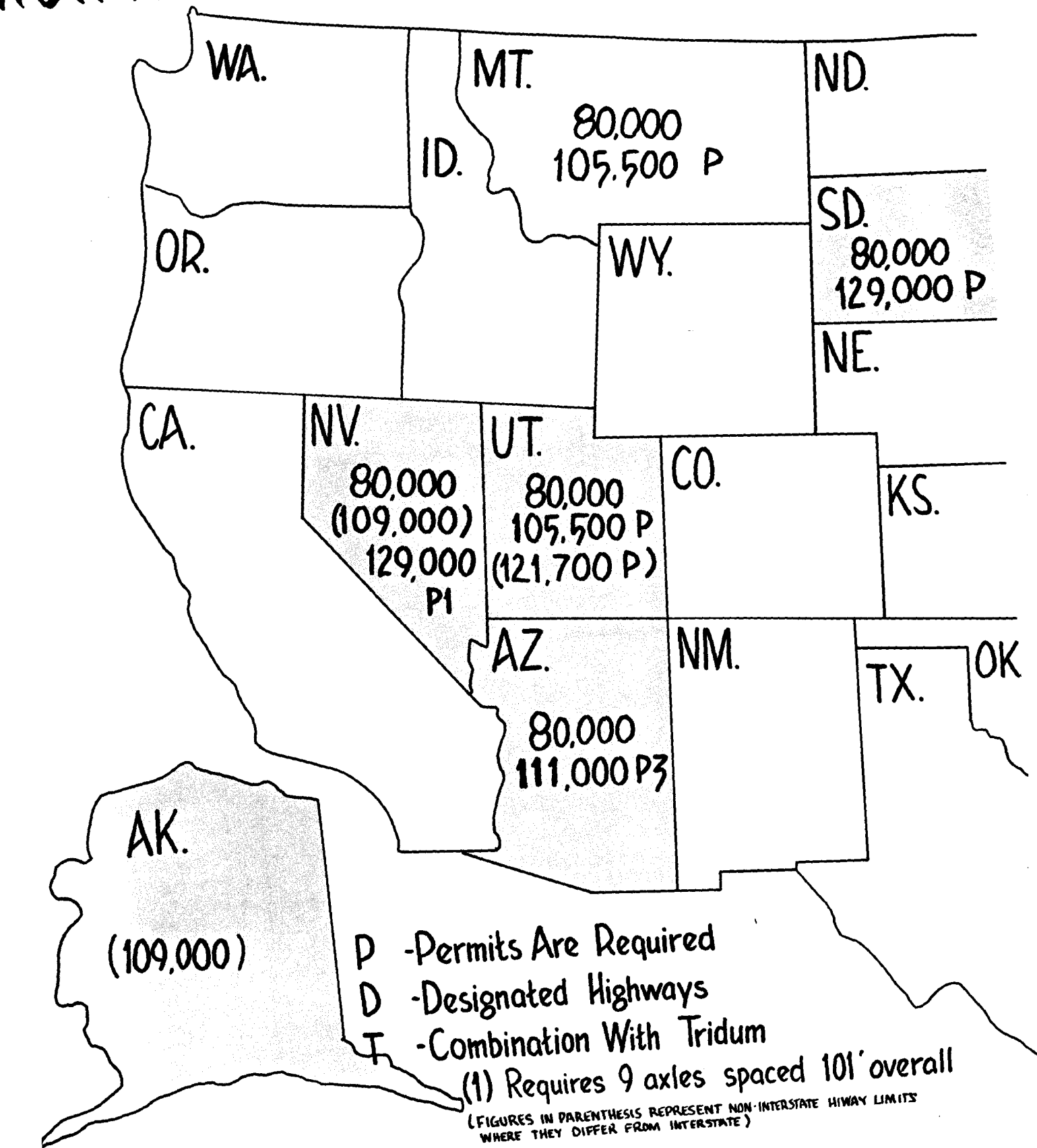
FT.	2 AXLES MT	3 AXLES MT	4 AXLES MT	5 AXLES MT	6 AXLES MT	7 AXLES MT	8 AXLES MT	9 AXLES MT
4	34,000							
5	34,000							
6	34,000							
7	34,000							
8	36,000	42,000						
9	39,000	42,750						
10	40,000	43,500						
11		44,250						
12		45,000	50,000					
13		45,750	50,660					
14		46,500	51,330					
15		47,250	52,000					
16		48,000	52,660	58,000				
17		48,750	53,330	58,620				
18		49,500	54,000	59,250				
19		50,250	54,660	59,870				
20		51,000	55,330	60,500	66,000			
21		51,750	56,000	61,120	66,600			
22		52,500	56,660	61,750	67,200			
23		53,250	57,330	62,370	67,800			
24		54,000	58,000	63,000	68,400	74,000		
25		54,750	58,660	63,620	69,000	74,580		
26		55,500	59,330	64,250	69,600	75,160		
27		56,250	60,000	64,870	70,200	75,750		
28		57,000	60,660	65,500	70,800	76,330	82,000	
29		57,750	61,330	66,120	71,400	76,910	82,570	
30		58,500	62,000	66,750	72,000	77,500	83,140	
31		59,250	62,660	67,370	72,600	78,080	83,170	
32		60,000	63,330	68,000	73,200	78,660	84,280	90,000
33			64,000	68,620	73,800	79,250	84,850	90,560
34			64,660	69,250	74,400	79,830	85,420	91,120
35			65,330	69,870	75,000	80,410	86,000	91,680
36			66,000	70,500	75,600	81,000	86,570	92,250
37			66,000	71,120	76,200	81,580	87,140	92,810
38			66,000	71,750	76,800	82,106	87,710	93,370
39			66,000	72,370	77,400	82,750	88,280	93,930
40			66,660	73,000	78,000	83,330	88,850	94,500
41			69,330	73,620	78,600	83,910	89,420	95,060
42			70,000	74,250	79,200	84,500	90,000	95,620
43			70,660	74,870	79,800	85,080	90,570	96,180
44			71,330	75,500	80,400	85,660	91,140	96,750
45			72,000	76,120	81,000	86,250	91,710	97,310
46			72,660	76,750	81,600	86,830	92,280	97,870
47			73,330	77,370	82,200	87,410	92,850	98,430
48			74,000	78,000	82,800	88,000	93,420	99,000
49			74,660	78,620	83,400	88,580	94,000	99,560
50			75,330	79,250	84,000	89,160	94,570	100,120
51			76,000	79,870	84,600	89,750	95,140	100,680
52			76,660	80,500	85,200	90,330	95,710	101,250
53			77,330	81,125	85,800	90,190	96,280	101,810
54			78,000	81,175	86,400	91,500	96,850	102,370
55			78,660	82,370	87,000	92,080	97,420	102,930
56			79,330	83,000	87,600	92,660	98,000	103,500
57			80,000	83,620	88,200	93,250	98,570	104,060
58				84,250	88,800	93,830	99,140	104,620
59				84,870	89,400	94,410	99,710	105,180
60				85,500	90,000	95,000	100,280	105,500
61				86,125	90,600	95,580	100,850	106,310
62				86,750	91,200	96,160	101,420	106,875
63				87,375	91,800	96,750	102,000	107,435
64				88,000	92,400	97,330	102,570	108,000
65				88,625	93,000	97,910	103,140	108,560
66				89,250	93,600	98,550	103,710	109,125
67				89,875	94,200	99,080	104,280	109,685
68				90,500	94,800	99,660	104,850	110,250
69				91,125	95,400	100,250	105,420	110,810
70				91,750	96,000	100,830	105,500	111,375
71				92,375	96,600	101,410	106,570	111,935
72				93,000	97,200	102,000	107,140	112,500
73				93,625	97,800	102,580	107,710	113,060
74				94,250	98,400	103,160	108,285	113,625
75				94,875	99,000	103,750	108,855	114,185
76				95,500	99,600	104,330	109,425	114,750
77				96,125	100,200	104,910	110,000	115,310
78				96,750	100,800	105,500	110,570	115,875
79				97,375	101,400	106,080	111,140	116,435
80				98,000	102,000	106,665	111,710	117,000
81				98,625	102,600	107,250	112,285	117,560
82				99,250	103,200	107,830	112,855	118,125
83				99,875	103,800	108,415	113,425	118,685
84					104,400	109,000	114,000	119,250
85					105,000	109,580	114,570	119,810
86					105,600	110,165	115,140	120,375
87					106,200	110,750	115,710	120,935
88					106,800	111,330	116,285	121,500
89					107,400	111,915	116,855	122,060
90					108,000	112,500	117,425	122,625
91					108,600	113,080	118,000	123,185

REVISED BRIDGE TABLE (HB437)

Maximum Lengths Long Combinations



Maximum Weights Highway Combinations



Gross Weight Chart - Restricted Route - Load Permit

Computed to nearest "0" by the formula in Section 61-10-107 M.C.A.

Formula = W 500 (LN/N minus 1 plus 12N plus 36) in which W = Gross Weight, L = WheelBase in Feet, and N = Number of Axles. The Formula provides for maximum gross weight allowed on any vehicle or combination of vehicles.

The formula provides for maximum gross weight for any group of axles.

No tandem axle to exceed 34,000 pounds. No single axle to exceed 20,000 pounds.

The Distance Between First and Last Axles in any group of axles, Vehicle, or combination of vehicles	2 Axles	3 Axles	4 Axles	5 Axles	6 Axles	7 Axles	8 Axles	9 Axles
61						95,580	100,850	105,500
62						96,160	101,420	105,500
63						96,750	102,000	105,500
64						97,330	102,570	105,500
65						97,910	103,140	105,500
66						98,500	103,710	105,500
67						99,080	104,280	105,500
68						99,660	104,850	105,500
69						100,250	105,420	105,500
70						100,830	105,500	105,500
71						101,420	105,500	105,000
72						102,000	105,500	105,500
73						102,580	105,500	105,500
74						103,160	105,500	105,500
75						103,750	105,500	105,500
76						104,330	105,500	105,500
77						104,910	105,500	105,500
78 and Over						105,500	105,500	105,500

THE MAXIMUM LOAD UNDER THE FORMULA IS:

1 Axle ---- 20,000 LBS.
2 Axles ---- 40,000 LBS.
3 Axles ---- 60,000 LBS
4 Axles ---- 80,000 LBS.)
5 Axles ---- 85,500 LBS.)
6 Axles ---- 90,000 LBS.)

(AS SHOWN ON CHART, EFFECTIVE APRIL 4, 1975, G.V.W. FORM 30-B.)

Montana Motor Carriers Ex

HOUSE BILL 437

TRUCK SIZE AND WEIGHT LEGISLATION

The bill proposes to lift the artificial cap on gross weights of truck combinations now permitted by law to operate on Montana highways and allows the gross weight of vehicle combinations to be determined by the "bridge formula" adopted by the Legislature in 1967. The "bridge formula" is also Federal law and is designed to protect highway bridges from weight concentration requiring the spacing of truck axles and the distribution of weight over multiple axles at specified distances.

The bill would also allow an additional ten feet....from 85 feet to 95 feet....in length for vehicle combinations operating under special permits.

Existing law provides for vehicle axle weight maximums to protect highway pavements and sets a maximum of 20,000 pounds for a single axle and 34.000 pounds for a tandem or double axle. The bill would not change the allowable axle weights.

Axle spacing is equally as important in design of bridges and impact on pavements as is axle weights. This is illustrated by what happens when a person tries to walk across ice that is hardly thick enough to support a person's weight. The result is he or she falls through the ice. If a person stretches out prone on the same ice and scoots across it, it is unlikely that the ice will break. This is true because the load or weight is spread over a larger area. A similar comparison can be made between trucks crossing a bridge.

The bill would not allow for the operation of any new vehicle combinations such as "triple trailers". It specifically limits the number of trailers permitted in a vehicle combination to no more than two.

It would allow an increase in gross vehicle weights as determined by the "bridge formula" without exceeding or approaching the present axle weight limitations. It would result in more truck productivity and less transportation costs.

For example, using a seven-axle vehicle combination, the gross vehicle weight would increase from the present capped weight of 105,500 pounds to 112,500 pounds with an average axle weight of 17,000 pounds, considerably under the maximum allowable axle weight.

On an eight-axle vehicle combination, the gross vehicle weight would increase from the present 105,500 pounds to 117,425 pounds with an average axle weight of 15,154 pounds..again considerably under the axle maximum allowable weight.

On a nine-axle combination, the gross vehicle weight would increase from the present 105,500 pounds to 122,625 pounds with an average axle weight of 14,078 pounds, considerably under the axle maximum allowable weight.

Highway pavements are affected by the amount of weight that the axles bear and the number of times the axle impacts the pavement when a vehicle is in motion. This bill insures against the application of excessive axle weights at the same time provides for more freight capacity for a vehicle combination.

Illegally overweight trucks that result in heavier than legal axle loads are a contributing factor to highway deterioration. The amount of gross weight a truck carries is not a factor in highway damage if proper axle weights are adhered to.

Other legislation to be considered by this Legislature is designed to deal with that problem....one measure would increase overweight fines 300 percent.

Controlling truck speed is another factor and the motor carrier industry supports strict enforcement of the 55 m.p.h. limit for trucks.

SIZE AND WEIGHT BILL

SUMMARY OUTLINE

(1) Would increase vehicle combinations by ten feet now permitted at 85' to 95'.

(2) Bill removes arbitrary gross weight cap on vehicle combinations.

(3) Does not change existing axle weight maximums designed to protect highway pavements, now set at 20,000 pounds for a single axle and 34,000 pounds for a tandem or double axle.

(4) Provides that gross weight of combinations with various axle groupings be established by the existing bridge formula in both State and Federal law without exceeding axle weights.

   (a) 7 axle combination from 105,500 pounds to 112,500 pounds, average axle weight would be 17,000 pounds.

   (b) 8 axle combination from 105,500 pounds to 117,425 pounds, average axle weight would be 15,154 pounds.

   (c) 9 axle combination from 105,500 pounds to 122,625 pounds, average axle weight would be 14,078 pounds.

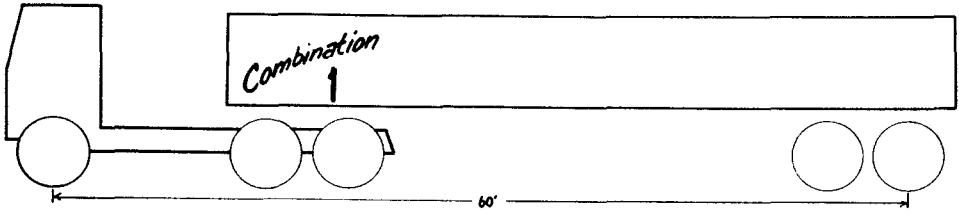
(5) Would not allow triple trailers, limits the number of trailers in a combination to no more than two.

(6) Would provide for more truck productivity and lessen transportation costs while insuring against application of excessive vehicle combination axle weights impacting the highways.

(See reverse side for Truck Combination Diagram)

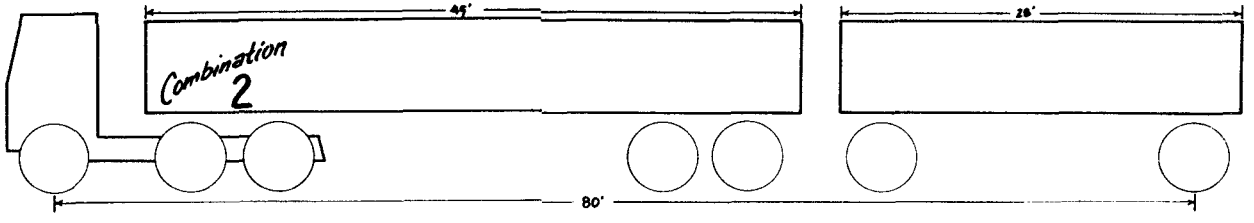
TRUCK WEIGHT & LENGTH COMPARISON

65' 5 AXLE STANDARD SEMI TRAILER COMBINATION



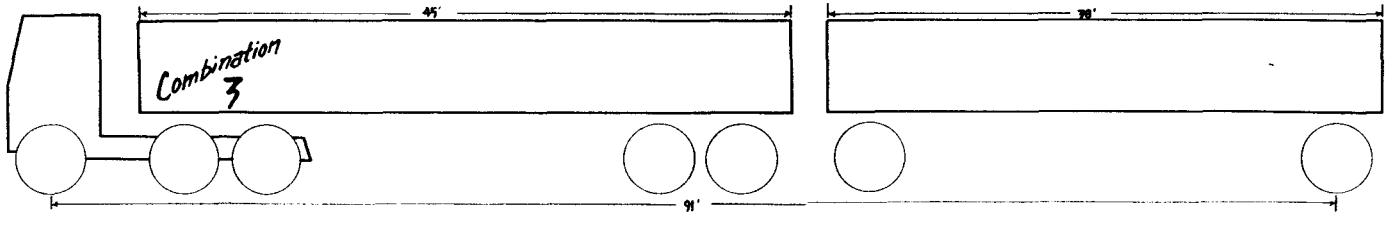
Axle Maximum	12,000*	34,000*		34,000*	80,000*

85' 7 AXLE SEMI TRAILER - TRAILER COMBINATION



Axle Maximum	12,000*	34,000*	34,000*	20,000*	20,000*	120,000*
85' Current Formula MONTANA LAW GVW INCREASE	10,000*	31,500*	28,000*	19,000*	17,000*	105,500*
85' Formula "B" LISTING GVW CAPACITY	10,000*	32,000*	28,500*	19,165*	17,000*	106,665*

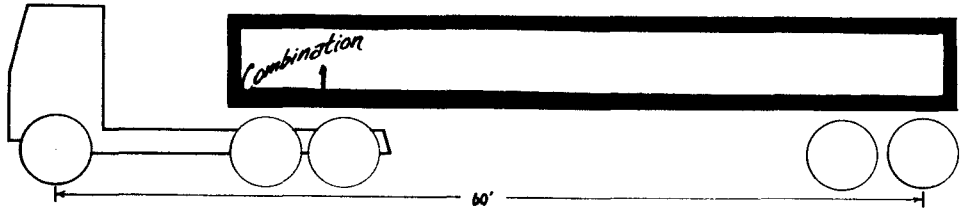
95' 7 AXLE SEMI TRAILER - TRAILER COMBINATION



Axle Maximum	12,000*	34,000*	34,000*	20,000*	20,000*	120,000*
95' Formula "B" LISTING GVW CAPACITY	10,500*	33,500*	30,500*	19,750*	18,250*	112,500*

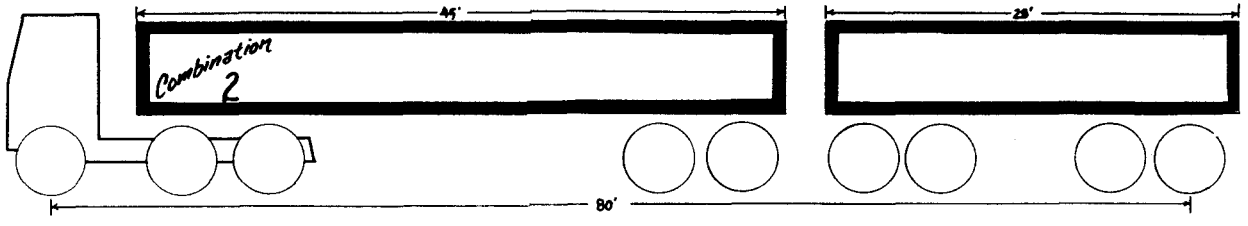
TRUCK WEIGHT & LENGTH COMPARISON

65' 5 AXLE STANDARD SEMI TRAILER COMBINATION



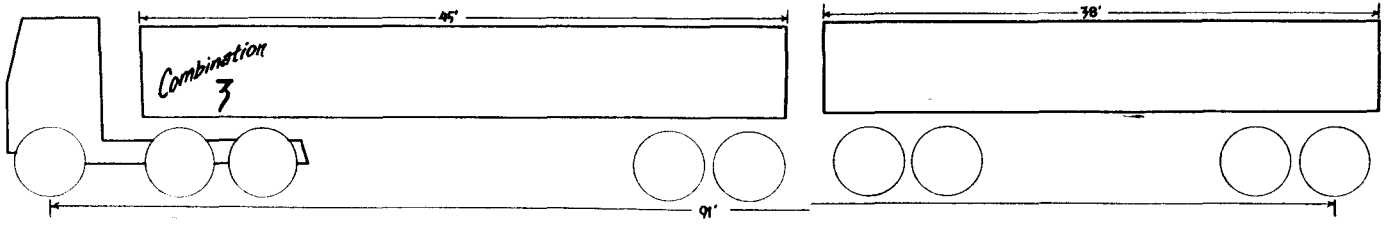
Axle Maximum	12,000*	34,000*	34,000*	80,000*

85' 9 AXLE SEMI TRAILER - TRAILER COMBINATION



Axle Maximum	12,000*	34,000*	34,000*	34,000*	34,000*	148,000*
85' Current Formula (MONTANA LIMIT GVW WEIGHT CAP)	10,000*	23,875*	23,875*	23,875*	23,875*	105,500*
85' Formula "B" (LIFTING GVW CAP)	10,000*	26,750*	26,750*	26,750*	26,750*	117,000*

95' 9 AXLE SEMI TRAILER - TRAILER COMBINATION



Axle Maximum	12,000*	34,000*	34,000*	34,000*	34,000*	148,000*
95' Formula "B" (LIFTING GVW CAP)	10,005*	28,155*	28,155*	28,155*	28,155*	122,625*

Mont. Motor Carriers

AMERICAN
TRUCKING
ASSOCIATIONS, INC.

1616 P Street, N.W., Washington, D. C. 20036

PRESIDENT
Bennett C. Whitlock, Jr.
(202) 797-5212

January 21, 1983

Mr. A. M. Rosenthal, Executive Editor
The New York Times
229 West 43rd Street
New York, New York 10036

Dear Mr. Rosenthal:

If trucks were people, they would be suing Tom Wicker for libel. In his column in the New York Times of Jan. 16, Mr. Wicker charged that the truck size and weight standards set by Congress in the new highway user tax law would unleash "killer trucks" on the highways.

It is not "killer trucks" we have to fear; it is "killer journalists," who shoot from the hip without pausing to check the facts.

The new legislation mandates nationwide adoption of weight standards originally approved by the federal government in 1975, including a minimum gross weight of 80,000 pounds. It also mandates use of twin-trailer combinations while a companion bill increases width from 96 to 102 inches (the same width already allowed for buses).

Mr. Wicker claims the Interstate highway system was constructed for maximum weights of 60,000 pounds.

Fact: The Interstate system was constructed for weights much greater than 80,000 pounds. In fact, this is a defense highway system officially so designated and designed to carry the heaviest of military vehicles. It is absurd to suggest that trucks damage something by using it at weights less than for which it was designed.

Mr. Wicker claims that excessive highway damage to trucks has been proved by a study by the American Association of State Highway and Transportation Officials (AASHTO).

Fact: That study has been discounted time and again by reputable highway engineers. Too many pertinent factors, such as weather, chemicals and the natural aging process, were purposely omitted from the study. AASHTO's report on the study warned that it was not conducted to assess damage by weight and any such conclusions could not be supported by the study.

But it is in the area of safety that Mr. Wicker charges blindly ahead without regard to the facts. For example, he contends that twin trailers in 1981 were involved in accidents resulting in fatalities at the rate of 12.2 per 100 million miles, citing as his source the Department of Transportation's Fatal Accident Report System (FARS).

Fact: The DOT's Fatal Accident Report System does not even develop fatality rates.

Fact: The same FARS report does give the number of fatalities for accidents involving twin trailers -- 177 out of a grand total of 49,392 -- less than one-half of one percent!

Fact: The Supreme Court of the United States on two separate occasions (in striking down bans on twin trailers in Iowa and Wisconsin) pronounced these combinations to be as safe as -- if not safer than -- the typical tractor-semitrailer unit.

Fact: Thirty-six states already allow the 65-foot twin-trailer combination. Most of them have allowed them for a number of years. Not one state has ever considered rescinding the law permitting their use -- a tribute to their safety performance.

In other words, 36 state governments and the U. S. Supreme Court consider these units to be safe, but Tom Wicker does not.

Fact: Only three states -- Arkansas, Illinois and Missouri -- have gross weight truck maximums of less than 80,000 pounds.

Are we to believe that 47 state governments are knowingly allowing "killer trucks" to roar up and down their highways causing deaths and injuries?

It may surprise Mr. Wicker, but no trucking company would knowingly put a "killer truck" on the highway, and no professional driver would get behind the wheel of one. That may not make good reading in a newspaper column, but it makes good sense and it happens to be a fact.

These, then, are the facts. And while Mr. Wicker is entitled to his opinions, as are all of us, he is not entitled to his own set of facts.

In the interest of fairness and responsible journalism, we request that this rebuttal receive the same prominent and widespread distribution you have given Mr. Wicker's column.

Sincerely,

Bennett C. Whitlock, Jr.

BCW/rh

NEW YORK TIMES 1-16-83

IN THE NATION

Welcome, Killer Trucks

By Tom Wicker

Just in time for Christmas, the lame-duck session of the 97th Congress handed a lavish gift to the truck and highway lobbies — killer trucks four times more lethal to human life than a passenger automobile and exponentially more destructive of the roads than any other vehicle.

Laws banning 65-foot tandem trailers — two trailers hitched together — from the highways of 14 states were effectively overridden, beginning April 1, 1983. After that, states that continue to ban these behemoths (which with a cab to haul them can be 75 to 80 feet long) could lose Federal highway aid; none will likely risk it.

The same legislation will permit such trucks to be widened from 96 to 102 inches, and to be heavier by 6,720 pounds, up to a total of 80,000 pounds (the weight of machine and cargo combined).

Nine months after the law takes effect, moreover, these killer trucks are also to be allowed on city streets that serve as access lanes to the interstate highways or to truck terminals, major pickup points and fuel depots.

For New York City, which has no bypass or circumferential highways, the State Department of Transportation says the practical effect will be to open *all city streets* to this destructive new traffic. The legislation — part of the law increasing the Federal gasoline tax — overrides a city ordinance restricting trucks to less than 55 feet in length, 96 inches in width and a maximum weight of 73,280 pounds.

Battered and jolted New Yorkers do not need to be told what new depredations the killer trucks will wreak on the pot-holed streets that already advertise the city's fiscal crisis. But even New Yorkers, weaned as they are on bad news, may not be aware that every year *one of three* tandem-trailer trucks has an accident, compared to one of only 12 highway vehicles overall.

And if one of these frequent killer-truck accidents happens to involve a passenger car, the Center for Auto Safety reports, the occupant of the car is 29 times more likely to die than the occupant of the truck.

In 1981, according to the Fatal Accident Reporting System of the Federal Department of Transportation, there were 2.96 fatalities per 100 million vehicle miles traveled in passenger cars, 5.6 fatalities for the same traffic in single trucks and *12.2 fatalities per 100 million tandem-truck miles.*

Those figures probably will get worse under the new weight allowance, because Congress made no requirement for improved braking systems (as it did when it last increased allowable truck weights). The 80,000-pounders can go right on using brakes designed for lighter trucks.

But these are killer trucks for highways as well as people. The interstate system, in fact, was constructed for maximum weights of 60,000 pounds, against the 80,000 pounds now to be allowed. Federal highway officials estimate that the destructive impact of a single 80,000-pound truck is as great as that of 9,600 passenger cars moving over the same stretch of road.

Put another way, an 80,000-pound, five-axle truck weighs only as much as about 20 cars. But a study by the American Association of State Highway and Transportation Officials shows that pavement damage increases exponentially (to the fourth power) with increases in axle weight. So the weight increase just allowed by the lame-ducks will result in a *highway damage increase* of about 15 percent.

Thus, legislation aimed at repairing the highways includes provisions guaranteed to damage them as fast as they're rebuilt; some experts think the increased damage will more than offset the increased tax revenues. And don't kid yourself that the trucking companies will be paying their fair share of the costs.

A D.O.T. cost allocation study, based on 1977, showed that auto drivers were paying 110 percent of the maintenance costs of highway damage for which they were responsible; trucks were paying only 79 percent of repair costs for the damage they caused; and trucks weighing over 75,000 pounds were paying *only* 45 *percent* of their true share. Georgia and Florida studies confirmed the Federal figures.

The lame-duck bill won't come close to removing this inequity, which results from the greater damage done by larger vehicles. The D.O.T. legislation originally boosted the average annual fees and taxes on commercial trucks from about $250 to about $2,700; the House cut that to $2,200, the Senate to $1,600 and the conference committee added a provision that overall fees could average no more than $1,900 by 1988.

Truckers will be paying the new gas tax too; but they're still getting off lightly. In fact, they may never pay the higher fees, because the lame-ducks thoughtfully decided not to put them into effect until July 1, 1984.

That gives truck lobbyists a year and a half to get the new fees repealed or modified. After the gift they just extracted from Congress, for which the rest of us will pay in lives, money and discomfort, don't bet they can't do it.

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HOUSE HIGHWAY AND TRANSPORTATION COMMITTEE HEARING HB 437
February 3, 1983

Outline of statement by Frank E. (Ted) Hawley,
Staff Engineering Consultant, Western Highway Institute

1. Personal Background: 36 years with Federal Highway Administration in research, engineering and administration. Regional Administrator in San Francisco. Metropolitan Transportation Commissioner. Supervised regional BMCS (motor carrier safety) program. Two years with Western Highway Institute--conduct studies and monitor research on heavy truck safety and performance.

2. Western Highway Institute: nonaction and nonprofit organization conducting tests and research for the trucking industry in western U.S. and Canada. Tests on long combinations initiated in Montana in 1966-67.

3. Current Status: long combinations (Rocky Mountain doubles, turnpike doubles, etc.) now authorized in 22 jurisdictions: twelve states, 4 Canadian provinces, 6 eastern turnpikes, Idaho, Nevada, Oregon, Utah operating since 1968.

4. Safety Record: Impressive record for safe operation has built up over last 15 years. We know of no accident where the weight or size was a factor. Data from 20 trucking companies operating long combinations for 50 million miles (1980) produced a rate of 1.07 compared to 7.79 for all trucks and 6.01 for passenger cars.
Utah had only four accidents in 12 years of long combination operation. Most studies on truck accidents and safety do not address long combinations because accidents are so infrequent.

5. Reasons for good record:

   a. All operations under State permit and regulations

   b. Professional and experienced drivers

   c. Superior brake capacity

   d. Better maintenance and equipment

6. "One truck equals 9,600 passenger cars:" This frequently-heard claim comes from procedures developed from an AASHTO (American Association of State Highway and Transportation Officials) test road project in the late 50's. Axle loads were related to pavement wear under carefully controlled conditions and this made it possible to assign a factor or "equivalency" to different axle weights. Thus, an 18,000 lb. single-axle is 1.00, a 16,000 lb. axle is 0.61, a 24,000 lb. axle is 3.33, and so forth. A 5-axle tractor-semi is 2.40 and a two-axle passenger car is .0004. So, 2.40 ÷ .0004 = 9,600 or one truck equals 9,600 cars! The absurdity of this calculation becomes evident when it is pointed out that there were no cars or even light trucks in the test road.

   The real problem comes, though, when someone tries to apply the AASHTO factors to mixed traffic on operating highways. There are simply too many other things that influence pavement performance (climate, soil conditions, construction materials, maintenance, etc.) to make these kinds of comparisons valid. The "9,600 to 1" statement is just a numbers game.

7. WHI's 17 years of testing and research on long truck combinations has shown that such combinations can carry more goods with less adverse impact on pavement and bridges; that they can operate compatibly on modern highways with other traffic; that they have adequate horsepower and traction capabilities; that they meet and even exceed established

braking and braking stability standards; that fuel savings of up to 1/3 can be achieved and that their safety performance is as good or better than other highway vehicles. The many years of safe and compatible operation by these units are the ultimate proof.

MAA
Exhibit
HB 437

S U M M A R Y

OF QUESTIONNAIRE OF GAO'S Gen Acct Office REPORT TO CONGRESS ON EXCESSIVE TRUCK WEIGHT

* * * * *

The responses of the Montana Highway Department itself to the questions propounded by the Comptroller General for the preparation of this report, and which seem particularly relevant to this hearing on the proposal to further increase weight limits for trucks in Montana, are as follows:

1. Montana Highway Department officials were asked to rate various factors which contributed to our highway deterioration. They responded that, "heavy trucks," "trucks under permit" and "illegal overweight trucks" were all contributing to the highway deterioration to "a substantial extent." "Lack of funds" and the "age of the roads" were the only classifications rated higher by our highway officials as problems -- and obviously, those are areas over which there is no local control. Automobile traffic, on the other hand, was classed as having "little or no effect" on Montana's highway deterioration. (page 13)

2. Our Highway Department officials were asked to state what percentage of our interstate highways were presently built for heavy truck traffic (over 26,000 pounds). They responded that only twenty percent (20%) of Montana's interstate was built for this heavy traffic. (page 15)

A logical extension of this inquiry would be to look at neighboring states which now allow heavier and/or longer trucks to see if their interstates are in a similarly unprepared state for heavier loads.

Those neighboring states which now allow heavier loads are: South Dakota who responded by saying that ninety percent (90%) of its interstate was built for heavy traffic, (page 15); and Idaho, who responded that ninety-five percent (95%) of its interstate was built for heavy traffic. (page 15).

Montana's twenty percent (20%) clearly shows how inadequate our roads are and those are roads built to withstand 26,000 pounds.

3. Montana was asked to estimate its needs for resurfacing, restoration and rehabilitation of its highways. Montana responded that it had 6,737 miles needing these improvements at an estimated cost of $1,852,563,000. Contract this position to South Dakota which claimed more miles, but a total cost of $368,104,000 -- less than 20% of our cost bill. Compared to Idaho, which has much less mileage, estimated their cost at $150,000,000, about 8% of our cost bill.

The conclusion seems inescapable that South Dakota and Idaho are much better prepared for heavier trucks than Montana. Whether it is a wise decision for either of these two states, however, is a separate question.

4. The study also sheds some light on what the future reasonably holds for increasing truck traffic and truck weight, based upon the last ten (10) years. The Montana highway officials stated that in the last ten (10) years, the percentage of trucks in Montana traffic has increased greatly; that the volume increased greatly and the average truck weight has similarly "increased greatly." On the other hand, local truck volume only increased moderately during the same period. (page 17)

5. Montana was asked if it has completed any studies in the area of contrasting the economic benefit of overweight heavy trucking against their effect on highways. The answer was "no." (page 21)

6. The contrast of heavy truck damage to highways versus automobile damage is pointed out and has been verified by the American Association of State Highway and Transportation Officials. The ratio is that one heavy truck (5-axle tractor trailer with 80,000 pound weight) has the same impact as 9,600 automobiles. (page 62)

The recommendations to Congress include:

1. Termination of current exceptions in Federal law that allow higher weight limits on some interstate highways.

2. Prohibit overweight permits and exemptions when loads can be reduced to meet normal state weight limits. (pages 61 & 62)

The conclusion of the report is that heavy trucks are a major cause of highway deterioration -- other states agree and so does the Comptroller General.

"Excessive Truck Weight: An Expensive Burden We Can No Longer Support", Supplement to the Report by the Comptroller General of the United States, July 16, 1979.

MCHA
EX
#8437

Adopted by the membership of the National Association of Counties on July 13, 1982

Resolution on

Increases in Truck Size and Weight and User Fee Increases for Heavy Trucks

WHEREAS, the National Association of Counties supports protection of our nation's highway investment and a greater emphasis on Interstate resurfacing, restoration rehabilitation, and reconstruction to preserve it;

WHEREAS, increases in gross vehicle and axle weight cause increasingly greater rates of pavement and bridge damage;

WHEREAS, the rising numbers of heavier and larger trucks will increase their responsibility for future highway damage;

WHEREAS, according to the Federal Highway Cost Allocation Study, heavy combination trucks currently pay only 65 percent of the costs they incue;

WHEREAS, Light trucks, vans and pick-ups pay more than their share of highway user costs because existing truck taxes are not graduated by weight.

WHEREAS, increased national standards for vehicle length and width will raise highway costs and create additional safety problems;

THEREFORE BE IT RESOLVED, that the National Association of Counties will oppose further increases in truck weight unless they are accompanied by simultaneous and sufficient increases in the highway user fees paid by heavy trucks to compensate for the additional highway and bridge damage they will cause.

BE IT FURTHER RESOLVED, the National Association of Counties supports changes in the highway user tax structure, such as a graduated tax on a vehicle's registered gross weight, which insure that heavier vehicles pay a larger share of future highway costs.

BE IT FURTHER RESOLVED, rthat the increases in truck size and weight be applicable only to those roads where the design is adequate to safely accommodate that increase.

BE IT FURTHER RESOLVE, that the National Association of Counties will oppose increased national standards for truck length and width until their impact on highway costs and safety have been assessed and reflected in the highway user fees and appropriate safety regulations.

MAA Exhibit
HB437

THE IMPACT OF TRUCKS ON HIGHWAY ACCIDENTS

Report to the
Board of Trustees
AAA Foundation for Traffic Safety
October 6, 1980
by
Paul C. Petrillo, P.E., Member
Foundation's Development Advisory Committee

Background

The AAA Foundation For Traffic Safety in August, 1979, undertook a study of the accident potential of the big truck and its impact on the safety of motorists. It did so, in part, because of the long standing concern of motorists about the safety of the big truck...they report that they are intimidated by the size of many trucks and are alarmed by the wind forces and the suction effect the large rigs create. They complain that trucks crawl uphill; speed downhill. With the 55mph limit,they report that trucks are now frequently going faster than cars and motorists are especially fearful of being followed too closely by large truck combinations. They, likewise, are concerned when the pavement is wet because trucks often splash their windshields so heavily that they must, for a few terrifying moments, drive blind.

These operating practices and conditions have led to the general feeling by the motoring public that the truck combinations are already too large and that larger ones should not be permitted.

Based on the record, motorists' concerns are justified. Consider, for example, the fact that for every truck driver who dies in a collision with a passenger vehicle, 32 automobile occupants are killed.[1]

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[1] "Heavy Truck Special Bulletin", FARS, National Highway Traffic Safety Administration, May, 1978.

Additionally, prevailing statistics indicate strongly that big trucks have been disproportionately involved in accidents. In 1975, for example, trucks with gross vehicle weight over 10,000 pounds accounted for 1 in 16 vehicles involved in a fatal accident. By 1978, large trucks comprise 1 in 12 vehicles involved in fatal accidents[2].

Perhaps even more important is that accidents involving large trucks are much more likely to produce a fatality in a vehicle other than the truck.

AAA Highway & Transportation Advisory Committee Turns to AAA Foundation for Truck Study

It was with this accident experience prevailing and with the knowledge of the growing concern by motorists about the safety of the big truck that ultimately led to a request by the AAA Highway and Transportation Committee that the AAA Foundation For Traffic Safety study the problem. At its meeting in Washington in February, 1979, the AAA Committee adopted a motion urging the AAA Foundation to undertake a study of all aspects of the impact of heavy trucks on the safety of motorists.

In response to the Committee's request, the Foundation convened a meeting of its Development Advisory Committee in Washington, D.C., in August, 1979. Attending the meeting in addition to the members of the Development Committee, were guests from government and private organizations concerned with traffic safety.

In an open and candid discussion with these safety experts, Committee members were given an opportunity to review some of the major issues in large truck safety to find out what was being done by government and private agencies in this area, and also to share their

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[2] "Highway Safety Facts - Heavy Trucks," National Highway Traffic Safety Administration, September, 1979.

concerns and experiences on truck safety issues.

It became rather evident from the discussion that prevailed at the meeting that the accident information available on large trucks was relatively limited, highly suspect and unsuitable to factually establish the magnitude of the big truck safety problem. The accident rates and information offered to substantiate an over-involvement of accidents on the part of the big truck was criticized for not accurately showing the true accident involvement of large trucks versus passenger cars. The major weakness alluded to was the failure on the part of Federal and state agencies to obtain accurate and verifiable measures of exposure. Because the practice in determining the relative safe operating experience of different types of vehicles in the traffic stream is to present the accident experience in terms of an exposure rate -- the number of vehicle miles travelled -- the data available at the time of the August, 1979 meeting was inconclusive because it was based on gross estimates of vehicle exposure, not factual recordings.

For example, truck accident data collected by the Bureau of Motor Carrier Safety is limited to regulated carriers involved in interstate commerce; the accident experience of unregulated intrastate truckers was overlooked and was not represented in the Bureau's accident reporting statistics.

Problems exist with the statistics published by the National Highway Traffic Safety Administration's "Fatal Accident Report System" (FARS). While the number of persons killed in car or truck accidents are accurately tallied, and probably represent the most reliable figures available on fatal truck accidents, the exposure information used to calculate fatal accident rates for cars and trucks was based upon gross estimates of mileage derived from data such as regional gasoline sales, vehicle registrations and

studies of national driving habits. The resulting accident rates are highly suspect and may rightfully be criticized because of the failure to obtain accurate and verifiable measures of exposure. This type of situation is recurring and, accordingly, renders most of the current accident rates unsuitable on which to formulate the basis for any discussion of the impact of trucks on highway safety.

Simply stated, the problem with the data available from the Federal government and other agencies was that the information provided on exposure -- the potential for an accident -- was largely a guesstimate. As a result, the problem of big truck safety could not be approached effectively until it could be factually established that the big truck is actually disproportionately involved in traffic accidents. In other words, in order to gain support for improving the safety of the big truck, it must first be documented that the big truck is in fact unsafe.

AAA Clubs Help Collect Truck Accident Data

At a follow-up meeting in January of this year, the Development Committee met to consider the actions to be taken by the Foundation on the proposed truck safety activities. Of particular concern was that any accident analysis undertaken by the Foundation should recognize the dubious nature of existing truck accident data and and likewise be structured so that any data collected was beyond reproach.

In that connection, the Development Committee reviewed the findings of Automobile Club of New York engineers who, in an attempt to find an alternative to using the questionable data already available on truck safety, collected accident data on controlled access facilities where the on and off movements of vehicles -- both passenger cars and trucks-- were documented by toll collection records. By using a "controlled environment," both the accident experience and exposure information could be accurately determined for all vehicles on the

highway, thereby producing a valid comparison of the safety record of the various types of vehicles.

It was the consensus of the Development Committee that the original research procedures developed by the Automobile Club of New York should be used on a nationwide basis and that all clubs with toll roads in their areas should be asked to participate in the effort.

The subsequent response from AAA Clubs* was overwhelming with data supplied on 52 expressway, turnpike, bridge and tunnel facilities located across the country and encompassing a representative mix of highways in rural and urban areas in just about every region of the United States.

It assured that for the first time ever, some information would be available which would show the true picture of the accident experience of cars and trucks on the same roadways under the same conditions.

Study Method

The data used in the Foundation's study was obtained from agencies responsible for the day-to-day operations of controlled access toll highways, bridges and tunnels. As mentioned previously, controlled access toll facilities were used because the on and off movements of

*The following AAA Clubs participated in the collection of accident information:

Automobile Club of Kansas
Automobile Club of Maryland
Automobile Club of New York
Automobile Club of Oklahoma
Automobile Club of Rhode Island
Automobile Club of Southern California
California State Automobile Association
Chicago Motor Club
Delaware Motor Club
East Florida Division AAA
Hoosier Motor Club
Louisville Automobile Club
Maine Automobile Association
Ohio Automobile Club
Pennsylvania AAA Federation
Tidewater Automobile Association
West Virginia State Association

all vehicles are precisely known and because of the assured availability of accurate accident statistics. As a result, the vehicle miles of travel for one or all users of the facility could be accurately determined.

Determining An Accident Rate

The total vehicle miles of travel on a highway represents what is commonly referred to as "exposure" and when this historical mileage data is related to the number of accidents, the resulting expression is an accident rate, that is, the number of accidents for a specified distance of travel.

For purposes of this study and consistent with accepted practices, accident rates are expressed as the number of accidents per 100 million vehicle miles of travel.

Accident information obtained by the various AAA Clubs for expressway, bridge and tunnel facilities* provided the number of vehicles by type that used the facility, the mileage travelled by them, as well as the number and type of accidents -- whether they were a property damage accident, resulted in injuries or produced a fatality. The data supplied covered the years 1976 through 1978.

The three broad categories of vehicles investigated were passenger cars, light trucks (those weighing 10,000 to 26,000 pounds) and heavy trucks (vehicles over 26,000 pounds).

The overall accident rates reported in this study include property damage, injury accidents and fatal accidents. In calculating the injury accident rate, accidents involving both injuries and fatalities were included.

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*Of the 52 facilities covered, the data for 18 facilities was not used for the purpose of this study because it did not meet the high standards of objectivity required. Consequently, the study was based on information obtained for a total of 34 facilities.

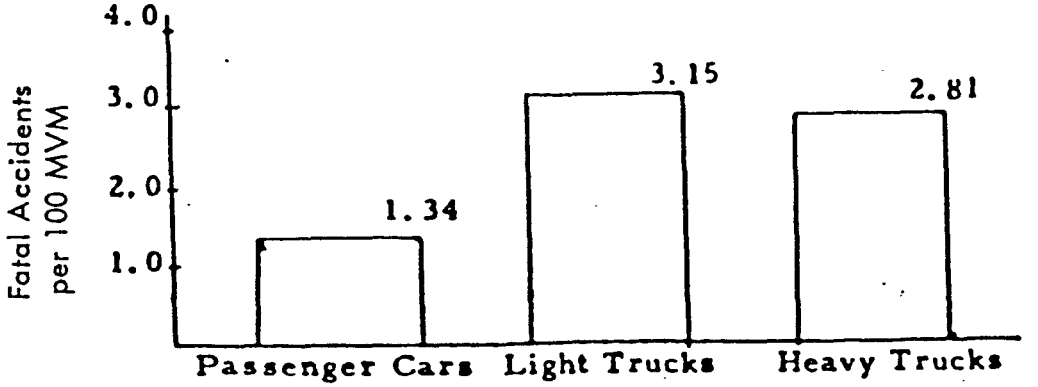
Study Results

The data analyzed and discussed in this report establishes for the first time beyond doubt that the big truck, for whatever reason, is disproportionately involved in highway accidents and has developed a deplorable accident history nationwide. The accident data supplied by the various AAA Clubs provided in Appendix 1 permitted an analysis of 2.3 billion vehicles, travelling 49.1 billion vehicle miles and 73,500 motor vehicle accidents.

It should be noted that the accident experience for controlled access highways was evaluated separately from that of bridges and tunnels because of suspected differences in traffic operating characteristics for the two types of facilities. As a result, the AAA Foundation's study is based on information supplied for controlled access highways because the available data was predominantly for that type of facility.

The results for the controlled access highways that were studied are provided in Figure 1 and show that the fatal accident rates for light and heavy trucks are significantly greater than those for passenger cars. On the average, light trucks were involved in 2.35 times more fatal accidents than passenger cars for the same distance travelled. Heavy trucks were also found to be over-involved -- with 2.10 times more fatal accidents than passenger cars for the same exposure.

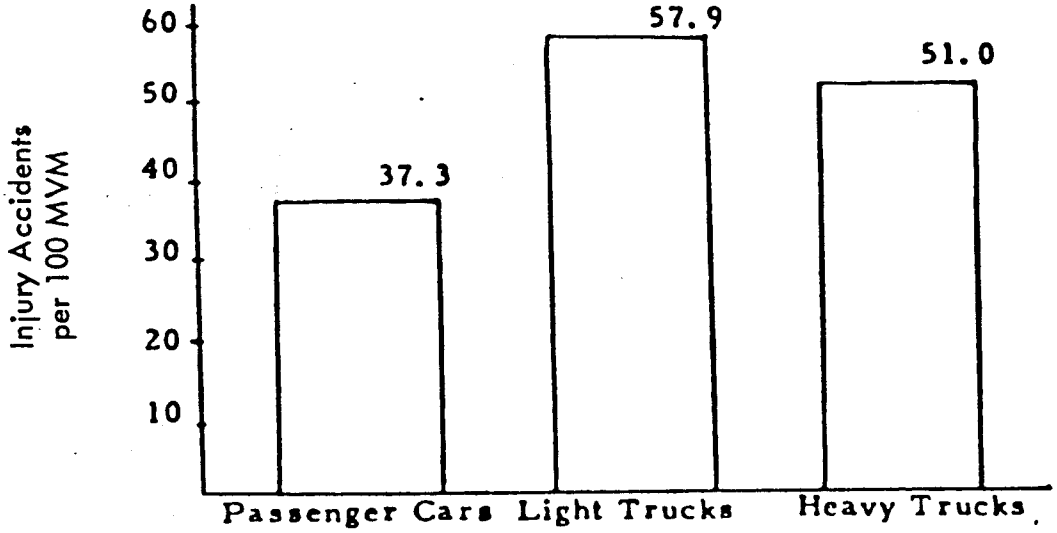
FIGURE 1 - Fatal Accident Rates



The dramatically disproportionate involvement of light and heavy trucks in fatal accidents can be attributed to the fact that when big trucks were involved in accidents, the results unfortunately are not just property damage accidents but instead fatal accidents that largely affect the occupants of passenger cars.

As shown in Figure 2, light trucks were involved in 1.55 times more injury accidents than passenger cars while heavy trucks were involved in 1.37 times the number of injury accidents.

FIGURE 2 - Injury Accident Rates



The overall accident involvement rate presented in Figure 3 for each vehicle class shows that compared to passenger cars, light and heavy trucks were involved in 1.72 and 1.58 more accidents, respectively than cars. Light trucks were thus involved in 72% more accidents than passenger cars -- and heavy trucks were involved in 58% more accidents -- for the same distance travelled under the same driving conditions.

FIGURE 3 - Total Accident Rates

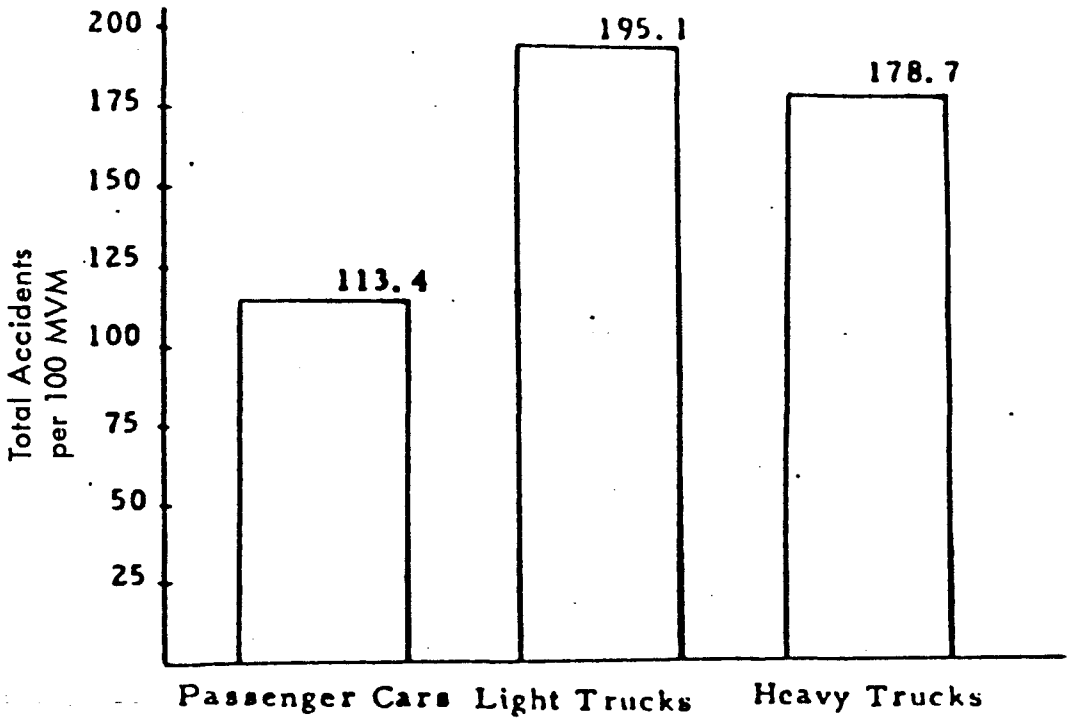
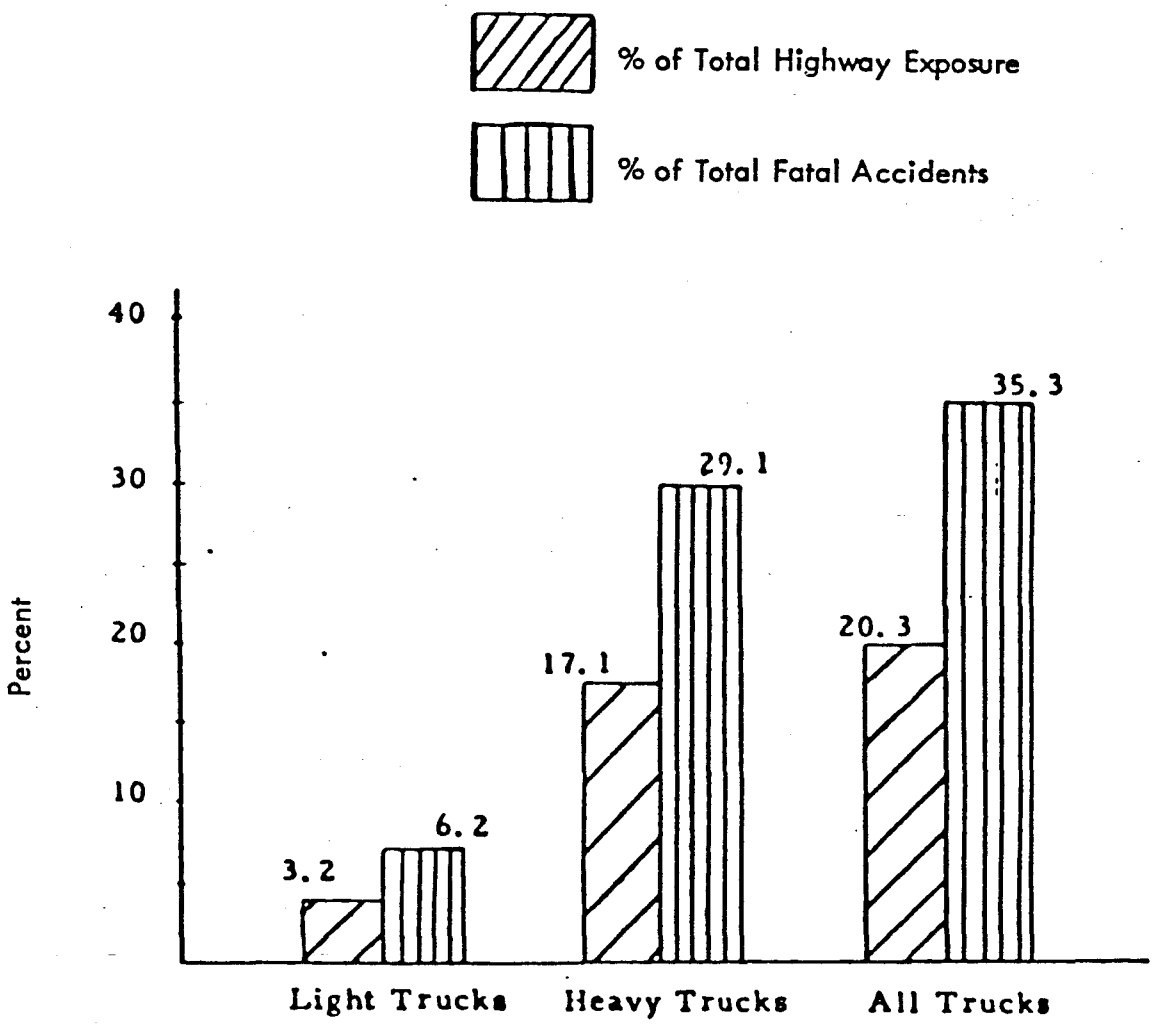


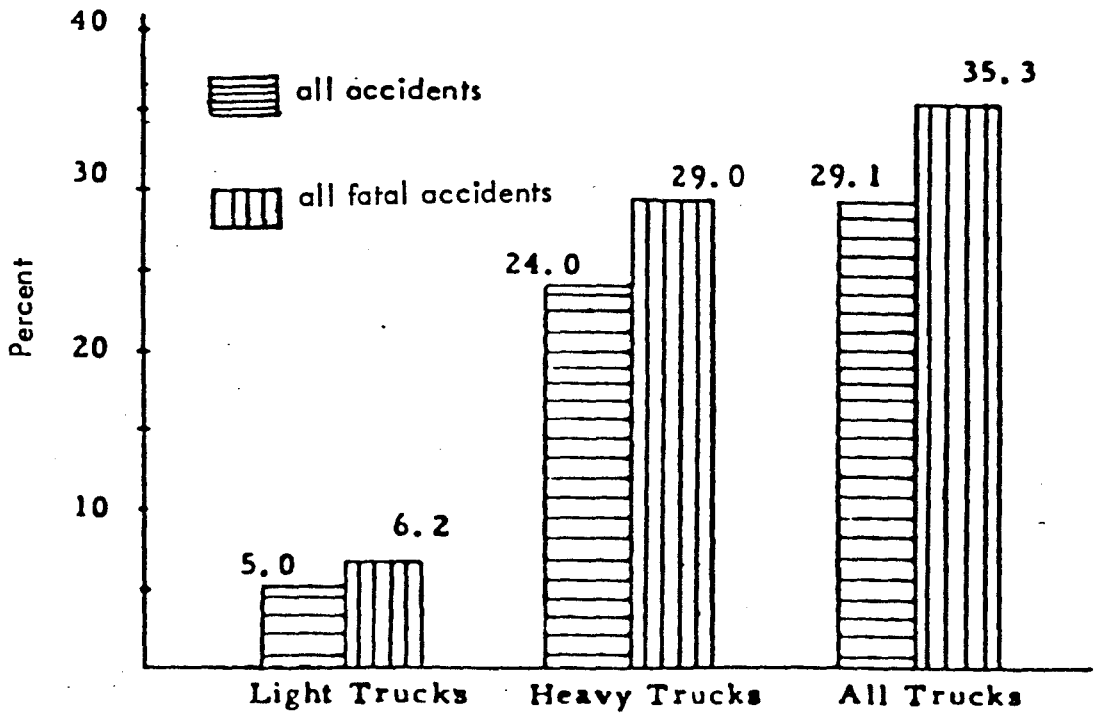
Figure 4 shows that while all trucks account for only 20.3% of the highway exposure (a product of the number of vehicles and the miles they travelled), they were involved in 35.3% of the fatal accidents.

FIGURE 4 - Fatal Truck Accidents in Relation to Vehicle Exposure



Moreover, Figure 5 shows that while light and heavy trucks were involved in 29% of all accidents, they had over one-third of the fatal accidents.

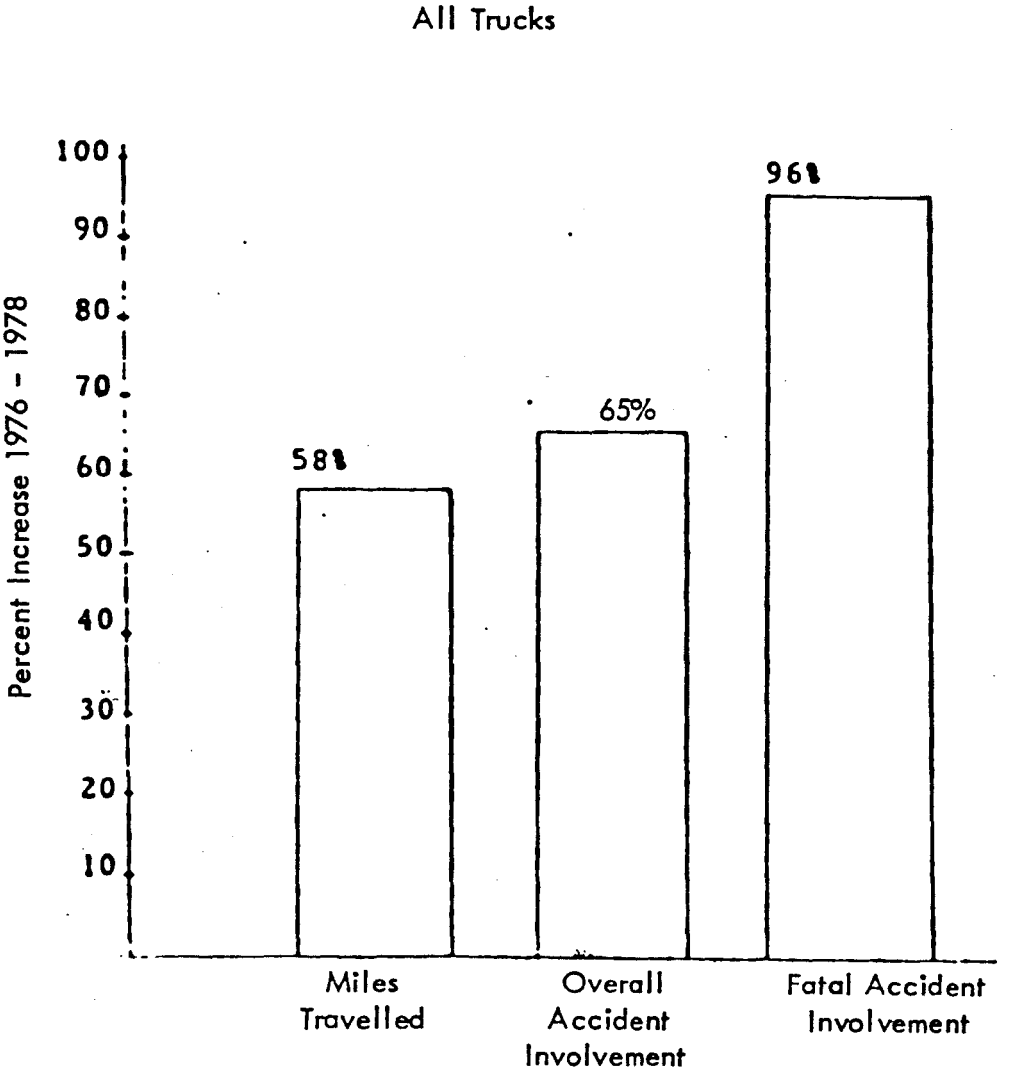
FIGURE 5 - Fatal Truck Accidents in Relation to All Truck Accidents



The analysis also showed that while 1 in 85 car accidents are fatal, 1 in 63 heavy truck accidents result in a fatality. This suggests the effect of a truck's substantially greater size and weight upon accident severity.

The number of fatal truck accidents was also found to have risen disproportionately when compared to increases reported for truck exposure. This is shown in Figure 6 which illustrates that between 1976 and 1978 truck exposure increased by 58%, while fatal truck accidents on the highways studied increased by a staggering 96%.

FIGURE 6 - Changes in Accident Involvement, 1976-1978



Summary

The findings can be summarized as follows:

1. The fatal accident rate of trucks is more than two times greater than the accident rate for passenger cars for the same exposure on the highway.

2. Other accident rates for light and heavy trucks, including injury and property damage accidents, are also disproportionately greater compared to passenger cars for the same distance travelled under identical conditions.

3. The big truck is involved in a significantly greater share of fatal accidents than might be expected for their mileage and population on the highway.

4. A substantially higher number of truck accidents result in a fatality than for passenger car accidents suggesting that the trucks' size and weight influence accident severity.

5. As the vehicle miles of travel of the big truck increases, there has been a disproportionate increase in fatal truck accident involvements.

6. While trucks now accounted for 20% of the vehicle exposure on expressways and turnpikes, they were involved in 35% of the fatal accidents. On some major thoroughfares such as the Pennsylvania, Ohio and New Jersey Turnpikes, about 50% of all fatal accidents involves a truck.

Conclusions

This study presents for the first time data that suggests the serious over-involvement of trucks in traffic accidents. The finding is based on accident and exposure data that has been provided for facilities that comprise what is generally regarded as the Nation's safest highways.

While the study, obviously, can only account for the traffic mix as it currently prevails, the situation can only be expected to get worse as the weight and size disparity between the passenger car and the truck continues to increase.

Unfortunately, there is every indication that the future will present a bleak picture for the motoring public. Because of the

concern about fuel economy, automobiles are getting smaller and lighter while trucks are getting bigger and heavier.

In addition to the growing disproportion in size and weight of the traffic mix, the number of large vehicles in the traffic stream has grown rapidly in recent years. In 1977, trucks carried three times the number of ton-miles of inter-city freight as they did in 1950.[3]

As a result, all this would seem to indicate that as far as big truck safety is concerned, the worst is yet to come.

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[3] "Facing A Major Safety Challenge," John S. Hassell, Jr., Deputy Administrator, Federal Highway Administration, American Transportation Builder, July/August, 1979.

PCP:pn
Attachment
9/30/80

APPENDIX 1

TABLE 1

EXPRESSWAY AND TURNPIKE OVERALL ACCIDENT RATES

(Per 100 Million Vehicle Miles of Travel)[1]

FACILITY	PASSENGER CARS			LIGHT TRUCKS			HEAVY TRUCKS		
Turnpikes or other Roadways	1976	1977	1978	1976	1977	1978	1976	1977	1978
CALIFORNIA									
Interstate 15	N/A	50.0[2]		N/A	48.0[2]		N/A	88.0[2]	
FLORIDA									
Florida Turnpike	47.6	64.4	81.2	67.5	33.0	85.3	106.5	66.0	111.7
Airport Expressway	172.3	228.8	292.6	208.6	489.2	359.6	1725.8	2329.6	3249.0
East-West Expressway	187.6	214.7	216.1	201.5	251.2	167.2	1389.9	1900.3	1157.8
Everglades Parkway	537.2	595.3	682.7	350.9	443.1	359.1	236.6	292.7	520.5
West Dade Expressway	45.2	63.1	60.3	30.0	45.1	23.9	41.1	35.4	66.9
ILLINOIS TURNPIKE	174.4	192.6	N/A	380.2	368.5	N/A	129.7	135.8	N/A
KANSAS TURNPIKE	94.2	116.2	127.8	270.0	316.1	365.7	162.2	180.8	205.1
KENTUCKY									
Bluegrass Parkway	92.5	114.7	84.5	195.4	215.4	180.4	130.9	123.3	81.3

[1] Includes property damage, injury and fatal accidents

[2] 1977 and 1978 data was provided combined for Barstow to Nevada line portion of I 15.

N/A -- Not available

EXPRESSWAY AND TURNPIKE OVERALL ACCIDENT RATES
TABLE 1 (continued)

FACILITY	PASSENGER CARS			LIGHT TRUCKS			HEAVY TRUCKS		
Turnpikes or other Roadways	1976	1977	1978	1976	1977	1978	1976	1977	1978
(KENTUCKY...continued)									
Cumberland Parkway	52.2	66.0	90.6	59.3	170.3	74.5	65.6	35.8	51.3
Daniel Boone Parkway	195.6	119.3	220.3	242.7	255.0	420.2	136.4	155.8	145.4
Green River Parkway	90.0	117.6	106.1	36.8	186.7	103.5	52.0	106.6	107.4
Jackson Purchase Parkway	114.2	121.9	118.9	323.0	196.8	174.7	107.8	146.7	68.1
Mountain Parkway	104.2	122.5	107.9	331.4	447.2	377.9	206.5	182.9	121.2
Pennyrile Parkway	192.6	195.4	216.1	324.5	228.6	304.7	88.3	267.0	208.2
Western Kentucky Parkway	94.6	103.1	106.8	131.2	169.9	220.4	83.3	151.6	111.6
OHIO TURNPIKE	N/A	112.4	109.5	N/A	225.6	238.1	N/A	207.8	197.1
NEW JERSEY TURNPIKE	61.6	72.5	69.4	See Footnote 3			165.0[3]	201.2[3]	234.7[3]
NEW YORK THRUWAY		144.3[4]			88.0[4]			221.8[4]	
PENNSYLVANIA TURNPIKE	63.9	76.1	88.3	See Footnote 3			37.0[3]	42.5[3]	47.2[3]
WEST VIRGINIA TURNPIKE	97.1	128.0	105.0	851.6	376.7	530.3	71.4	174.7	241.5

[3] Light and heavy truck data was provided combined

[4] 1976, 1977 and 1978 data was provided combined

N/A -- Not available

TABLE 2

EXPRESSWAY AND TURNPIKE INJURY ACCIDENT RATES

(Per 100 Million Vehicle Miles of Travel)[1]

FACILITY	PASSENGER CARS			LIGHT TRUCKS			HEAVY TRUCKS		
Turnpikes or other Roadways	1976	1977	1978	1976	1977	1978	1976	1977	1978
CALIFORNIA									
Interstate 15	Data Provided Did Not Include Specific Information On Injury Accidents								
FLORIDA									
Florida Turnpike	17.9	24.0	29.0	20.5	18.1	16.1	31.9	19.9	37.2
Airport Expressway	74.9	85.4	115.9	94.8	139.8	205.5	246.5	582.4	0.0[2]
East-West Expressway	66.3	72.5	74.3	52.6	91.4	83.7	198.6	532.9	463.1
Everglades Parkway	212.6	239.5	319.8	184.3	175.4	127.7	84.7	128.8	178.8
West Dade Expressway	17.5	22.5	22.9	4.3	14.1	4.3	6.9	10.1	14.9
ILLINOIS TURNPIKE	48.5	52.3	N/A	86.1	87.1	N/A	30.8	28.4	N/A
KANSAS TURNPIKE	42.5	50.5	52.4	109.7	128.1	108.6	56.2	76.0	78.6
KENTUCKY									
Bluegrass Parkway	31.2	40.4	16.0	65.1	123.1	30.1	20.2	47.4	45.1

[1] Includes injury and fatal accidents

[2] Data provided is questionable

N/A -- Not available

EXPRESSWAY AND TURNPIKE INJURY ACCIDENT RATES
TABLE 2 (continued)

FACILITY	PASSENGER CARS			LIGHT TRUCKS			HEAVY TRUCKS		
Turnpikes or other Roadways	1976	1977	1978	1976	1977	1978	1976	1977	1978
(KENTUCKY..continued)									
Cumberland Parkway	18.3	24.5	22.7	59.3	42.5	0.0	43.7	17.9	51.3
Daniel Boone Parkway	65.2	63.3	96.0	80.9	0.0	224.1	0.0	72.2	66.1
Green River Parkway	24.7	33.6	17.1	36.8	0.0	34.5	31.2	26.7	49.6
Jackson Purchase Parkway	14.8	36.1	63.5	107.8	98.4	87.3	26.9	62.9	0.0
Mountain Parkway	45.9	49.5	40.4	165.7	201.3	133.4	82.6	77.0	30.3
Pennyrile Parkway	81.4	64.6	68.6	144.2	65.3	60.8	40.8	102.7	44.0
Western Kentucky Parkway	27.5	30.9	35.4	18.7	34.0	50.9	36.4	40.4	31.2
OHIO TURNPIKE	N/A	40.8	36.3	N/A	91.2	67.6	N/A	67.2	62.1
NEW JERSEY TURNPIKE	23.6	24.5	24.4	See Footnote 2			55.0[2]	66.2[2]	71.7[2]
NEW YORK THRUWAY		36.3[3]			19.0[3]			54.8[3]	
PENNSYLVANIA TURNPIKE	25.2	25.1	26.6	See Footnote 2			38.8[2]	45.0[2]	50.0[2]
WEST VIRGINIA TURNPIKE	40.4	73.4	50.4	310.9	235.4	85.4	46.1	85.4	120.8

[2] Light and heavy truck data was provided combined

[3] 1976, 1977 and 1978 data was provided combined

N/A -- Not available

TABLE 3

EXPRESSWAY AND TURNPIKE FATAL ACCIDENT RATES

(Per 100 Million Vehicle Miles of Travel)

FACILITY	PASSENGER CARS			LIGHT TRUCKS			HEAVY TRUCKS		
Turnpikes or other Roadways	1976	1977	1978	1976	1977	1978	1976	1977	1978
CALIFORNIA									
Interstate 15	N/A	4.0[1]		N/A	3.2[1]		N/A	8.0[1]	
FLORIDA									
Florida Turnpike	0.3	0.7	1.3	2.0	0.0	4.6	1.0	1.4	3.2
Airport Expressway	2.6	1.8	2.5	0.0	0.0	0.0	0.0	0.0	0.0
East-West Expressway	0.3	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Everglades Parkway	3.1	4.5	6.3	0.0	0.0	16.0	4.7	17.6	15.8
West Dade Expressway	0.4	0.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0
ILLINOIS TURNPIKE	0.9	1.2	N/A	2.5	1.4	N/A	1.1	0.9	N/A
KANSAS TURNPIKE	2.7	1.7	2.3	5.9	8.5	7.9	0.0	8.7	2.3
KENTUCKY									
Bluegrass Parkway	1.1	0.0	0.0	0.0	0.0	0.0	10.1	0.0	0.0

[1] 1977 and 1978 accident data was provided combined

N/A -- Not available

EXPRESSWAY AND TURNPIKE FATAL ACCIDENT RATES
TABLE 3 (continued)

FACILITY	PASSENGER CARS			LIGHT TRUCKS			HEAVY TRUCKS		
Turnpikes or other Roadways	1976	1977	1978	1976	1977	1978	1976	1977	1978
(KENTUCKY...continued)									
Cumberland Parkway	2.6	4.9	2.3	0.0	0.0	0.0	0.0	0.0	0.0
Daniel Boone Parkway	2.6	7.3	10.9	0.0	0.0	56.0	0.0	0.0	13.2
Green River Parkway	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.8
Jackson Purchase Parkway	0.0	0.0	4.0	0.0	0.0	87.3	0.0	0.0	0.0
Mountain Parkway	1.0	4.0	3.8	0.0	22.4	44.5	0.0	9.6	0.0
Pennyrile Parkway	12.5	1.4	0.0	0.0	0.0	0.0	13.6	0.0	0.0
Western Kentucky Parkway	2.8	2.8	2.1	0.0	17.0	0.0	0.0	0.0	0.0
OHIO TURNPIKE	1.0	1.2	0.8	0.0	3.0	1.0	3.0	3.9	2.0
NEW JERSEY TURNPIKE	0.6	0.5	0.4	See Footnote 2			3.0[2]	2.2[2]	2.7[2]
NEW YORK THRUWAY		1.3[3]			1.0[3]			2.8[3]	
PENNSYLVANIA TURNPIKE	0.3	0.5	1.0	See Footnote 2			1.8[2]	2.5[2]	2.8[2]
WEST VIRGINIA TURNPIKE	6.7	12.5	11.0	13.5	94.2	32.5	11.5	2.0	29.8

[2] Light and heavy truck data was provided combined

[3] 1976, 1977 and 1978 accident data was provided combined

TABLE 4

BRIDGE AND TUNNEL OVERALL ACCIDENT RATES

(Per 100 Million Vehicle Miles of Travel) [1]

FACILITY	PASSENGER CARS			LIGHT TRUCKS			HEAVY TRUCKS		
Bridges and Tunnels	1976	1977	1978	1976	1977	1978	1976	1977	1978
CALIFORNIA									
Carquinez Bridge, Salino County	189.1	127.9	168.2	0.0	378.5	1383.6	838.9	1355.0	1500.6
Golden Gate Bridge, San Francisco	155.3	178.7	170.8	849.8	951.5	1267.9	4732.8	3702.7	4481.4
Oakland-San Francisco Bay Bridge	191.4	186.3	200.0	202.0	80.3	316.8	2543.6	2893.6	2360.5
San Mateo-Hayward Bridge	78.5	74.1	85.1	243.9	548.5	172.5	1058.8	1074.8	945.7
DELAWARE									
Delaware Memorial Bridge	117.7	95.8	99.4	408.1	302.1	626.6	170.7	205.0	214.2
FLORIDA									
Warren Bridge	361.8	511.1	632.3	206.2	873.4	292.2	429.6	315.4	519.0
MARYLAND									
Baltimore Harbor Tunnel	379.3	276.9	274.6	See Footnote 2			1316.7 [2]	897.5 [2]	886.4 [2]
NEW YORK									
Bronx Whitestone Bridge	N/A	225.0	233.0	N/A	3864.0	3017.0	N/A	4147.0	4049.0
George Washington Bridge	861.0	1054.0	1057.0	2690.0	3368.0	3024.0	2238.0	3316.0	3121.0
Throgs Neck Bridge	N/A	186.0	172.0	N/A	1155.0	858.0	N/A	2826.0	1982.0
Triborough Bridge	N/A	253.0	242.0	N/A	2381.0	2379.0	N/A	3036.0	2933.0
Verrazano Narrows Bridge	N/A	187.0	199.0	N/A	1564.0	1516.0	N/A	1554.0	2938.0
VIRGINIA									
Chesapeake Bay/Bridge Tunnel	101.4	159.6	161.5	See Footnote 2			188.1 [2]	283.5 [2]	325.6 [2]

[1] Includes property damage and injury accidents

N/A -- Not available

[2] Light and heavy truck accident data was provided combined

House Bill No. 539

Amendments proposed by the Department of Highways to the introduced bill.

Title, line 6.
Following: "PERMIT"
Insert: "AND PROVIDING FOR CHANGING THE 7% ALLOWANCE TO A 5% ALLOWANCE ON TOTAL GROSS AND AXLE WEIGHT LIMITATIONS FOR ALL VEHICLES OR COMBINATIONS OF VEHICLES"

Title, line 6.
Following: "61-10-124"
Insert: "AND 61-10-144"

Page 2.
Following: Line 21
Insert: "Section 2. Section 61-10-144, MCA, is amended to read:

"61-10-144. Violation of standards - ~~seven~~ five percent allowance. (1) It is a misdemeanor for a person, firm, or corporation to violate any provision of 61-10-101 through 61-10-110.

(2) However, the operator of a vehicle or combination of vehicles may move over the highways to the first open state scale, permanent or portable, without incurring the excess weight penalties set forth in 61-10-145 if the total gross weight of the vehicle or combination of vehicles does not exceed allowable total gross weight limitations by more than ~~7%~~ 5% and if the weight carried by any axle or combination of axles does not exceed the allowable axle weight limitations by more than 5%. In the event the vehicle or combination of vehicles is not in excess of the allowable total gross or axle weight limitations by more than ~~7%~~ 5%, the department may issue a single trip permit for the fee of $10 for allowing said vehicle or combination of vehicles to move over the highways to the first facility where its load can be safely adjusted or to its destination. Violations of total gross or axle weight limitations in excess of ~~7%~~ 5% are subject to the fines provided in 61-10-145, and all loads in excess of ~~7%~~ 5% of total gross or axle weight limitations must be adjusted or reduced to conform to the size and weight limitations before the vehicle or combination of vehicles is moved from the point of weighing.

(3) An operator of a vehicle or combination of vehicles subject to the provisions of 61-10-107(2) may move over a highway, except any highway which is part of the federal-aid interstate system, within a 50-mile radius of the harvested field to the point of first unloading, without incurring the excess weight penalties set forth in 61-10-145 if the total gross weight of the vehicle or combination of vehicles does not exceed allowable weight limitations by more than 20% per axle but the maximum load per inch of tire width may not exceed 670 pounds. The vehicle or combination of vehicles may not exceed 40 miles per hour. No single trip permit as required in subsection (2) shall be applicable to such vehicle or combination of vehicles. When such vehicle or combination of vehicles violates any of the provisions of this subsection, the fine or penalty imposed shall apply to that portion of the load above the legal limit."

Renumber: subsequent section.

Special Report

Highways and Railroads in Montana: Problems and Opportunities

December 1982

HIGHWAYS AND RAILROADS IN MONTANA: PROBLEMS AND OPPORTUNITIES

by T. Randall Fortenbery, Gail L. Cramer and Bruce R. Beattie*

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*T. Randall Fortenbery is a research associate in the Department of Agricultural Economics and Economics, Montana State University, Bozeman; Gail L. Cramer and Bruce R. Beattie are both professors of Agricultural Economics and Economics at Montana State University, Bozeman.

Preface

This report on the Montana transportation system was completed at the request of concerned citizens. It is not a product of a detailed original research project; rather it is a review of currently available information and expresses the authors' opinions about the transportation situation and options facing Montana. After reading this report, it will become evident that much research is needed in order to definitively describe and analyze the economic consequences of alternative transportation strategies and options available to the state.

This report reflects the collective views of the authors and should *in no way* be interpreted as representing the position of Montana State University or the Montana Agricultural Experiment Station, with which the authors are affiliated.

The report was written before any federal transportation recommendations were announced.

Introduction

The State of Montana with the fourth largest acreage in the Union, has a population which, in many instances, is exceeded by the population of individual cities located in geographically smaller states. While a low density population can be of great advantage, and is probably one important reason some of us reside here, it causes some unique problems in marketing Montana's products. The state's industries tend to specialize in the extraction and production of raw materials, and the transporting of these products to distant refineries. The result is that Montana's economic stability is dependent upon the state's ability to export raw materials, and import consumer goods and manufactured production inputs. This can only be accomplished with an efficient and well maintained transportation system.

Currently, the state has one major railroad and the highest per capita highway mileage in the nation (105 miles per 1000 population). The railroad is a private organization subject to market forces, while the highway system is a public enterprise, with its construction, operation and maintenance supported by tax dollars and user fees.

The economy of Montana can be identified by four primary industries—agriculture, mining, tourism, and lumber products. All of these industries are heavily dependent upon an efficient, reliable transportation system. The objectives of this report are: (1) to identify the transportation needs of each industry and Montana consumers; (2) to briefly describe Montana's existing surface transportation system—its condition and funding; (3) to discuss some possible options to improve and maintain the transportation system; and (4) to make a few specific recommendations for financing the highway system.

Dimensions of the Transportation Problem

Agriculture

The initial impetus for the development of Montana agriculture was the demand for food on the part of miners. The possibilities of commercial agriculture were soon discovered, and Montana began exporting agricultural products in the 1860s. With the coming of the railroads and the opportunity to transport in bulk, agriculture overtook mining as Montana's leading commercial venture.

As the agricultural sector has become increasingly more productive, the demand for transportation services in all directions from Montana has grown.[1] Because of the distance to population centers and relative transportation rates on raw versus final products, Montana has relatively few agricultural processing industries. Accordingly, most of Montana's raw products must be shipped long distances for processing.

Initially, the railroads handled almost all of agriculture's transportation requirements, but as the industry grew and diversified, so did its demand for transportation services. Today's agricultural sector still requires a good rail system, but rail costs are such that it is no longer feasible for the railroads to service small community elevators, resulting in a move toward large subterminals capable of handling unit trains. This has afforded farmers significant rail-rate savings, but the average truck haul distance from the field to the train has increased. In order to adjust to this change, agriculture is becoming increasingly dependent on a well maintained county and secondary road system.

The delivery of livestock to out-of-state feedlots is, for practical purposes, entirely by truck. In 1980 railroads transported only 37,319 cattle in Montana, while 709,052 cattle, 106,203 sheep, and 102,888 hogs were moved by truck (Flaherty). Few livestock will be transported by rail in 1982.

Montana's agricultural sector, then, is highly dependent on a comprehensive, reliable transportation system including rail service for the movement of grain, a good county and secondary road system so farmers can take advantage of unit-train rates, and a good primary road system to deliver livestock to out-of-state feedlots.

Forest Products

Montana's forest products industry also needs a diversified transportation system. In 1977, of the ten major commodity groups originating in Montana, lumber (excluding plywood and other wood products) ranked third in terms of annual tonnage shipped and third as a revenue source for the railroad; wood chips ranked fourth in annual tonnage and ninth in revenue; and saw logs were also in the top ten rankings providing the sixth largest tonnage and the tenth highest revenue—see Table 1, p. 2. The forest products industry in Montana shipped a total of 404,012 thousand board feet of lumber by rail in 1980, but even more moved by truck (Flaherty).

Truckers carried 578,987 thousand board feet of Montana lumber to out-of-state processing plants (Flaherty). Most of the commercially extracted lumber in Montana comes from the northwestern part of the state, with the three most common destinations being

[1]Increased productivity refers to the food and fiber output of the average U.S. agricultural worker per year. In 1950 the average worker produced enough food and fiber for 16 people, and by 1979 this had increased to enough food and fiber for 68 people (Economic Research Service, U.S.D.A.).

Duluth, Chicago, and Des Moines. These data suggest that the forest products industry, like agriculture, depends not only on an efficient rail system, but also on a well maintained primary road system traversing the state from West to East.

Mining

Mining was one of Montana's first commercial activities, and it is still an important source of revenue and jobs. Coal is our most important mineral product, with a total of 27,253,987 tons being shipped from Montana mines in 1980. A little over 96 percent of this was shipped by rail, with the most common destinations being the Twin Cities area of Minnesota, the Great Lakes Region, and Houston. Some coal was also shipped to Sidney and Billings via rail. Trucks carried only 578,987 tons of coal in 1980, representing, for the most part, spot sales and local purchases (Flaherty).

In 1980 coal ranked first, both in total tonnage shipped by rail and in revenue generated for the railroad. Sixty-seven percent of all tonnage shipped by rail in 1977 was coal, and 44.9 percent of the revenue received by the railroad was from coal shipments (Montana

Table 1. Profile of the ten major Montana-originating commodity groups transported by rail[a]

Commodity Group[b]	*Approx. Annual Tonnage (000)*	*Principal MT Origins*	*Major Termination Points (within & outside of Mt)[c]*	*Relative Importance (Percent of total)* Tonnage	Revenue
Coal and Lignite	18,500	Kuehn, Decker, Colstrip, Big Sky, & Deborgia (bit coal) Cecil (lignite)	Minnesota (53%), Illinois (29%), Wisconsin (12%), Montana (6%)	1st 67.7%	1st 44.9%
Wheat	2,550	Hi-Line Counties, Golden Triangle, NE and Central MT	Washington (60%), Oregon (30%), Montana (10%)	2nd 9.2%	2nd 13.7%
Lumber	1,000	Western MT (Columbia Falls, Libby, Bonner, Missoula, etc.)	National (25% Midwest, 15% Plains, 15% Northeast, 10% Atlantic states)	3rd 3.6%	3rd 12.9%
Wood Chips	1,000	Western MT (Libby, Missoula, etc.)	Regional (Washington, Oregon, Montana)	4th 3.6%	9th 2.3%
Non-metallic Minerals (14)	700	Libby, Bradman Spur, Alder	Partly national, partly regional (Oregon, Washington)	5th 2.5%	4th 3.3%
Saw Logs	600	Thompson Falls, Woolin, Troy	Mostly local (Missoula, Schilling), some Washington	6th 2.1%	10th 1.1%
Clay, Concrete, Glass or Stone Products (32)	500	Montana City, Trident, Three Forks, Barretts	Midwest (non-metallic minerals) Regional (cement)	7th 1.8%	8th 2.6%
Petroleum Products (29)	500	Billings, Union Oil	Regional and Midwest (asphalt, residual oil, petroleum coke)	8th 1.7%	7th 2.8%
Barley	400	Hi-Line Counties, Golden Triangle, Central MT	Washington (30%), Oregon (30%), Minnesota (15%) Montana (15%)	9th 1.4%	6th 3.2%
Pulp, Paper & Allied Products (26)	350	Schilling	Midwest, Northwest, (fiberboard)	10th 1.3%	5th 3.3%

[a]Based on an analysis of the 1977 FRA/ICC waybill sample.

[b]Numbers in parentheses are the corresponding 2-digit SIC code for that group; all other commodity groups are identifiable at the 5-digit SIC code level.

[c]Internal Montana traffic: 14% carloads, 12% tonnage, and 5% revenues.

Source: State of Montana Rail Plan.

Prepared By: Rail Planning Unit, Montana Dept. of Highways, Aug. 1979, 2nd printing, September 1980.

Department of Commerce, 1980). Coal was eighty percent of the total tonnage shipped in 1980 (Montana Department of Commerce, 1982).

The mining industry is not nearly as dependent on highways as are the other primary industries. However, it has the greatest dependence on an efficient rail system. In particular, it relies upon large capacity trains that are loaded at or near the extraction site and that move directly to point of final destination. (For example, Burlington Northern currently refuses to pull fewer than 62 loaded cars from the Colstrip area at one time.)

Tourism

According to Pacini, 3.5 million nonresident tourists came to Montana in 1979, and spent nearly $500 million during their visits. This inflow generated $172 million in earnings for 20,000 Montana workers that same year. Pacini further states that 80 percent of the state's total travel related employment is accounted for in ten Montana counties. Tourism is of great economic importance to Montana, and the viability of this industry presumably depends on an adequate highway system, especially in areas of concentrated tourist demand.[2]

According to a study by Davidson and Peterson for Montana's Travel Promotions Bureau, Glacier and Yellowstone Parks are the major reasons out-of-state visitors come to Montana. These areas define regions of concentrated tourism, and on *prima facie* grounds, might justify a highway system constructed and maintained with the needs of tourists in mind. This might include such things as access to camping locations, scenic pull-outs, restrooms and garbage disposal facilities, and restrictions on large commercial vehicle traffic. (Some of Montana's most poorly developed and maintained highways are in the high density tourist areas.)

Other Transportation Needs

So far, we have viewed transportation from the perspective of exporting industries and tourism. Clearly the state also needs an efficient transportation system to insure the delivery of goods originating out-of-state, but terminating in Montana. There are very few manufactured goods originating in Montana, and the citizens are dependent upon products from other states to satisfy their demand for finished goods.

According to the 1977 Commodities Census, 27,920,000 tons of goods were shipped to Montana (Table 2, right). These products were either not produced at all in Montana, or not produced in sufficient quantity to satisfy the entire demand. These goods were transported to Montana by several transportation modes, emphasizing the need for a well organized, diverse transportation system.

The Total Transportation Need

Montana's total transportation need may be summarized in fairly simple terms: most of Montana's raw products must be shipped to distant markets; the finished goods consumed in the day-to-day life of Montana citizens must be shipped from distant processing plants; and Montana's visitors and transients desire adequate transportation services.

The most cost effective way to ship the bulk of Montana's raw material tonnage to distant markets is via rail. Coal and grain comprised the largest portion of Montana's export tonnage in 1980, of which 66 percent moved by rail (57 percent of total grain tonnage, 96 percent of coal tonnage). We would not anticipate a dramatic shift away from these relative figures. On the other hand, significant quantities of other export commodities, most notably livestock and wood products, moved out-of-state by truck. And most of the tonnage of products imported to Montana in 1977 was by truck (U.S. Department of Commerce).

Given the relative costs of transportation we believe

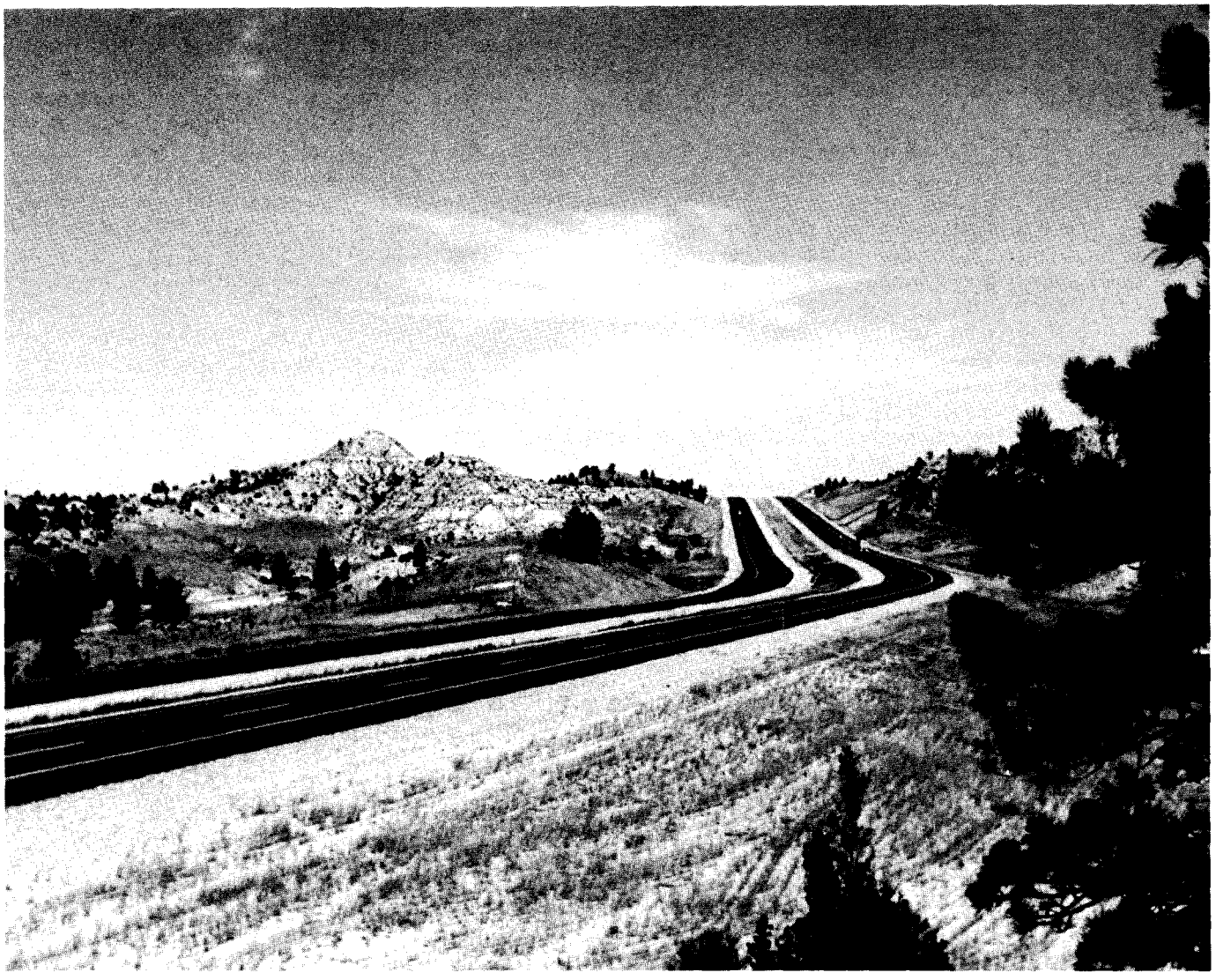
Table 2. Commodities shipped to Montana

Type of Product	*Amount*	*Rank*
	(000 tons)	
1. Food and Kindred Products ..	1521	5
2. Tobacco Products	19	14
3. Textile Mill Products	5	17/18
4. Apparel, Other Finished Textile Mill Products, Including Knit	5	
5. Lumber and Wood Products, Except Furniture	3284	3
6. Pulp, Paper, and Allied Products	87	9
7. Printed Matter	6	16
8. Furniture and Fixtures	20	13
9. Chemicals and Allied Products	1750	4
10. Petroleum and Coal Products.	8972	1
11. Rubber and Misc. Plastic Products	21	12
12. Leather and Leather Products.	1	20
13. Stone, Clay, Glass, and Concrete Products	4593	2
14. Primary Metal Products	215	8
15. Fabricated Metal Products, Excluding Ordinance, Machinery, Transportation...	75	10
16. Machinery, Except Electrical	227	7
17. Electrical Machinery, Equipment and Supplies	34	11
18. Transportation Equipment....	290	6
19. Instruments, Photo and Medical Goods, Watches, Clocks	2	19
20. Misc. Products of Manufacturing	14	15

Source: 1977 Commodity Census, U.S. Department of Commerce, June 1981.

[2]We say "presumably depends" because the extent to which the "quality of road system" encourages or discourages tourists is a matter of conjecture as far as the authors are concerned. It may be, for example, that the highway between Livingston and Gardiner would have to deteriorate substantially before tourism would be negatively impacted. To the best of our knowledge quantitative estimates of highway quality/tourist interrelationships are not well established.

Montana's truck and rail systems will continue to be the principal modes of commodity movement in the foreseeable future. Before turning to a discussion of some of the transportation policy options that we believe should be considered by Montanans to insure and improve these systems, we shall briefly review the existing surface transportation network and its condition.



Montana's Existing Surface Transportation System: Condition and Costs

The Road System

Montana currently has in place most of the road network that can be economically justified; the problem is in generating sufficient revenue to finance maintenance and in certain instances some upgrading. Montana's road system is generally divided into five categories — the interstate highways, primary roads, secondary roads, urban roads, and primitive and/or unimproved roads.

Data on the total road system, including all county, city and town roads, and unimproved roads, are not readily available. However, data are available on the portion of the road system under the jurisdiction of the State Department of Highways. While the authors recognize the importance of county and city roads in Montana's total transportation system, this report addresses that part of the road system for which the State Highway Department is responsible.

The State Highway Department is responsible for construction and maintenance of all of the interstate and primary roads (excluding roads on federal reservations),[3] and some secondary and urban roads, e.g., state highways through towns (Huntington). Fortunately, all of Montana's State Highway System[4] qualifies for federal aid for its construction and reconstruction; namely, 1,194 miles of interstate, 5,447 miles of primary roads, 103 miles of secondary roads, and those urban roads under Highway Department jurisdiction. (It should also be noted that some roads under county and city jurisdiction also qualify for federal aid.)

Total expenditures by the State Highway Department for fiscal year 1981 were $187,697,308. Construction expenditures were $137,421,300, which accounted for 73 percent of total expenditures. Maintenance accounted for 16 percent ($30,650,339); preconstruction, six percent ($11,382,285); general operations, four percent ($6,587,756); and GVW operations, one percent ($1,655,629).[5] Of the $30,650,339 expended for maintenance, $4,154,796 was devoted to interstate maintenance, $18,691,946 was for primary roads, $205,000 was on secondary roads, and the balance was accounted for by urban road maintenance and overhead (Brownlow).

Total state highway funding for fiscal year 1981 was $177,230,598. Federal aid accounted for $122,629,585 (69 percent), while earmarked state revenues amounted to $54,601,013 (31 percent). (With some 69 percent of the budget of the Highway Department coming from the federal government, the critical importance of federal legislation relating to this subject is obvious.)

All of the federal funds and all but $19 million of the state earmarked funds were available for highway construction and reconstruction. The $19 million not used for highway construction and maintenance (from the gasoline and diesel fuel taxes) were expended for such things as highway patrol salaries, city and county distribution, the Highway Safety Office, the Department of Revenue, Equipment Bureau capital expense, and statewide buildings.

Currently, the Highway Department estimates there are 474 miles of Montana highway in critical condition (Figure 1, p. 8); of which, 133 have become critical since 1975.[6] In addition, there are 2,027 miles of highway which will need reconstruction in the next ten years.

The Department has indicated that the average cost of reconstructing a mile of highway is about $605,000. Thus, it would cost in the order of $286 million to rejuvinate the critical 474 miles of highway. The Highway Department has projected that it would need to receive $50-52 million *additional* revenue each year for the next six years (the furthest projection made thus far) to upgrade the roads in the critical category, and to insure that other roads would not fall into this category.[7] This would not upgrade roads that are not yet critical, but would prevent further deterioration.

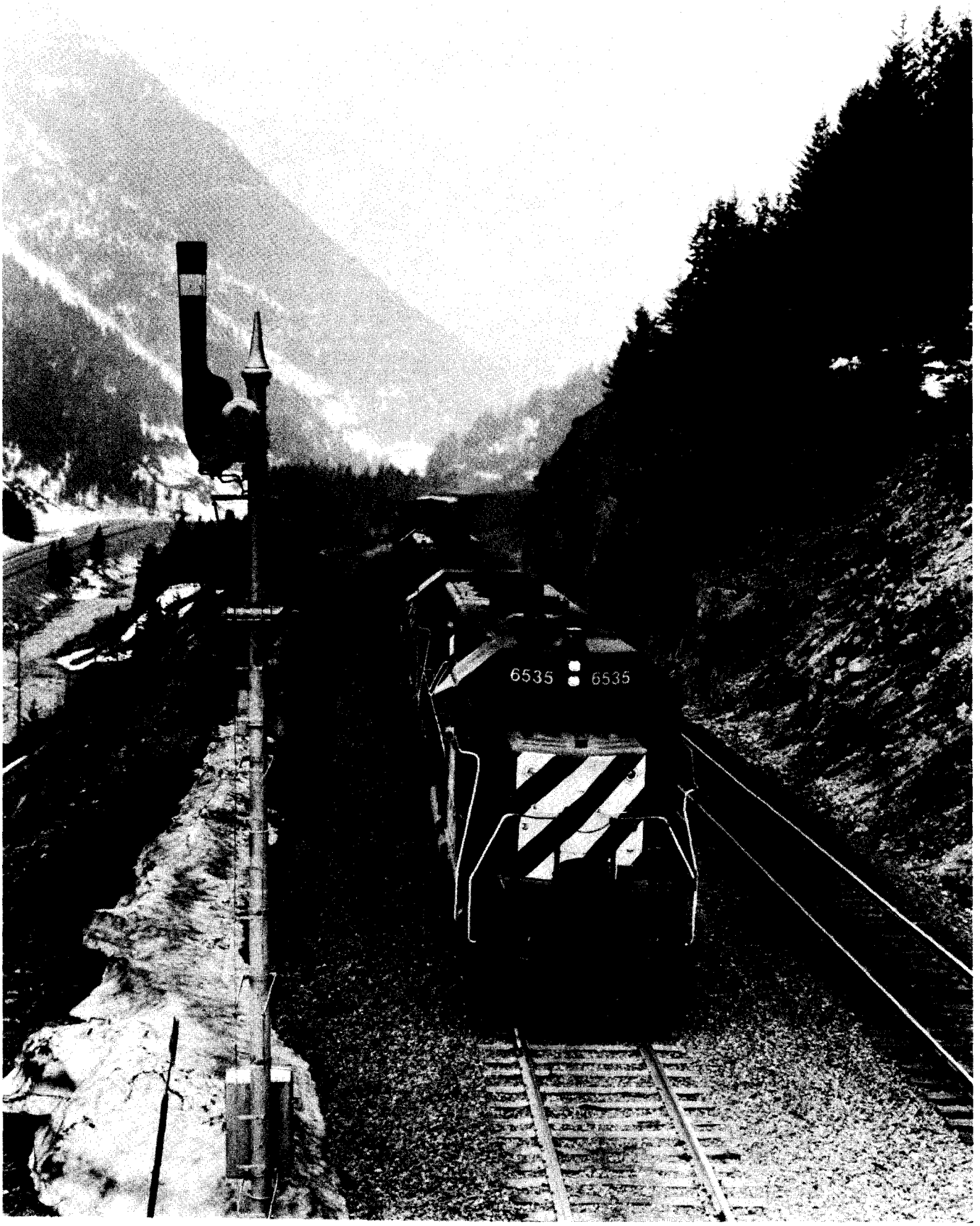
[3]Federal reservations include national parks, national forests, Indian reservations, and wildlife refuges.

[4]We define Montana's State Highway System as those roads falling under the maintenance responsibility of the Montana Department of Highways.

[5]Preconstruction includes such items as planning and research. GVW operations are expenditures associated with the registration and enforcement activities of the Gross Vehicle Weight Division of the Department of Highways.

[6]Roads said to be in critical condition are those rated 40 percent or less sufficient by the Montana Department of Highways. The sufficiency rating index is based on a formula that takes into account quality of the road foundation, surface and drainage, and safety and capacity considerations.

[7]This $50-52 million is a minimal estimate and with additional research by the Department of Highways, it will probably be increased considerably.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6535

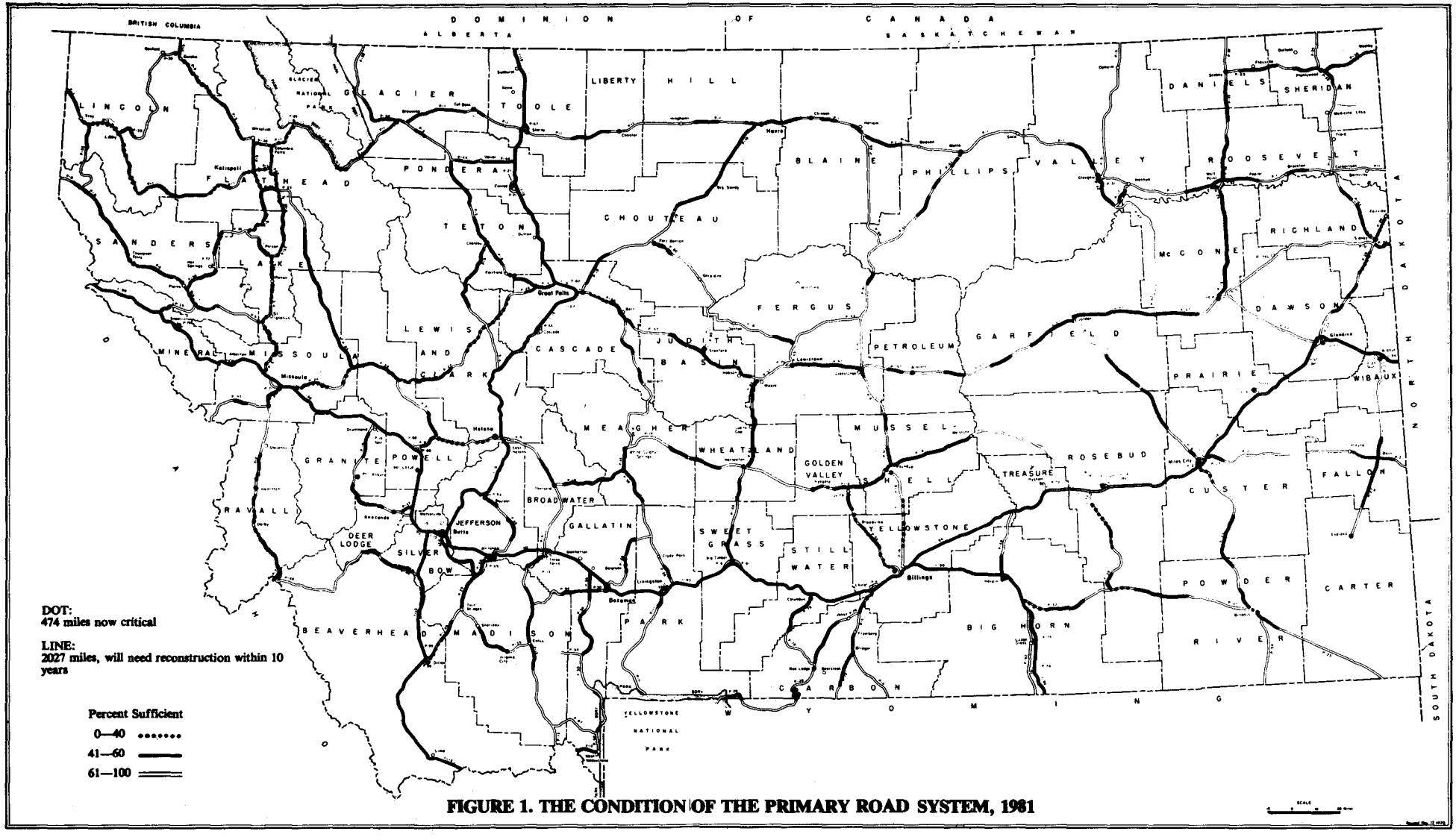
The Rail System

The rail system in Montana has effectively been reduced to one entity, Burlington Northern (BN). There are some stretches of track owned and operated by other railroads, but they represent only about 1/10 of Montana's rail system mileage. BN operates 3,487 miles of the 3,881.5 miles of system in Montana. The present rail system is shown in Figure 2, p. 9.

Also noted in Figure 2 are several branchlines of the BN that are in various stages of proposed abandonment due to lack of sufficient freight revenue to render the individual lines profitable to BN.[8] The proposed abandonments, amounting to 319 miles of BN's present 3,487 miles of track (Craig), are part of BN's effort to move toward larger trains and subterminals.

The two largest volume commodities hauled by BN are coal and grain. In 1980, the railroad originated the hauling of 100.3 million tons of coal nationwide (Burlington Northern). Of this, 26,675,000 tons, more than 25 percent of the total coal hauled by BN, originated in Montana (Flaherty). Nationwide, BN's rail operating revenues in 1980 were $3.3 billion, an increase of 23 percent over 1979. Sixty-five percent of these revenues were attributed to the hauling of farm and mine products (Burlington Northern). The BN railroad does not publish costs on a state-by-state basis. Thus, there are no available data which represent BN's operating cost per mile of Montana track *(Billings Gazette)*. However, BN operated 29,300 miles of track nationally at an average cost of $101,563 per mile (Burlington Northern).

[8]Abandonment stages 1, 2, and 3 relate to the identification of proposed abandonment sites by a railroad company. That is, a stretch of track for which a carrier anticipates filing for abandonment within three years of the date of the Systems Diagram Map is denoted as Category 1. Category 2 includes those lines which the carrier has under study for possible future abandonment because the carrier anticipates that either operating losses or rehabilitation costs will be excessive (anticipated filing date sooner than for Category 1). The third category includes those lines for which an abandonment application has been filed with the Interstate Commerce Commission (Montana Department of Commerce, 1980).



DOT:
474 miles now critical

LINE:
2027 miles, will need reconstruction within 10 years

Percent Sufficient
0—40
41—60
61—100

FIGURE 1. THE CONDITION OF THE PRIMARY ROAD SYSTEM, 1981

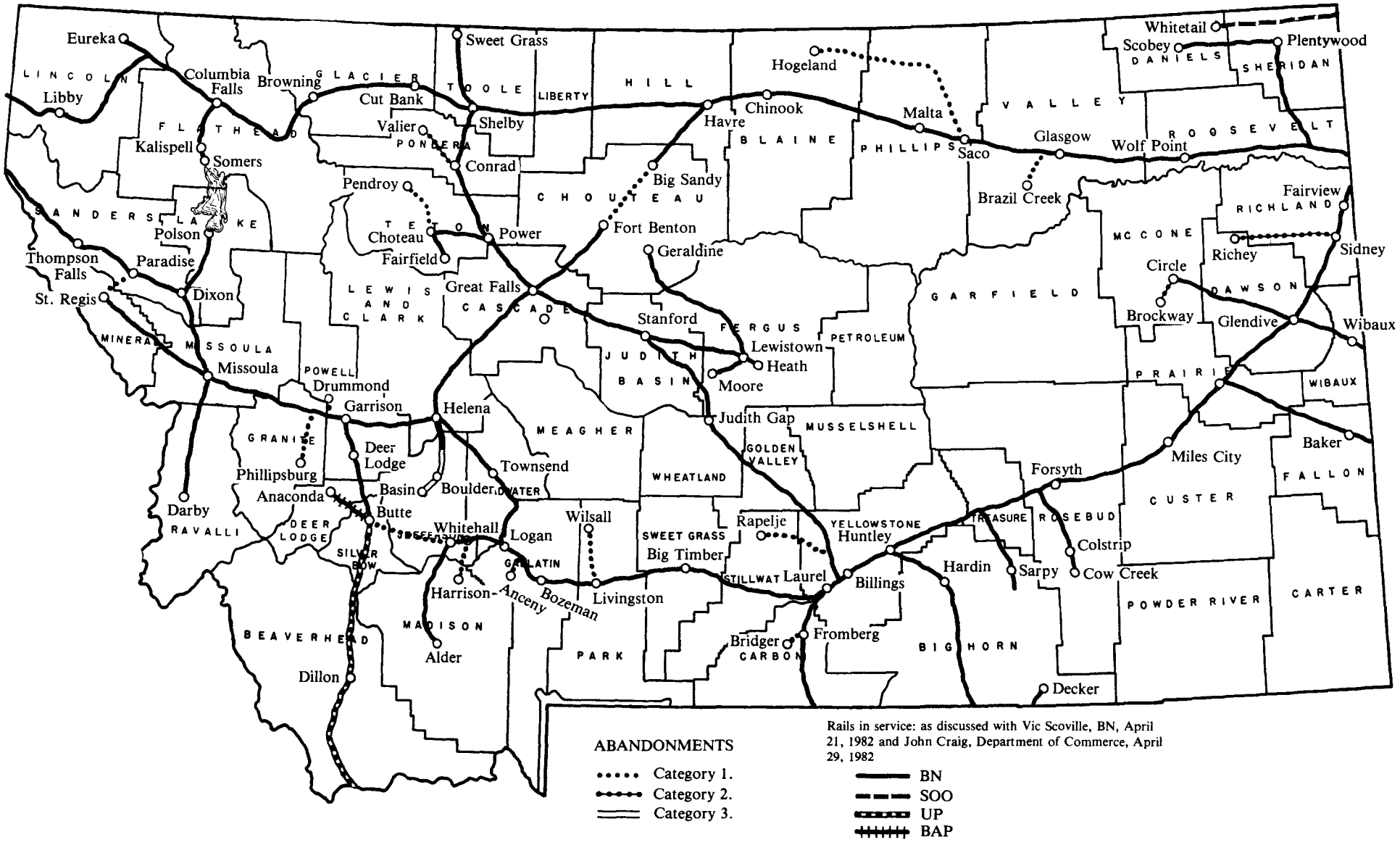


FIGURE 2. THE RAILROAD SYSTEM IN MONTANA, 1982

Current Highway Funding in Montana and Adjacent States

The distribution of federal aid among the states surrounding Montana varies considerably. Montana received the most federal aid, with a total of $122.6 million in fiscal year 1981, or 69 percent of our total highway funding (Table 3, below). Wyoming was next in fiscal 1981 receiving $68.7 million, or about 38 percent of total funding. North Dakota's fiscal 1981 federal aid totaled $62.2 million, yielding about 53 percent of total funding. South Dakota follows with $55.7 million, for 42 percent of their total, and Idaho received the least — $54.8 million, or about 54 percent of their total highway funding.

Fuel tax rates in these states also vary considerably. In Montana, the fuel tax is 11 cents on diesel fuel and 9 cents on gasoline. One cent of both taxes is temporary, and due to expire in July, 1983. Total fuel tax receipts used for Montana highways in fiscal 1981 were $28.0 million, or about 16 percent of total revenues ($21.8 million was gasoline, for 12 percent; and $7.0 million was diesel, for 4 percent).

In Wyoming, there is an 8 cent pump tax on gasoline, and a ton-mile assessment (commercial registration in Table 3) of 1.5 mills for gasoline powered trucks and 2.6 mills for special fuels (of which diesel is one). In fiscal year 1981, fuel taxes netted Wyoming $19.9 million, or 11 percent of total revenues.

The fuel tax in North Dakota is 8 cents per gallon on both diesel and gasoline. Total fuel receipts in North Dakota in 1981 were $19.8 million, approximately 17 percent of total highway revenues.

South Dakota currently has a pump tax of 13 cents per gallon for both diesel fuel and gasoline. One cent of this is temporary, however, and due to expire on March 31, 1984. In fiscal year 1981, South Dakota netted $43.6 million from fuel taxes, about 33 percent of their total highway revenues.

Table 3. State highway funding comparison, 1981.

Road Type	*Montana*	*Idaho*	*Wyoming*	*N. Dakota*	*S. Dakota*
Interstate	1194 miles	633 miles	914 miles	571 miles	656 miles
Federal-Aid					
Primary	5447 miles	2608 miles	3000 miles	5597 miles	6499 miles
Secondary	4705 miles	1595 miles	2300 miles	946 miles	2368 miles State 8511 miles Local
Urban	335 miles	-0-	-0-	22 miles	340 miles
Fiscal Year 1981					
Expenditures	$187,697,000	$105,000,000	$189,900,000	$116,149,000	$145,158,000
Revenues	177,231,000	102,000,000	180,900,000	116,377,000	133,500,000
Federal aid	122,630,000	54,800,000	68,700,000	62,199,000	55,697,000
Fuel tax	28,862,000	27,930,000	19,900,000	19,842,000	43,595,000
(Gasoline)	21,815,000	—	—	—	—
(Diesel)	7,047,000	—	—	—	—
(Special Fuels)	—	—	—	4,100,000	—
GVW fees	19,375,000	—	—	—	11,610,000
Weight-distance tax	—	20,000,000	—	—	—
Motor trip permits	—	—	1,400,000	—	—
Commercial registration	—	—	25,500,000	—	—
Ton fees	—	—	—	119,000	—
Motor vehicle use tax	—	—	—	713,000	—
Misc. truck fees	—	—	—	4,226,000	—
Mineral royalties	4,428,000	—	2,900,000	—	—
Coal tax revenue grant	—	—	3,800,000	—	—
Coal severance tax	—	—	5,600,000	—	—
Coal, uranium, trona tax	—	—	6,700,000	—	—
Registration	—	9,870,000	10,100,000	14,156,000	14,269,000
Interest from highway account	—	—	2,500,000	—	—
City and county matching funds	—	—	1,800,000	7,805,000	—
General fund	—	—	2,000,000	36,000	—
Drivers license fee	—	—	—	1,006,000	—
Miscellaneous	1,936,000	—	—	2,174,000	8,329,000

The State of Idaho is currently charging 12.5 cents per gallon tax at the pump for both diesel fuel and gasoline. Also Idaho has a highway use charge for commercial vehicles based on the ton-mile concept. The tax is assessed on a sliding scale which graduates about every 2000 pounds (one graduation incorporates a 4000 pound skip). The scale starts at 9.3 mills per ton-mile for trucks grossing 16,001 pounds, and ends at 27 mills per ton-mile for trucks grossing 78,001-80,000 pounds. Idaho collected a total of $27.9 million in fuel taxes in fiscal year 1981, for a total revenue percentage of about 27 percent.

In terms of commercial truck contributions to total highway revenues, Montana is considerably lower than either Wyoming or Idaho. The Wyoming Highway Department estimated truck revenues to be around 22-23 percent of all revenues in that state, while the Idaho Transportation Department estimated trucks contributed 29 percent of that state's total highway revenue. In Montana, the commercial truck contribution is about 14 percent of total highway revenues including federal aid. Montana's current GVW taxes, in addition, are lower than those in the states of Idaho, Arizona and Oregon, and about par with those of North Dakota and Washington. South Dakota and North Dakota could offer no accurate estimates as to percent of revenue generated by commercial traffic.

One interesting aspect of Wyoming's highway revenues is that a significant amount of it was generated through mineral taxes. The State of Wyoming allocated $19 million, or 10.5 percent of all highway revenues, from mineral revenues. Montana was the only other state in 1981 to apply mineral revenues to highways, using $4.4 million of mineral royalties. This is 2.5 percent of total Montana highway revenues.

Regulation/Litigation Versus Competition

Given the preceding background, what are some of the viable political/economic options available for Montana policy makers? In order to answer this question, it is perhaps worthwhile to discuss some popular options (strategies) that may *not* likely be fruitful.

One of the more obvious options open to the state would be to try to create a transportation system via regulation. While some regulation of the transportation sector is useful, and in fact necessary, it is often viewed as a cure-all, which it clearly is not; regulatory costs often exceed benefits. Regulation tends to deal with symptoms and does not really offer long-term solutions to problems. If a transportation firm is viewed to be charging excessive rates, a political entity (the state or federal government) could institute regulations which would control transportation rates and services. The level of freight rates, however, could reflect a firm's market dominance, and the real problem is lack of competition; the state might be better served if the political sector concentrated on fostering competition rather than attempting to regulate the existing firm(s).

U. S. railroads are classified as common carriers. As such, their interstate activities are subject to regulations by the federal government and their intrastate activities are subject to state regulation. Being a common carrier means that the railroads have special obligations to society. These duties include reasonable service of all customers, reasonably prompt delivery of goods, to charge reasonable rates, and to avoid discrimination (Sampson and Farris).

Certainly Montanans should be concerned about whether these "duties" are being met by the Burlington Northern (BN). The temptation exists to opt for an aggressive regulatory/litigation posture relative to the BN. However, Montanans historically often have been in conflict with railroads. While BN clearly has market power in Montana, probably not much would be gained from continuing the historic adversarial relationship between BN and the state.

Does investing large amounts of money in railroad litigation yield a greater or lesser return than comparable amounts of money and effort invested in alternative strategies? For example, will the citizens of the State of Montana be better or worse off ten years from now if sizable investments are made in court battles or if relatively greater amounts are invested in highway maintenance?

The Burlington Northern is a private business organization whose livelihood is dependent upon its profitability. As such, the state should carefully evaluate each action tending to inhibit BN's ability to react to market forces. For example, it is not clear that the state should vigorously battle to stop each and every proposed branch-line abandonment or to directly affect rail rates as a matter of routine. At the same time, however, Montana should not protect BN from market competition through legislative or regulatory barriers to entry for competing modes of transportation (pipelines, for example). Insofar as possible the market should be allowed to determine the most efficient transportation for a given commodity.[9] The challenge is to foster competition in the transportation sector (broadly defined). This could do more to influence rail rates than spending large sums of money in regulatory and litigation activity.

If this view is accepted, the state's primary responsibility should be the job of maintaining the "public" transportation system — the highways. This implies identifying Montana's highway services and then seeking revenues from Montana residents and nonresidents in accordance with some standard of equitable tax structure for the different services.

[9]We believe that the market system should primarily be used to allocate transportation resources; however, we are aware of other social objectives that may preclude free market solutions. In such cases we recommend that careful benefit/cost studies be done to determine the "gains and losses" and likely net benefits over costs so the public can make informed decisions.

Principles of Taxation

Over the years, much has been written by economists concerning the distributional burdens of taxation. Even though there is no scientific basis by which to determine who should pay for publicly owned and operated services, two general principles of taxation have been used. The first principle is the "user fee" concept, whereby users of public services are charged in accordance with benefits received or costs imposed. The other taxation principle is "ability-to-pay;" that is, taxes are assessed depending upon some measure of relative wealth or income.

The User Fee or Benefit Received Principle

Paying according to benefits received is common in a free enterprise economy. When purchasing a good in a private market, an individual must make an evaluation and comparison of benefits received and costs imposed. If benefits are perceived to be greater than costs, a purchase is usually made; a purchase would not be made if the opposite were true. The concept of user fees attempts to transmit the same benefit/cost calculus to the purchase and use of public goods; it implies that those who receive the benefits should bear the costs. This, then, provides a direct relationship between expenditures and revenues. The adoption of user fees to provide funding for public goods on the basis of benefits received or costs (damages) imposed is becoming an increasingly acceptable financing alternative. Examples of the implementation of this type of tax include gasoline taxes, garbage collection fees, and entrance fees of various types.

Ability-to-Pay Principle

The ability-to-pay principle holds that individual taxpayers should contribute to the cost of providing public goods and services according to their ability-to-pay, irrespective of benefits received. The ability-to-pay principle embodies two concepts of equity—vertical equity and horizontal equity. Vertical equity suggests that people with greater incomes or wealth (payment capacity) should carry a proportionately greater share of the tax burden. In theory, a progressive income tax encapsulates the notion of vertical equity.[10]

Closely related to vertical equity is the idea of horizontal equity, which simply holds that taxpayers with equal ability-to-pay should carry equal shares of the tax burden. Unfortunately, neither the concept of vertical or horizontal equity is easily implemented. For practical purposes, it is impossible to determine, institute, enforce, and maintain a tax system that insures equal tax contribution for *equal* ability-to-pay — worthy as that goal may be. For example, how does one determine equal ability-to-pay? Families with different wage incomes may have incomes from alternative sources with varying degrees of tax exempt status, different numbers of dependents, and different configurations of deductible and non-deductible expenses. Clearly, even an attempt to determine equal ability-to-pay is fraught with problems, not to mention the problems involved with the implementation, enforcement and maintenance of the tax scheme.

Nevertheless, some principles or criteria must be adopted by which the "fairness" of a taxation scheme is judged. Thus, it is useful to think in terms of the benefit-received and ability-to-pay principles as the financing of Montana's highway system is more closely studied.

For example, the *Final Report of the Highway Cost Allocation Study to Congress* (U.S. House of Representatives) proposes that large trucks should pay proportionately higher user fees than lighter vehicles. The recommendation is based on the notion that heavier vehicles impose substantially greater design, construction and maintenance costs than do lighter vehicles. Estimates of maintenance cost responsibility were made using an incremental cost method. This is a method by which different levels of incremental maintenance are assigned to succeedingly heavier groups of vehicles. The first increment is the result of use by all traffic, while the last increment is the result of use only by the heaviest vehicles.

The *Cost Allocation Study* further suggests that road maintenance associated with roadside and drainage, structures, traffic surfaces, and snow, ice, and gravel control are not affected by vehicle size and weight, and as such all vehicles should contribute solely on the basis of miles traveled, as opposed to any tax formula accounting for gross vehicle weight. In terms of road shoulders, surface, and base, however, size and weight become a critical factor.

Regarding overall maintenance (damage and non-damage related) the study suggests that five-axle, diesel trucks in excess of 60,000 pounds are responsible for 15.5 times the *annual* highway maintenance costs of a passenger car. Nationally, smaller loaded trucks (two-axles, six-tires) are responsible for about three times the *annual* highway maintenance costs of a passenger car. On the other hand the costs *per mile* of travel on the Federal-aid highway systems for the five-axle trucks is about 2.1 times that of a passenger car. There are other methods for determining user fees, such as benefit received, but the incremental cost method was the preference of the congressional study. This method has been opposed by trucking interests because it places a larger tax burden on large trucks than do some other methods. While this study was conducted in 1964, the relative estimates of maintenance cost could still be useful as a guideline today.

[10]Of course, we are all aware that, in practice, progressive income tax schemes generally fall far short of achieving so-called vertical equity, because it is clearly in the interest of those with wealth, and therefore political power, to see to it that certain exceptions, income exclusions, etc., are built into the income tax code.

Using either the benefit-received or the ability-to-pay principle, substantial share of Montana's road maintenance burden should probably be shared by the federal government. Montana has the highest per capita road mileage in the United States, and the quality at which these roads should be maintained is greatly influenced by the volume of out-of-state traffic. Simply put, Montana does not need as high a quality road system to market domestic commodities as it does to serve its own needs *plus* interstate traffic.

As previously mentioned, in fiscal year 1981 the federal government provided $122.6 million or 69 percent of total revenue for Montana's highways. In light of Montana's military importance, its strategic and economic significance as a bridge state between the west coast and the eastern states, and Montana's proximity to Glacier and Yellowstone Parks, it could be argued that as Montana's highway costs increase, so should the amount contributed by the federal government.

Even if these arguments are overstated, it is in Montana's interest to push hard to attain additional funding from the Federal Highway Trust Fund. There are currently 17 bills in Congress dealing with the Highway Trust Fund, and these bills should be reviewed and closely followed. Montana politicians should voice support for those "rules" and "formulas" which recognize and provide support for Montana's highway system.

In terms of increasing domestic (Montana) revenues to meet maintnance costs, Montana has several options available besides general fund expenditures. For purpose of this paper these options are divided into two categories — user fees and their enforcement, and other financing options.

User Fees and Enforcement

Several options are available to increase revenues for highway construction and maintenance via increased user charges. These options are first discussed and then attention is turned to enforcement procedures that would be required to make the user charge concept effective.

1) Increase fuel taxes

Since fuel consumption is reflected by the composite of both distance traveled and the size of the vehicle (larger vehicles tend to consume more fuel per mile traveled), fuel taxes tend to assess tax burdens on individuals in accordance with highway use. Thus, theoretically, fuel taxes are an example of taxation according to benefit received. Currently there is a one cent tax on gas and diesel fuel due to expire July 1983. At current consumption levels, a one cent tax yields about $5 million per year. The state has the option of renewing this tax on a temporary or permanent basis and possibly increasing the fuel tax further. Certainly the economic and political feasibility of increasing state fuel taxes in the near term depends on the outcome of the current proposal to increase federal fuel taxes.

2) Raise gross vehicle weight fees (GVW)

The current schedules of gross vehicle weight fees were established on January 1, 1968 (GVW Division). In the meantime, highway maintenance costs have increased significantly. If GVW fees contributed a "fair share" to highway revenues in 1968, then seemingly GVW fees would need to be increased or decreased in proportion to other revenue sources in order to maintain that fair share.

3) Restructuring GVW exemptions for concrete trucks, low-boys, logging trucks, livestock trucks, and farm trucks and trailers

Concrete trucks and lowboys were originally allowed GVW exemptions because their road use was seasonal while GVW taxes were assessed on an annual basis. However, it is now possible to buy GVW permits for selected months (i.e. those months the vehicle will be operated on Montana highways). Certainly the extent of GVW exemption should be limited to the percentage of vehicle mileage not on state funded highways. "Ready mix" concrete trucks are currently exempt from 45 percent of GVW fees. Low-boys and livestock trucks are exempt from 25 percent of GVW fees. Logging trucks are also exempt from 25 percent of the standard tax, and this may be appropriate since logging truck mileage is not all highway mileage. Farm trucks, on the other hand, are exempted from 84 percent of the standard tax. For many farm trucks, highway mileage constitutes more than 16 percent of total annual mileage.

The whole GVW exemption issue is fraught with problems. The principle of taxation according to benefit received would suggest that trucks be assessed according to actual use, not simply by percentage of total mileage that is highway mileage. That is, if one truck operates 100 percent on highways but only travels 10,000 miles per year, while another truck operates only 50 percent on highways but travels a total of 20,000 miles per year, should the second vehicle GVW fee be 50 percent that of the first? We think not. Both trucks traveled 10,000 miles on highways.

4) Ton-mile taxes

Ton-mile taxes are currently used in a number of states including Wyoming and Idaho. Highway department officials from both states indicate they believe the method is being used successfully. This type of tax structure could equitably assess taxes on commercial vehicles for those maintenance costs associated with the size and weight of vehicles. There are limitations, however, which reduce the viability of this option for Montana. Specifically there are significant administrative and enforcement costs associated with the tax. Montana currently has neither the scales nor personnel to enforce such a tax.

5) Travel permits

A travel permit system is an alternative to the ton-mile tax. Such a system need not be as complicated as a ton-mile tax and provide the equity advantages offered by the ton-mile tax. Trucks could be assessed one fee for travel under 200 miles, a higher fee for 200-400 miles, and a still a higher fee for travel in excess of 400 miles. The fee schedule could also be structured by weight to insure that a truck crossing Montana empty would not pay as much as a truck hauling a load through the state. Modifications could be allowed. For example, trucks registered for 100 percent of their travel in Montana (see the International Registration Plan discussion in the Conclusions section) could be exempt from any fee; and trucks which purchase fuel in Montana might be allowed to deduct state fuel tax from the cost of their trip permit.

6) Expand the powers of the GVW law enforcement personnel to allow them to enforce all laws applicable to commercial vehicles

This enforcement option would allow the state to make better use of user fee concepts. Legislation would be necessary to authorize GVW enforcement personnel to issue citations for such things as speeding, expired drivers license, or registration violations.

7) Increase the maximum distance a GVW official can require a truck to proceed to be weighed

Currently if a truck thought to be in violation of weight regulations is stopped more than two miles from a scale, it cannot be required to proceed to that scale to be weighed.

Other Options

1) Apply some percentage of Montana's mineral severance taxes to highways

The principle behind the Coal Trust Fund is that those funds would be set aside for future generations. In light of this, an argument could be made to divert some percentage of that revenue to highways. Future Montanans will need a well designed, well maintained transportation system to export their products and import those that are not domestically produced. It may be in the long-run interest of Montana to upgrade and maintain the current highway system rather than force future generations to incur the costs of replacing a completely deteriorated road system. The need for good transportation services is not likely to decline in future years.

2) Credit interest from the highway earmarked account to that account.

Interest earned on the highway earmarked account currently is diverted to the general fund. These interest earnings amount to about $1.5 million per year.

3) Elimination or restructuring of the current financial districts

Currently, all 12 financial districts submit lists of highway priorities to the State Highway Department, which then finances some number of priorities in each district. This can cause gross inefficiencies in highway expenditures. If the first three priorities of one district are more important to the state as a whole than any of the priorities from another district, the second and third will still not get funded until the first priority of the other eleven districts has been funded. Currently, all of the critical roads lie in six districts, but funds cannot be channeled to all the critical road projects until the high priority projects of other districts with no critical road section have been financed.

Conclusions

Maintaining an adequate surface transportation system in Montana is a formidable problem. Montana's rail system is dominated by a single firm, Burlington Northern, which may have the potential to exert considerable market power. Maintenance costs of Montana's highway system are substantial. Yet an adequately maintained highway system is seemingly essential to service the main competitive alternative to the rail system for the movement of most freight, i.e., the trucking industry.

It was argued earlier in this report that efforts of Montanans, individually and collectively, to deal with Burlington Northern through regulatory/legal processes might be better directed toward other strategies, e.g., fostering competition in the transportation industry through improved highway, air and/or pipeline alternatives. Although it would not be an easy research task, it would be interesting to know whether the investment in attempting to control the rail industry via legislative/regulatory/legal processes has had a positive, neutral or negative impact on rail freight rates and service for Montana users.

Be that as it may, the most immediate transportation concern of many Montanans is how to generate the additional $50 million in state funds that the Highway Department claims is needed to refurbish and maintain our present highway network. Several options are available to enhance resources for highway development and maintenance. These include:

1) The state could raise part of the $50 million needed annually through an increase in fuel taxes. This would insure that all highway users bear a part of the burden for increased maintenance according to use. A one cent increase in fuel taxes will generate approximately $5 million per year in revenue.

2) The state could take a close look at GVW laws. Montana is a member of the International Registration Plan (IRP). The IRP provides for trucks which engage in interstate transport to prorate their fees in Montana according to the percentage of their total miles per year traveled in Montana. While this reduces costs and time for the carriers in states that are IRP members, it does present some problems for Montana. Reliance on the IRP for commercial traffic tax assessment results in an inequitable taxing of trucks in terms of cost per mile traveled. A fleet registered for 100 percent of its travel in Montana would pay 100 percent of the Montana tax assessment regardless of miles traveled. A fleet registered for only 25 percent of its travel in Montana pays only 25 percent of the assessed fees regardless of miles traveled in Montana. If the first fleet travels 25,000 miles, and the interstate fleet travels 100,000 miles, they both travel the same distance in Montana. The first fleet will pay 75 percent more taxes than the second fleet for equal travel on Montana highways. The result is that prorated truckers are being subsidized at the expense of entities that conduct all of their business in Montana. This is inconsistent with the principles of equitable taxation previously discussed. Montana could come much closer to approaching tax equity by charging all trucks on a per mile basis.

Montana and its four adjacent states are all members of the International Registration Plan. Montana and North Dakota charge no fees in addition to prorated fees on commercial vehicles, and South Dakota requires

only a small registration fee with their Public Service Commission in addition to prorated fees. Wyoming and Idaho, on the other hand, both charge ton-mile taxes in addition to prorated fees. Since a ton-mile tax is assessed on the basis of weight and distance traveled, it is consistent with the principle of taxation according to benefit received (cost imposed). Ton-mile taxes help insure that out-of-state truck use is not subsidized at the expense of domestic truckers.

3) A tax system based on distance traveled and possibly gross vehicle weight could be enforced using state scales, private scales, scales from other states and a fine structure that would encourage compliance.

4) Montana also participates in a reciprocity agreement with some states. This allows trucks to travel in either state while being registered in just one. While this could be an advantageous program assuming there was an equal number of trucks from each state using the other state's highways, such is not the case. The states with which Montana participates in this program tend to be of less strategic advantage to Montana trucks than Montana is to their trucks. (For a list of these states, see Appendix Table 1, p. 22.) Montana's option in this situation could be to cancel reciprocity agreements and force all out-of-state trucks to participate in Montana's highway revenue program.

5) According to the *Final Report of the Highway Cost Allocation Study,* large trucks have historically paid much lower user fees in relation to lighter vehicles than would seem to be equitable based on their impact on highways. User fees contributed by all trucks in Montana in fiscal year 1981 were roughly 45 percent of non-Federal revenues. (This rough approximation was obtained as the sum of GVW collections pertaining to trucks and diesel fuel tax revenue.)

This suggests that the state might consider a more equitable distribution of the user tax burden among relatively heavy and light vehicles in addition to a general increase in GVW fees to compensate for losses due to inflation over the last 14 years. Further, there probably should be a minimum registration fee to cover the administrative costs of licensing those fleets whose tax reflects a mere fraction of their processing (registration) costs to the state.

6) Montana could expand the enforcement powers of GVW personnel to allow them to enforce all regulations applicable to commercial vehicles. These individuals are professional law enforcement personnel and, as such, the state might wish to take full advantage of their training and expertise to improve law enforcement effectiveness.

7) Further, weight compliance could be improved by permitting the GVW division to increase the maximum distance a GVW official can require a truck to proceed to be weighed. The present two mile limit, in combination with a relatively modest fine structure, provides only limited incentive for weight compliance. Strict weight compliance would result in less highway damage and hence lower maintenance costs.

8) Montana may also want to consider undertaking a "permit-system" for commercial trucks to insure that an unfair amount of the tax increase on trucks is not delegated to those vehicles registered for all of their travel in Montana, and thereby further subsidizing interstate trucks at the expense of small Montana operations.

9) It seems reasonable that Montana consider the possibility of entering into agreements with neighboring states to cooperate in the use of truck weigh scales. The state could much more comprehensively enforce weight regulations if it did so in cooperation with surrounding states. A similar agreement ought to be considered with private scale owners in order to expand Montana's ability to enforce regulations on intrastate traffic.

10) Montana could study the approach routes to the national parks and consider designating them as recreational highways; it might be beneficial to limit or control commercial truck traffic on such roadways.

As a concluding point, it should be noted that the above recommendations pose a dilemma when set juxtaposed to the argument that the trucking industry is essential if Montanans hope to foster competition in the transportation sector. That is, if points 1) through 10) above were pursued the impact would be to increase truck freight rates to Montanans, which would reduce rather than enhance the compeitive position of the trucking industry at least in the short run. The dilemma is real. However one looks at the problem, the real cost of transporting products into and out of Montana is not likely to fall in the foreseeable future. It is also apparent that whatever options are pursued consumers of Montana transportation services will likely bear increased costs.

Future Research Needs

There are a number of critical questions and issues regarding Montana's transportation future that are in need of answers before an informed transportation policy or highway funding program can be formulated. Some of the most important areas where additional information would be helpful are:

1) Research is needed in the area of developing realistic damage estimates for different types of highway use. This would include estimating what would comprise an equitable tax distribution between commercial and private use, and heavy and light vehicle use.

2) A study should be considered which would identify more equitable ways of distributing the tax burden for commercial highway use between exclusively Montana trucks and prorated trucks.

3) Some effort should be made to determine the highway quality needed to service Montana as opposed to that needed to serve interstate users.[11]

4) A study should address an equitable method of taxing partially GVW exempt vehicles based on actual highway use.

5) Consideration is needed regarding an equitable method of taxing alternative modes of transportation (rail, air and highway).

6) With more and heavier trucks on county roads, a study of allocating increased maintenance costs and impacts on local governmental jurisdictions should be undertaken.

A caveat should be noted regarding the need for additional study. Obviously, action cannot always be deferred until all the facts are known. On the other hand, some expensive mistakes will likely be made if action is taken prematurely in areas where there are serious knowledge shortfalls. The question of whether or not to commission further study is an economic question: Do the expected benefits of the additional knowledge exceed the expected (perhaps known) costs of attaining the better information? The answer is not always yes.

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[11] In this vein it would be helpful to know what is likely to be the future federal government posture regarding funding for highway reconstruction and maintenance.

Appendix Table 1. Commercial Registration Status With Montana.

Uniform Agreement (Prorate)

Alaska
British Columbia
California
Nevada
New Mexico
Washington

International Registration Plan (I.R.P.)

Alabama
Alberta
Arizona
Arkansas
Colorado
Idaho
Illinois
Iowa
Kansas
Kentucky
Louisiana
Minnesota
Mississippi
Missouri
Nebraska
North Carolina
North Dakota
Oklahoma
Oregon
South Dakota
Tennessee
Texas
Utah
Virginia
Wisconsin
Wyoming

Bilateral (I.R.P.)

Pennsylvania

Reciprocity

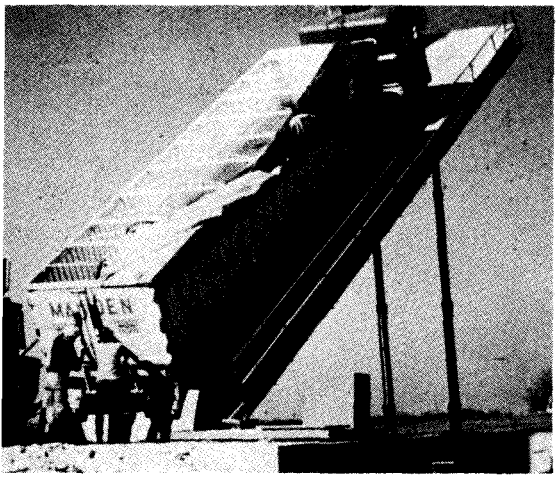
Connecticut
Delaware
D.C.
Florida
Georgia
Indiana
Maine
Massachusetts
Michigan
New Hampshire
New Jersey
Rhode Island
South Carolina
West Virginia
Manitoba
Ontario

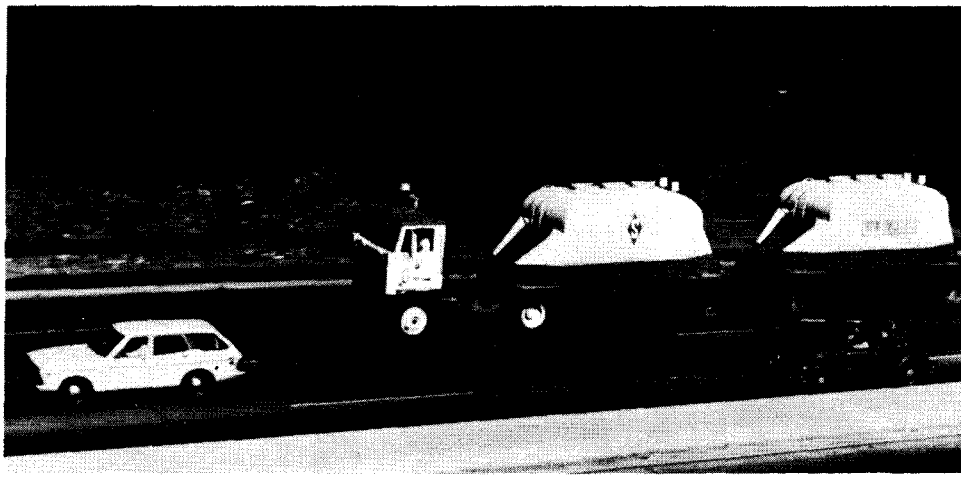
Limited Reciprocity

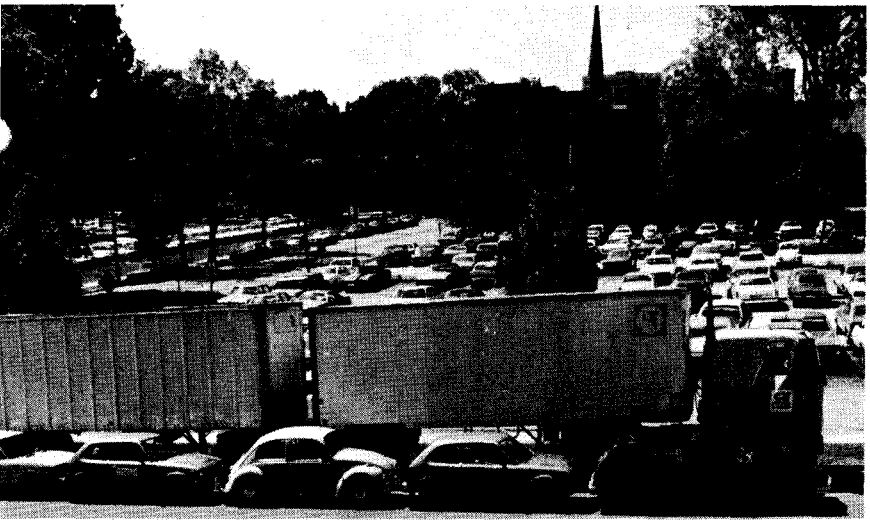
New York
Ohio

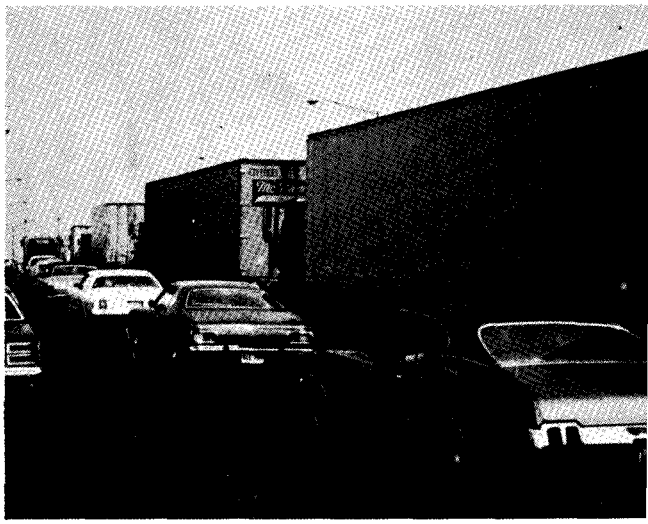
Non-Reciprocity or Other Agreements

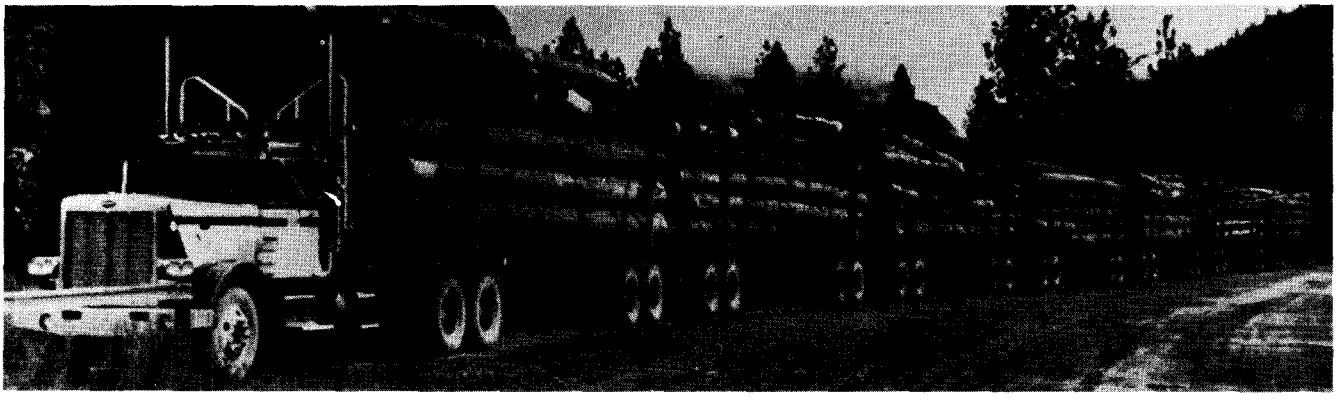
Maryland
Vermont
Hawaii











INCREASED TRUCK SIZE AND WEIGHT

The Impact On Highways, Safety, And Energy

Revised Edition

INCREASED TRUCK SIZE AND WEIGHT

The Impact On

Highways, Safety, And Energy

CONTENTS

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FIGURES

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INTRODUCTION

The highway system is one of America's most valuable national resources. It was constructed with a vast outlay of public funds, natural resources, and human effort. However, during the past decade there has been an alarming deterioration in the condition of the highway system. The backlog of needed repairs continues to outstrip current sources of highway revenues at the federal, state, and local levels.

In recent years there has been a concerted legislative effort by the trucking industry to increase the allowable weight, length, and width of trucks on the highways. The industry representatives speak of the obvious importance of trucks to the national economy and claim that larger trucks will save fuel and lower consumer prices. They say little about the impact of larger trucks on the highways and public safety.

Engineering studies show that there is an exponential relationship between truck weight and road damage. For example an increase from 73,280 pounds to 80,000 pounds leads to a 50 percent increase in a truck's impact on a roadway. The bulk of the interstate system was designed for 73,280 pound trucks. Despite this fact all but three states (Illinois, Missouri, and Arkansas) allow 80,000 pound trucks. During the past two sessions, Congress has considered legislation to force all states to permit 80,000 pound trucks on the Interstate System. A bill to allow 86,000 pound trucks died in committee.

Statistics between 1975 and 1981 show that fatal accidents involving combination trucks (cab and one or more trailers) are increasing at an alarming rate. During this period there was a 40% increase in fatal accidents involving combination trucks. The rate of such accidents increased 31 percent while the distance traveled by combination trucks and cars increased only 3.6 and 8.4 percent respectively.

Despite these facts, Congress has been considering various measures to allow trucks to be six inches wider and force all states to permit double trailers and longer single trailers. Several states are under pressure to permit triple trailers up to 105 feet long. As trucks become larger and cars become smaller, the safety situation is bound to worsen.

Potholes and bad roads are a major concern in most states today. The Congressional Budget Office estimated in 1982 that $16 billion are needed to maintain the Interstate System alone. Heavier trucks can only make these problems worse. The purchasing power of road funds is rapidly declining in the face of inflation. It makes no sense to allow bigger trucks to accelerate the deterioration of a highway system that cannot be maintained with current revenues.

A 1982 highway cost allocation study by the U.S. Department of Transportation found that heavy combination trucks currently pay less than 50 percent of the highway costs allocated to them. The trucking industry thus receives a subsidy from the taxpayers. This finding and the fact that big trucks are responsible for great amounts of road damage should be taken into account as road use taxes are increased at the state and federal level.

Bigger trucks are supposed to help solve the nation's fuel problems, on the assumption that fewer trucks will be needed to move freight. This argument falls apart when one realizes that truck registrations increase as weight limits increase. The fact is that truckers use weight increases to undercut rail rates and divert traffic from railroads to highways. Since trucks use approximately three times as much fuel as trains, increased truck traffic will worsen the fuel situation.

Some states have taken positive steps to protect their highways and the public from bigger trucks. Voters in Missouri passed a referendum that repealed a state law increasing truck weights to 80,000 pounds. Several western states have turned back attempts to permit triple trailer trucks. Other states are passing weight-distance taxes which charge trucks on the basis of their weight and miles traveled.

When fuel efficiency, public safety, and highway conditions are considered, it should become clear that bigger trucks are not in the national interest. Public officials who are responsible for highways should give priority to ensuring the safety of the motoring public and protecting our national investment in roadways.

IMPACTS OF LARGER TRUCKS: SUMMARY POINTS

Fatal accidents involving heavy trucks increased 47.6 percent between 1975 and 1978. 1975 was the first year that 80,000 pound trucks were legal in some states.

Although heavy trucks make up only about one percent of the registered vehicles, they are involved in about ten percent of all traffic fatalities.

The government is requiring cars to become smaller at the same time it allows trucks to become larger. This creates a dangerous situation for the motoring public.

In collisions between heavy trucks and smaller vehicles, 91 percent of the fatalities are occupants of the smaller vehicles.

Even though trucks are allowed greater braking distances than cars, only 65 percent of five-axle tractor-trailers and 44 percent of tractors with twin trailers could stop within the required distance during tests conducted in 1974.

Thirty-four percent of the trucks inspected by the Bureau of Motor Carrier Safety during random checks have safety violations serious enough to put them out of service. Brake deficiencies are the most frequently recorded serious violations.

Twin trailer trucks require twice as much stopping distance as the cars with which they share the highways.

American highways are deteriorating 50 percent faster than they are being repaired, according to the General Accounting Office.

Tests conducted by the American Association of State Highway Officials demonstrated that an increase in truck weights from 73,280 pounds to 80,000 pounds will decrease remaining pavement life between 25 and 40 percent.

Increasing truck weights to 90,000 pounds could decrease remaining pavement life by up to 60 percent.

The vast majority of the highways and bridges in the nation were built when trucks did not exceed 60,000 pounds. Sixty-four percent of the bridges on the primary highway system cannot handle 73,280 pound trucks without reducing their serviceable life.

The bulk of the $104 billion Interstate Highway System was designed for trucks weighing 73,280 pounds.

The Federal Highway Administration estimated in 1978 that only 15 percent of the Interstate System bridges, nine percent of the primary system bridges, and four percent of the secondary system bridges, could safely handle 80,000 pound trucks without reducing serviceable life.

The National Transportation Policy Study Commission reported in 1979 that the highway system would require an expenditure of $900 billion by the year 2000.

A five axle truck loaded to 73,280 pounds does as much road damage as approximately 6,000 cars. An 80,000 pound truck does as much damage as 9,600 cars.

The Arkansas Highway Department points out that a 73,280 pound truck causes as much road damage as 6,075 cars. The truck pays $3,517 in taxes and fees while the cars collectively pay $4,078,640.

In Indiana heavy trucks pay 19 percent of the federal user fees, but are responsible for 30 percent of the traffic on Indiana roads.

A 1978 Georgia cost allocation study showed that only cars and light trucks are paying taxes and fees equal to or greater than the highway costs they occasion.

A 1969 Federal Highway Administration cost allocation study showed that combination trucks paid only 76 percent of their allocated costs.

DOT estimated in 1975 that maintaining 1975 highway conditions until 1990 would require 329.2 billion 1975 dollars.

Twenty-two percent of all tractor-trailer combinations weighed by the Federal Highway Administration exceeded state weight limits.

State weight laws are lightly enforced and weigh stations are easily avoided. For example, half the truck traffic on I-55 near Chicago exits at Bolingbrook to avoid scales.

The General Accounting Office found widespread deliberate weight violations among trucks hauling grain, coal, steel, sand and many other products.

Soil and weather conditions are important factors which affect road life. Since these conditions vary from state to state, it is reasonable for weight limits to vary.

Two Chicago Tribune reporters found that two out of three trucks on Chicago expressways exceed the speed limit.

Trucks use at least three times as much fuel as railroads to move a ton-mile of freight.

Although heavy trucks use less fuel per ton-mile than their lighter counterparts, weight increases will save fuel nationally only if fewer trucks operate.

Truck weight increases will allow individual trucks to operate more efficiently and divert traffic from railroads. Since railroads use far less fuel per ton-mile than trucks, the nation will suffer a net fuel loss.

If truck trailer lengths are allowed to reach 48 feet, railroad cars will no longer be able to carry two standard trailers. This will cripple fuel efficient piggyback service.

HISTORY OF THE BIG TRUCK ISSUE

The United States contains approximately 3.8 million miles of highways. The age and design characteristics of these roads vary dramatically because they have been built by many levels of government to serve a wide variety of functions. Many of today's primary highways were wagon paths in the 1800's and were first paved in the 1920's when almost all freight moved by rail. As motor vehicle technology evolved, trucks began moving freight over the nation's primitive roadways. By 1913, four states had attempted to protect their public highway investments by placing limits on vehicle size and weight. All other states had such laws by 1931.

The states maintained complete jurisdiction over truck size and weight within their borders until the Federal Highway Act of 1956 established maximum limits on weight and width. Prior to enactment of the law, allowable gross vehicle weight varied from 35,000 to 110,000 pounds. These differences reflected such factors as the age of the roadways, weather conditions, subsurface conditions, the design of roads, the amount of money the state spent on highways, the availability of alternate transport, and the political effectiveness of various groups with vested interests in the issue.

The Federal Highway Act of 1956 established 73,280 pounds as the maximum allowable gross weight of trucks operating on the newly-authorized Interstate Highway System. The act specified single-axle load limits of 18,000 pounds and tandem-axle limits of 32,000 pounds. States which had higher limits prior to enactment of the law were allowed to keep them. Between 1958 and 1960, a comprehensive road test was conducted at Ottawa, Illinois. This test demonstrated that a slight increase in axle loading causes a tremendous increase in road damage. The bulk of the interstate highway system was designed for the weight limits specified in the 1956 Act.

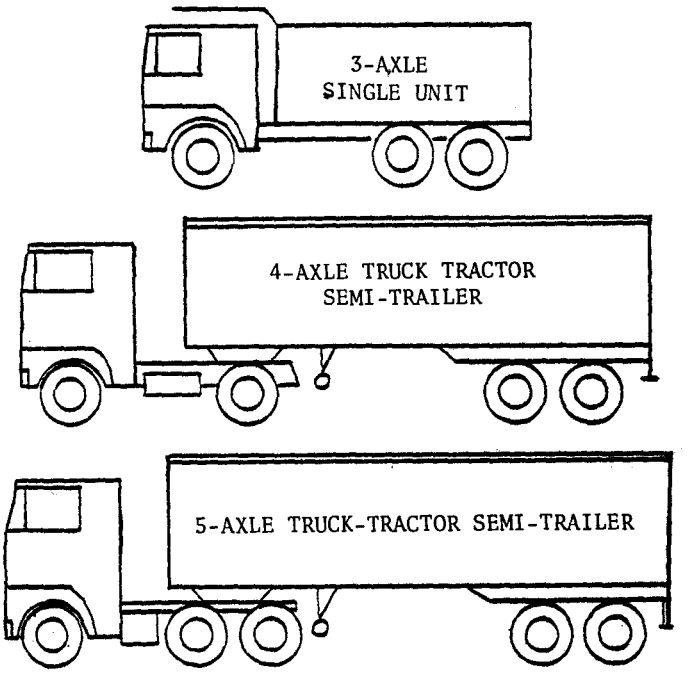
Over the years, trucking interests repeatedly attempted to increase federal limits. They met with little success until the oil embargo of 1973. In 1974, in the closing days of the 93rd Congress, the Senate passed a bill authorizing a temporary increase of maximum truck weights to 80,000 pounds (20,000 pounds single-axle and 34,000 pounds tandem-axle). This increase was supposed to compensate truckers for lost productivity due to the 55 mile per hour speed limit, which was also viewed as temporary. The House had previously defeated an attempt to increase weights to 90,000 pounds by a vote of 252 to 159. However, the 80,000 pound measure was attached to the Federal Aid Highway Act; its failure to pass would halt highway construction throughout the country. Rather than lose the highway program, the House concurred in the Senate action. The Act passed, but contained a provision for individual states to keep lower limits if they so desired.

Ten states maintain weight limits lower than the 80,000 pound maximum. Six of those (Iowa, Illinois, Indiana, Missouri, Arkansas, and Mississippi) have 73,280 pound limits, which prevent east-west interstate movement of heavy trucks. Trucking interests have lobbied extensively in these states in unsuccessful attempts to raise the limits.

Diesel fuel price increases led to the independent truckers strike of 1979 and focused national attention on the low weight states. Elements within the trucking industry have used the economic problems generated by the fuel shortage in an attempt to force the country to give them national weight and length increases that they have been unable to attain by legislative means during calmer times. During the first half of 1979, the governors of five states signed emergency orders allowing heavier trucks to cross their states. The governors of Illinois, Indiana, Arkansas, Tennessee, and Pennsylvania, citing the potential for road damage, refused to increase weight limits. The Carter administration and several members of Congress are now pushing for uniform national truck weight limits of 80,000 pounds.

Two key points are often overlooked in the current debate. First, uniform weights already exist since all states accept trucks up to 55 feet long which weigh no more than 73,280 pounds. Second, the trucking industry has traditionally supported legislation to increase weights and will most probably continue to do so even if they pass the 80,000 pound legislation.

FIGURE 1. TYPES OF TRUCK AFFECTED BY INCREASED WEIGHT LIMITS



HIGHWAY SYSTEM

There were 3,717,524 miles of highway in the United States in 1975. The Federal Highway Administration (FHWA) classifies these roads as rural, urbanized or small urban. They are also divided into functional categories as shown in Table 1.

The principal arterial system primarily serves statewide and interstate travel. It includes the Interstate Highway System and other principal arterial routes. Minor arterials in rural areas provide access to principal arterial routes and facilitate interstate and intercounty service. The collector system serves more localized areas such as counties or cities. About two-thirds of the nation's highways are classified as local.

The 42,500 mile Interstate Highway System has been called the world's most ambitious public works project. When the last 3,000 miles are completed, it will have cost $104 billion or about $800 for every licensed driver in the nation.

Although the Interstate System comprises only one percent of the highway system, it carries about 20 percent of the nation's daily vehicle miles traveled (DVMT). Other principal arterials and minor arterials each carry an additional 20 percent of the DVMT (1).

The Federal Highway Trust Fund provides 90 percent of the money to build the Interstate System. Federal matching funds are also available at lower levels for the construction of highways that qualify for the Federal Aid Systems.

State and local governments are responsible for financing the operation and maintenance of the Interstate System and other highways. Although some federal funds are now available for major reconstruction and rehabilitation work, the states continue to have a vital interest in any federal legislation that may cause road damage because they still pay most operation and maintenance costs.

HIGHWAY CONDITIONS

Highways are deteriorating 50 percent faster than they are being repaired, according to a 1977 General Accounting Office report (2). The U.S. Department of Transportation (DOT) estimates that an investment of $329.2 billion in 1975 dollars will be needed to maintain the highway system at its 1975 condition until 1990 (1).

The condition of the highways in 1975 is summarized in Table 2. Under the system used, "good" indicates pavement that is in relatively new condition, "fair" indicates that resurfacing is required in the near future, and "poor" indicates an immediate need for resurfacing.

Approximately 30 percent of the Interstate System, 50 percent of the arterials, and 65 percent of the collectors were rated fair or poor in 1975 (1). Bridges were classified as deficient if they could no longer safely serve the system of which they were an integral part in 1975. Approximately four percent of all Interstate bridges, 18 percent of the arterial bridges and 65 percent of the collector bridges were deficient.

In 1975 approximately one percent of the rural mileage had traffic congestion problems. In urban areas congestion was a problem on about 20 percent of the interstate highways and arterials and five percent of the collectors.

TABLE 1. 1975 U. S. Road Mileage by Federal Highway Administration Functional Classification and Percent of Daily Vehicle Miles Traveled Carried by Each Highway Type.

Type of Highway	RURAL			SMALL URBAN			URBANIZED		
	Mileage	Percent of Total	Percent of 1,650,607,000 DVMT	Mileage	Percent of Total	Percent of 302,703,000 DVMT	Mileage	Percent of Total	Percent of 1,696,807,000 DVMT
Principal arterial									
Interstate	29,938	0.9	19.5	1,202	0.8	6.5	7.469	1.7	19.6
Other	82,132	2.6	20.3	14,956	9.8	42.5	36.039	8.3	38.2
Minor arterial	152,573	4.9	20.7	16,815	11.0	22.5	47,701	11.0	19.9
Collector									
Major	430,950	13.8	21.2	18,169	11.9	11.2	47,040	10.8	8.8
Minor	306,798	9.8	6.2						
Local	2,127,938	68.0	12.1	101,621	66.5	17.3	296,273	68.2	13.5
Totals	3,130,239	100.0	100.0	152,763	100.0	100.0	434.522	100.0	100.0

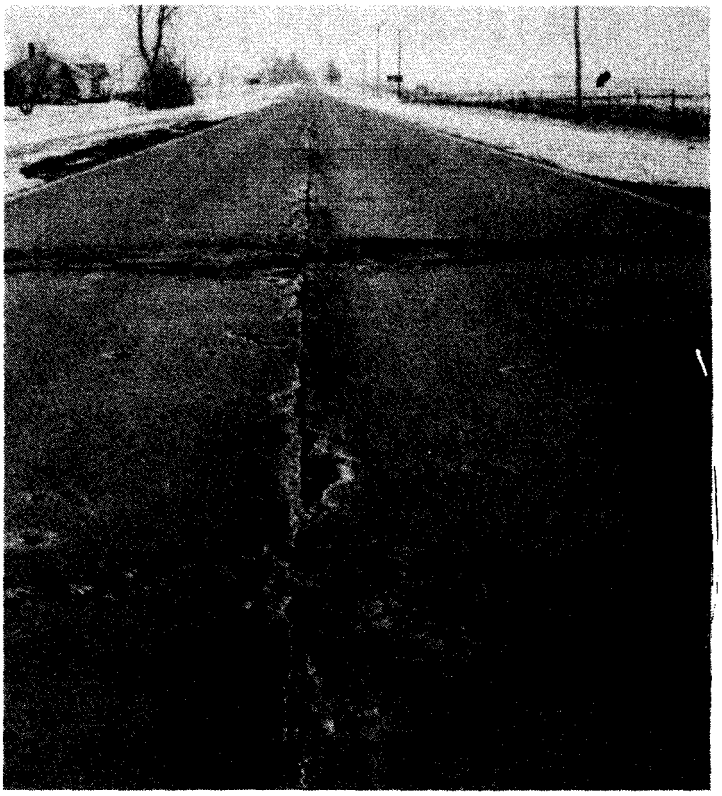
Since 1975, highway budgets have been hit hard by inflation, and the nation has experienced three of the worst winters in history. Most observers agree that the highways have deteriorated since the 1975 inventory. In June of 1979, the National Transportation Policy Study Commission predicted that the highway system would require a capital investment of $900 billion in 1975 dollars by the year 2000.

When a Popular Mechanics team made an 8,000-mile tour of the interstate highways in 1978, they found it was "like driving on the craggy side of the moon" (3). The magazine placed much of the blame for road damage on heavy trucks and deferred maintenance.

The problems on the highways are so severe that Peter Koltnow, President of the Highway Users Federation for Safety and Mobility, has warned that highways could become "the Penn Central of the next generation" - a new kind of transportation disaster (4).

Owner Operator, a truckers' publication, calls the interstate system "America's Multi-Billion Dollar Pothole." It blamed the situation on the age of the system, tax resistance, inflation, bureaucratic greed, highway tax diversion, lack of maintenance and weather (5).

U.S. News and World Report compiled a special report on highways in 1978 (6). The article painted a gloomy picture of potholes, cracked pavement and unsafe bridges. Heavy and overweight trucks in combination with bad weather received most of the blame for highway deterioration.



Highways nationwide are deteriorating in the face of severe winters, declining maintenance budgets, and increased traffic volume. Any increase in truck weights will accelerate the deterioration of the nation's roads.

TABLE 2. 1975 U. S. Highway Conditions as rated by the DOT.

	Pavement Conditions			Bridge Deficiencies		Congestion		
Type of Highway	Rating	Percent Rural	Urban	Percent Deficient Rural	Urban	Peak Hr. percent v/c	rural	Urban
Interstate	good	74	68	4.0	4.3	>.60	5	41
	fair	22	29			>.80	2	23
	poor	4	3			>.90	1	17
Arterials excluding interstates	good	47	48	21.1	16.6	>.60	4	35
	fair	46	46			>.80	2	22
	poor	7	6			>.90	1	17
Collectors	good	30	36	29.4	24.2	>.60	1	11
	fair	60	55			>.80	-	6
	poor	10	9			>.90	-	4

Good = fairly new pavement condition
Fair = reinforcements needed in near future
Poor = needs replacement
v/c = ratio of travel to maximum amount of traffic a highway can accommodate each hour. Congestion problems are indicated between .80 and .90. A rating greater than .90 indicates congestion which may seriously inhibit traffic flow.

CAUSES OF HIGHWAY DETERIORATION

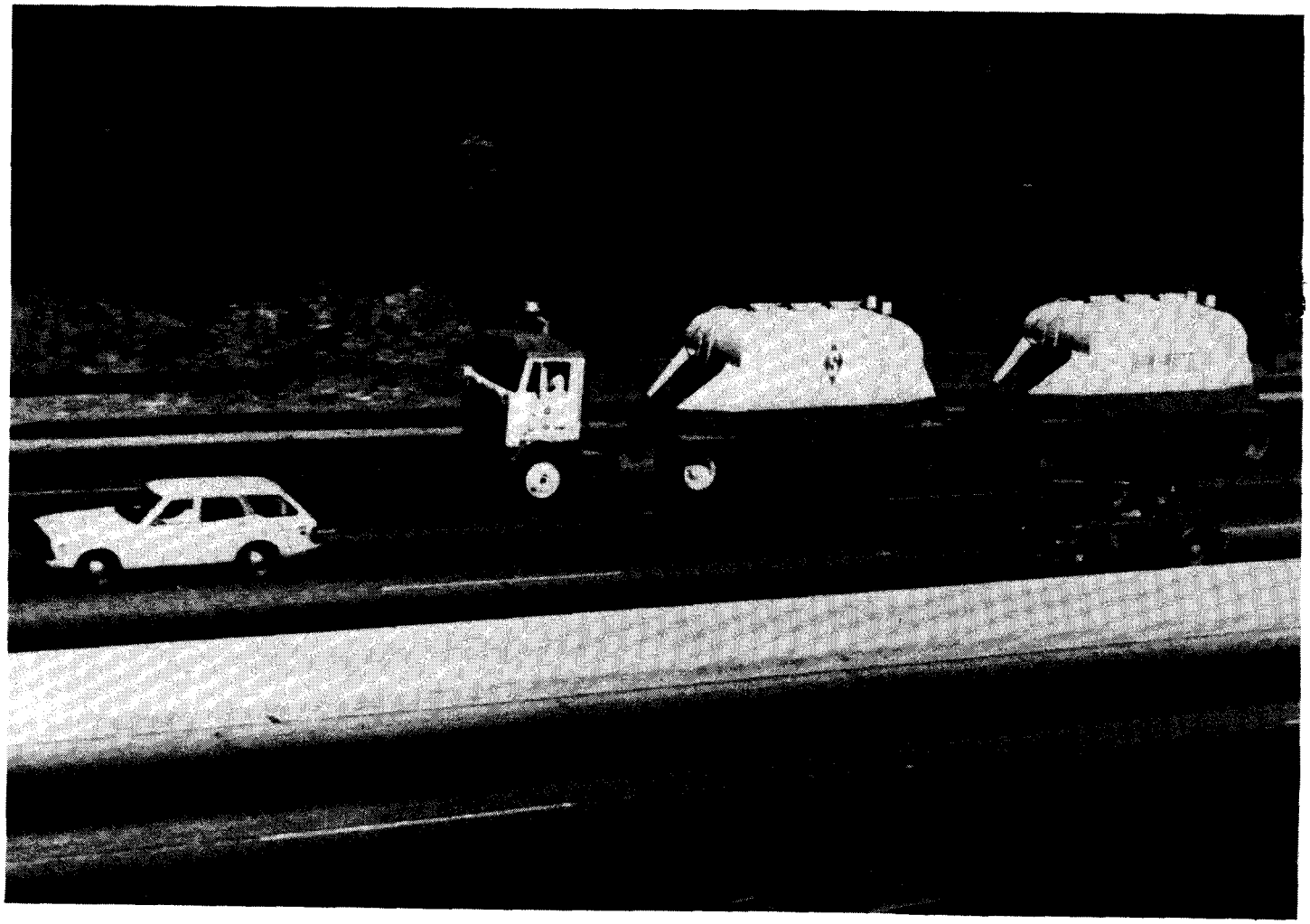
The Department of Transportation reported to Congress that the condition of the nation's highway pavement shifted from "good" to "fair" between 1970 and 1975. In July of 1979 the General Accounting Office (GAO) summarized the principal causes of highway deterioration (7). They are weather, deferred maintenance, highway age and increased traffic loads.

Moisture and temperature changes cause drainage and buckling problems on highways and bridges. The rapid freeze-thaw cycles that are common in northern and central states are particularly hard on pavement. Kentucky reported 45 freeze-thaw cycles during the winter of 1977-78. In areas with poor subgrade or poorly constructed roadbeds, weather related problems are especially severe.

Limited funds have caused many states to defer needed maintenance. This in turn leads to accelerated damage due to weather and traffic. Officials from forty-nine states told the GAO that deferred maintenance was a problem contributing to highway deterioration, and officials from 32 states felt it was a serious problem.

Many older pavements and bridges were not designed for post-1960 traffic. Roads which began as horse trails were often modernized with an asphalt surface in the 1940s or 1950s. These roads do not have a subsurface pavement adequate for today's truck weights and volumes.

Some modern highways have already exceeded their design life. The GAO reported that about 38 percent of the Interstate Highway System is already four years past its original intended life because those sections built before 1963 were designed to last until 1975. Highway engineers did not anticipate the tremendous number of cars and trucks that now use the highways. As a result, current traffic levels exceed the design capacity of many highways. State officials told the GAO that "heavier truck weight and more heavy truck traffic cause most traffic-related highway deterioration."



Road damage generated by trucks increases exponentially as the axle-load increases. A single axle with a load of 20,000 pounds does one and a half times the damage of an 18,000 pound axle-load. The 18,000 pound axle-load corresponds to the 73,280 pound truck weight that is accepted by all states. The 20,000 pound axle-load corresponds to the 80,009 pound truck weight which the federal government wants to impose.

HEAVY TRUCKS AND ROAD DAMAGE

Pavement damage rises exponentially as axle weight increases. This was demonstrated at the $27 million AASHO Road Test conducted at Ottawa, Illinois between 1958 and 1960.

The test was sponsored by the American Association of State Highway Officials. It was administered and conducted by the Highway Research Board of the National Research Council of the National Academy of Sciences, which was assisted by approximately 30 experts from universities, industry, federal agencies, and state highway departments.

The Ottawa site was selected "because annual rainfall, frost penetration, and the native fine-grain cohesive, expansive poor clay soils all satisfied the general site specifications for the project as being fairly average and representative of roadbuilding and operating conditions found throughout the United States." (8).

During the test, trucks of various sizes and weights were run over five test tracks which contained 836 sections of test pavement. During two years the sections were subjected to 1,114,000 axle loads.

The test showed conclusively that damage is related to axle load, the amount of weight carried by an axle. A typical 1960 passenger car weighing two tons had an axle load of 2000 pounds and did essentially no damage to pavement. As shown in Table 3 and Figure 3 damage caused by trucks increased dramatically with axle load. A five axle truck loaded to the 73,780 pound limit does as much damage as approximately 6,000 cars, while an 80,000 pound truck does as much damage as 9,600 cars.

The American Association of State Highway and Transportation Officials (AASHTO) explained the significance of the AASHO road test to a Congressional Committee in 1977 (8):

"Permissible axle load and gross load limitations must, of economic necessity, be related to the capabilities of the pavements and the bridge structures to carry such loads and survive for a reasonable life expectancy.

"Any contemplated revisions in such load limitations also must be viewed from the effects that they will have, not only on new construction, but on existing facilities which must remain in service.

"Some significant results were obtained from the AASHO road test project regarding the reduction in pavement and bridge life that can occur from an increase in axle loadings.

"The work at the project developed a method whereby various loads can be brought to a common denominator, such as equating any axle load to the 'equivalent number of 18,000-pound single axle load applications as a standard reference.' The results of such studies indicated that the increase from the 18,000-pound to the 20,000-pound load can result in an average loss of the remaining highway life between 25 to 40 percent. To increase it to 22,000 pounds can result in the loss of pavement life of close to 60 percent. To increase it to a 24,000-pound single axle loading can result in the loss of remaining life of about 70 percent.

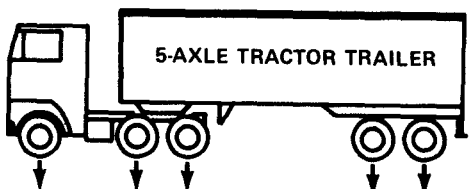
"It was demonstrated that the 20,000-pound single axle load is equivalent to 1.60 applications of the 18,000-pound axle, the 22,000-pound single axle load is equivalent to 2.37 applications of the 18,000-pound axle, and the 24,000-pound single axle is equivalent to 3.45 applications of the 18,000-pound single axle.

"It is readily apparent that increasing loads seriously shorten the remaining life of the pavements.

"In reviewing the effect of increased tandem axle loadings, they should be equated to their 'companion single axle loadings,' which was also developed from the road test project.

"For the most part our Interstate and other major highway system was designed for maximum 18,000-pound single and 32,000-pound tandem axle loadings. We might also advise that it is the general basis for the design of the Interstate System pavements and bridges.

FIGURE 2.
EQUIVALENT DAMAGE CAUSED BY LOADED
5-AXLE TRACTOR TRAILER



TRUCK AXLE WEIGHTS	12,000 POUNDS	+	34,000 POUNDS		+	34,000 POUNDS	=	80,000 POUNDS
EQUIVALENT NUMBER OF AUTOS	500 AUTOS	+	4,550 AUTOS		+	4,550 AUTOS	=	9,600 AUTOS

"The AASHO road test also showed the frequency of allowable axle loads is also a matter that must be taken into consideration.

"For an application of an 18,000 lb. load applied 100,000 times, a 3.8 inch pavement thickness will suffice. But if it goes to a 1-million application, it will require 5.8-inch thick pavement. If it goes to 10 million, it will require an 8.4 inch pavement.

"Similarly for each number of applications, the pavement thicknesses have to be substantially increased to take care of the heavier axle application.

"The foregoing common denominator techniques used in conjunction with traffic forecasts are used in determining remaining life of highways and in determining when funds will be needed for heavy maintenance, or strengthening operations for replacement.

"Very often, you can hear the statement that the structural capacity of a highway can be 'beefed up' relatively easily by adding some resurfacing to an existing pavement.

"This is not as simple as it might sound for these additional layers of resurfacing do not develop nearly the additional pavement strength that they would have if they had been incorporated as a monolithic part of the original pavement design and construction.

"Also, the effective service life of such resurfacing or overlays is hard to predict, but generally the history of their effectiveness is limited to 10 years or less under present traffic conditions.

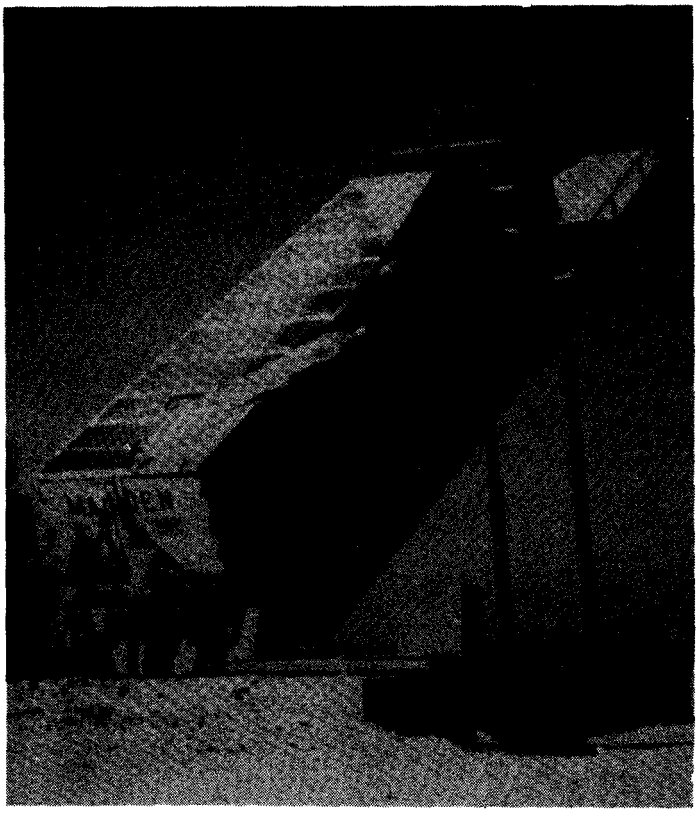
"In developing the bridge formula at the AASHO road test project, it was assumed that because of the rather conservative allowable stresses assigned to concrete and steel at the time that our older H-15 design bridges were built, which is the predominant bridge of the state highway systems, we could probably over-stress these structures up to about 39 percent and still be safe, but with a sacrifice in remaining life of the structure.

"After 1942, bridges on major highways were designed for an H-20 loading and a modification of this, the HS-20 loading, has been used in designing the bridges for the Interstate System, but the allowable design stresses do not have the built-in safety factor of the older H-15 structures. These loadings assume a maximum tandem axle loading of 32,000 pounds, so anything in excess of this would, in effect, be overstressing these bridges. The H-15 bridge was designed for a maximum tandem axle loading of 24,000 pounds.

"The bridge formula is not only important in developing a maximum allowable gross weight for the vehicle, but also must be used to control intermediate axle groupings under the vehicle because of the effect of such group loadings on bridge floor design, and especially the effects on negative moments in the large number of continuous bridges that are in use.

TABLE 3. EQUIVALENT 18-KIP (18,000 POUNDS) SINGLE-AXLE LOAD APPLICATION FACTORS FOR VARYING SINGLE AND TANDEM AXLE LOADS
Based on AASHO Road Test Equations

Single Axles		Tandem Axles	
Load,Kips	Factor	Load,Kips	Factor
2	0.0002	4	0.0004
3	0.0008	6	0.0014
4	0.002	8	0.004
5	0.005	10	0.01
6	0.01	12	0.02
7	0.02	14	0.04
8	0.03	16	0.06
10	0.08	18	0.10
12	0.18	20	0.15
14	0.34	22	0.23
16	0.60	24	0.33
18	1.00	26	0.46
20	1.57	28	0.64
22	2.37	30	0.85
24	3.45	32	1.12
26	4.88	34	1.45
28	6.73	36	1.85
30	9.09	38	2.33
32	12.05	40	2.90
34	15.72	42	3.57
36	20.23	44	4.35
38	25.70	46	5.26
40	32.29	48	6.31



The size of farm-to-market trucks has increased dramatically in recent years. Heavy trucks are destroying rural roads and highways that were not built to handle them.

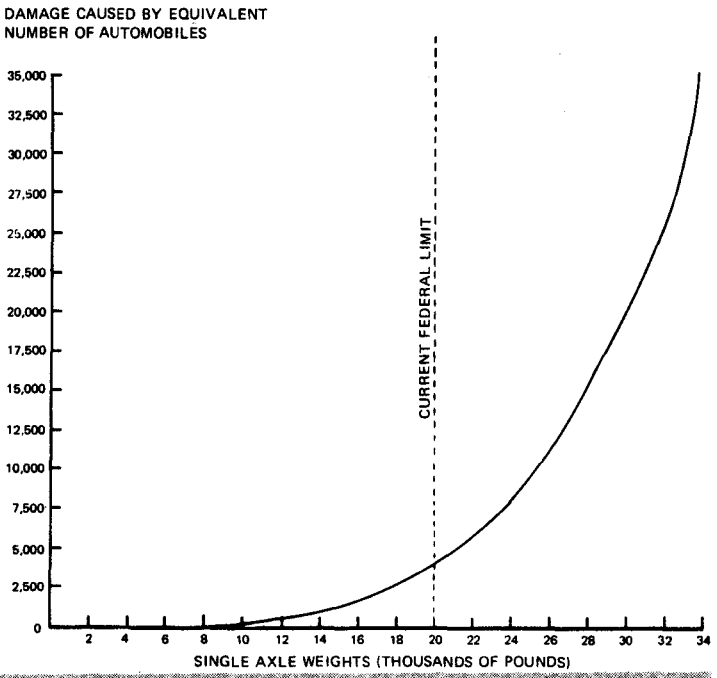
"We want to point out that there is no easy or economical way to upgrade an existing bridge structure for either increased axle or gross loads.

"Generally, such bridges of low structural capacity must be replaced if the gross or axle weight allowances are substantially increased. Of course, when a section of highway is totally reconstructed to modern standards, substandard bridges that are either structurally deficient or functionally obsolete are replaced as part of the project. This is not necessarily true when an existing road is being resurfaced or rehabilitated.

"The bridge investment in our highway system is indeed a large figure, running about 25 to 30 percent of the total highway investment."

Engineers can design futuristic trucks of almost any size and weight. However, it is totally unrealistic to expect the public to continually rebuild the highways to accommodate the desires of the motor carriers. At some point Congress and the public must require the trucking industry to design vehicles that are compatible with the nation's road system.

FIGURE 3.
RELATIVE DAMAGE CAUSED BY INCREASE IN SINGLE AXLE WEIGHTS ABOVE FEDERAL UNITS



The majority of the nation's highways were constructed when truck weights seldom exceeded 50,000 pounds. The Interstate Highway System was designed for 73,280 pound trucks. Increasing truck weights to 80,000 pounds will shorten pavement life by between 25 and 40 percent, depending upon local conditions.

HIGHWAY COST ALLOCATION STUDIES

The question of cost allocation among highway users has received considerable attention at the state and federal level since the first cost allocation study was authorized more than 20 years ago. Costs for highway construction and maintenance are increasing while inflation is decreasing the real value of revenues. Highway officials are anxious to determine whether all classes of highway users are paying their fair share of allocated costs.

The Surface Transportation Assistance Act of 1978 required DOT to conduct a study of the possibility of establishing uniform truck weights across the country. This, in combination with annual pressure from the trucking industry to increase weights, has prompted many states to study the impact of increased truck weights on their highways and state treasuries.

ARKANSAS

According to the Arkansas State Highway and Transportation Department, a 73,280 pound truck causes the same amount of damage as 6,075 cars. A 73,280 pound truck which travels 100,000 miles a year in Arkansas pays $3,517 in taxes and fees. During a year, 6,075 cars would pay $4,078,640 in taxes and fees. When road damage is considered on a proportional basis, a car pays 1,160 times as much as a truck. If the calculation is made using 80,000 pound trucks, a car pay almost 1,600 times as much in fuel taxes and fees as a truck (9).

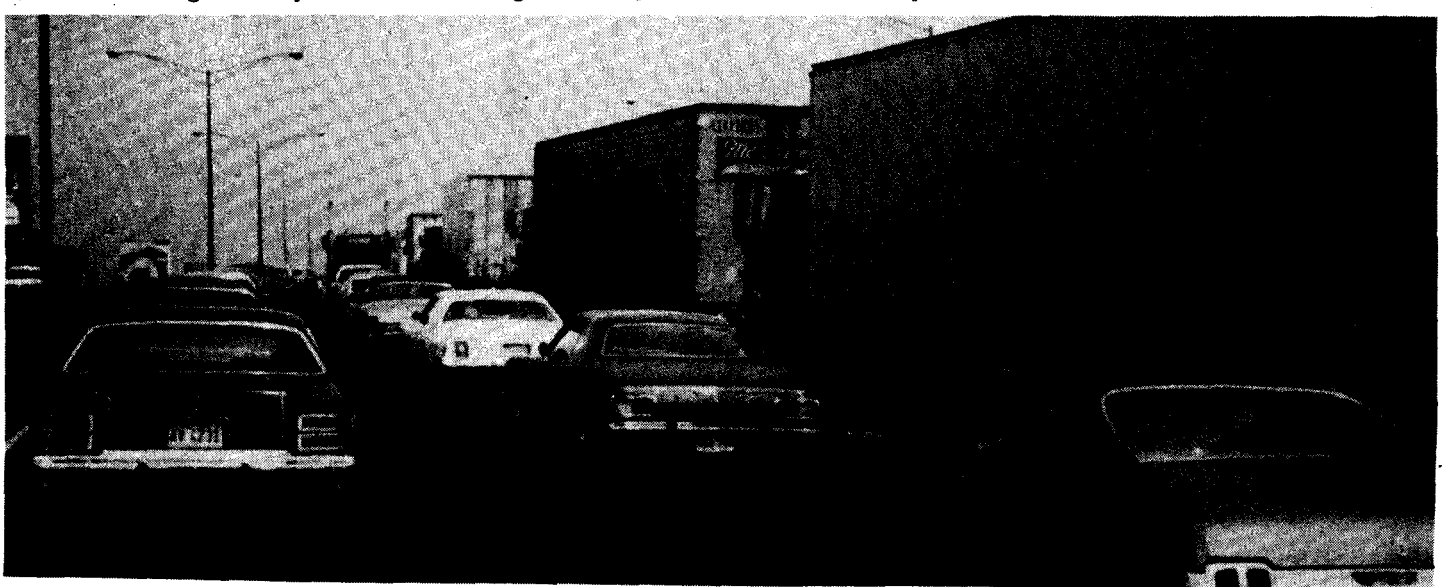
"Public discussion of the economics of highway transportation is essentially incomplete since the basic premise of the discussion is the continuation of the existing inequities in the trucking industry's contribution to the physical plant, i.e. the highways," Arkansas Chief Highway Engineer B. K. Cooper testified at a U. S. Department of Transportation hearing in July 1979. "As long as the present failure of the industry to meet its fair share of the facilities cost continues...any relinquishment of the states of their power to fix lawful gross weight limits lacks merit," Cooper said (10).

GEORGIA

A 1978 cost allocation study for the state of Georgia (11) concludes that only cars and pickup and panel trucks are paying highway user taxes and fees in an amount equal to or greater than the costs they occasion. Trucks are significantly underpaying and buses are slightly underpaying.

The Georgia study concluded that cars were responsible for 49 percent of the annual highway construction and maintenance costs and paid 58 percent of the road user taxes and fees. Pickup and panel trucks were responsible for 13 percent of the costs and paid 20 percent of the revenues. Two and three axle single unit trucks with dual rear tires were responsible for 8.7 percent of the costs and paid 6.4 percent of the revenues. Three-axle semi-trailers were responsible for 0.45 percent of the costs and paid that amount in taxes. Four-axle trucks were responsible for 4.8 percent of the road costs and paid only 2.9 percent of the revenues. Five-axle trucks were responsible for 21.6 percent of the costs and paid only 10.7 percent of the revenues.

According to the Georgia study, the two largest classes of trucks paid only 51 percent of their cost responsibility. They made annual payments of $72 million but generated annual cost responsibility of $141 million. To meet this cost responsibility, trucks would have to pay an additional $69 million a year, an increase of 95 percent over their current payments. In contrast, cars paid 103 percent of their cost responsibility and pickup and panel trucks paid 136 percent of their cost responsibility. These figures should be considered as a relative comparison.



The number of trucks on the road today far exceeds the number envisioned by the engineers who designed the Interstate System. As a result, pavements are wearing out more quickly than planned. Solid walls of trucks, such as these in Chicago, prevent motorists from changing lanes and block the view of road signs.

TABLE 4. Amount of 1969 Cost Allocation of Highway Trust Fund Expenditures by Incremental Cost Method and Comparison of Highway Trust Fund Taxes Paid by Selected Vehicle Classes

Vehicle Class	Number of Vehicles	Percent of Registrations	Percent of Vehicle Miles	Allocated Costs Millions	Taxes Paid (Millions)	Percent of Allocated Cost Paid	Overpayment(+) Underpayment(-) (Millions)	Overpayment(+) Underpayment(-) Per Vehicle
Combination Trucks	858,100	1	3.6	$ 921.5	$ 702.4	76	(-)$219.13	(-)255.33
Automobiles	85,752,400	83.4	80.2	$2,913.7	$2,741.6	94	(-)$172.1	(-)$ 2.01
4-Tire Light Trucks	10,791,800	10.5	10.3	$ 328.8	$ 545.5	166	(+)$216.7	(+)$ 20.08

Source: (16)

INDIANA

In Indiana, heavy trucks pay 19 percent of the federal user fees but are responsible for 30 percent of the traffic on all Indiana roads. Given the results of recent studies showing that trucks damage highways in far greater proportion than their percentage of the traffic mix, it can be concluded that trucks in Indiana are not meeting their cost responsibilities. Indiana highway officials have opposed truck weight increases. "Indiana is opposed to federal regulations requiring uniform truck weights...Although benefits from increased weights may be uniformly distributed among states, concurrent increases in highway costs are not uniformly applied. Disproportionate costs are borne by those states such as Indiana which serve as crossroads of America" (12).

CALIFORNIA

"California recovers a disproportionately large part of total highway costs from the owners of small vehicles and a correspondingly small part from large vehicles" (13). California studies say increasing fuel tax rates alone would shift an even larger burden to small vehicle owners.

VIRGINIA

Another report illustrated how the Virginia fuel tax differential originally designed to account for the costs allocated to cars and trucks was gradually eroded in favor of trucks. In 1956 the fuel tax was six cents per gallon and trucks paid a surcharge of two cents or a 33 percent differential. By 1972 the fuel tax was nine cents per gallon and the trucks still paid a two cent surcharge. The differential between trucks and cars decreased to a mere 22 percent (14).

CONGRESSIONAL RESEARCH SERVICE

According to the Congressional Research Services, tractors with semi-trailers were making annual underpayments of $54 million per year in 1964 and $121 million per year in 1969. Tractors with full trailers made underpayments estimated at $95 million a year in 1969. These underpayments since 1957 (when the Highway Trust Fund was started) total $1.6 billion for tractors with semitrailers; $156 million for tractors with full trailers and $700 million for tractors with semi and full trailers (15). This underpayment is a federal subsidy to the trucking industry.

FEDERAL HIGHWAY ADMINISTRATION

The state allocation studies cited above include cost responsibility for road maintenance and damage as well as for construction. In 1969 the Federal Highway Administration updated the original cost allocation study (16). In this study, unlike the state studies, cost responsibility was based primarily upon incremental construction costs assigned by vehicle class, since Highway Trust Fund revenues were used primarily for new construction, not maintenance.

This 1969 study found that automobiles were paying 94 percent of their allocated share of the costs, while combination trucks paid only 76 percent of their allocated costs, and two-axle four wheel trucks (vans and pickups) were paying 166 percent of their allocated costs.

As shown in Table 4, combination trucks as a class underpaid by $219.1 million annually or $255.33 per truck in 1969. Automobiles underpaid by $172.1 million annually or $2.01 per car. Vans and pickups overpaid by $216.7 million or $20.08 per vehicle. Overpayments were also made by buses and single unit trucks while publicly owned vehicles underpaid. This study shows cars and pickups pay a far greater proportional share of federal user taxes than do heavy trucks.

In 1975 the Federal Highway Administration attempted to update the 1969 study. The results have never been released because the Department of Transportation does not consider the results sufficiently reliable for policymaking purposes (17). Between 1969 and 1977 approximately 500,000 additional combination trucks have been registered.

Congress authorized a new cost allocation study as part of the Surface Transportation Assistance Act of 1978. This new study will take into consideration new federally funded highway programs (rehabilitation and maintenance) whose cost responsibility should differ significantly from previous programs.

OVERWEIGHT TRUCKS

Deliberate truck overloading is a common practice in most states. Federal Highway Administration statistics show that 22 percent of all loaded tractor-trailers exceeded state weight limits (7). Truckers do not usually worry about weight violations because they can detour around permanent truck scales along the highways and fines are generally low.

U.S. News and World Report (6) reported that crackdowns on overweight trucking sometimes create a backlash. The Federal Highway Administration (FHWA) sent investigators to Houston, Texas to check on weight violations. They were accompanied by state troopers. After a few days, Port of Houston officials asked the investigators to leave because they were picking up so many violators that port operations were hampered.

Half of the truck traffic on Interstate 55 southwest of Chicago used to exit at Bolingbrook, Illinois to avoid state weigh scales. Two reporters from the Chicago Tribune, along with state and local police, observed this action in 1978. Officials running the scale could easily observe the truckers' activities but made no effort to stop them.

Coal-truck drivers went on strike because Tennessee state police were trying to enforce weight limits on vehicles making deliveries to a Tennessee Valley Authority power generating plant. The police, not the truckers, backed down.

TABLE 5. Number of Trucks Exceeding State Weight Limit found by Federal Highway Administration

Truck Category	Trucks Weighed	Trucks Over State weight limits	
		Number	Percent
All Light and Medium (two axles)	49,151	713	1
All Heavy single units (three or more axles)	5,977	1,694	28
All Tractor-Trailers	89,127	19,386	22
All Trucks with Trailers	2,330	590	25
Heavy Single Units (four or more axles)	505	410	81
Tractors with three-axle trailers	799	441	56
Trucks with trailers (five axles)	1,394	469	34

The General Accounting Office (GAO) reported to Congress on overweight trucks in July of 1979 (7 and 18). The GAO found widespread weight violations throughout the trucking industry. An examination of shipping records showed that 90 percent of 179 grain deliveries to a Texas port facility exceeded state weight limits. One truck weighing 38,040 pounds more than the state limit had traveled more than 470 miles.

Trucks carrying steel products accounted for 52 of the 61 overweight citations issued in Houston, Texas in June of 1978. One tractor-trailer hauling steel pipe was found with 68,600 pounds on the rear tandem axles, more than twice the 34,000-pound State tandem axle weight limit.

In Texas 28 trucks delivering gravel to a federal-aid highway construction project weighed an average of 110,000 pounds. The lowest weight was 99,520 pounds.

FHWA and state enforcement officials conducted several road checks of tanker trucks in Connecticut and nearby states in December, 1975. They stopped, weighed, and inspected 265 tanker trucks. Over 25 percent exceeded weight limits and about 10 percent were ordered out of service because of safety deficiencies.

Concrete mixers and garbage trucks are predominately short-haul trucks. Concrete mixers have been cited for weight violations in seven states. Most garbage trucks come equipped with compactors to convert loose refuse into a dense cargo. Officials in nine states indicated that compaction garbage trucks were overweight.

In Ohio, 65 percent of 107 trucks hauling sand and gravel were overweight by an average of 10,395 pounds.

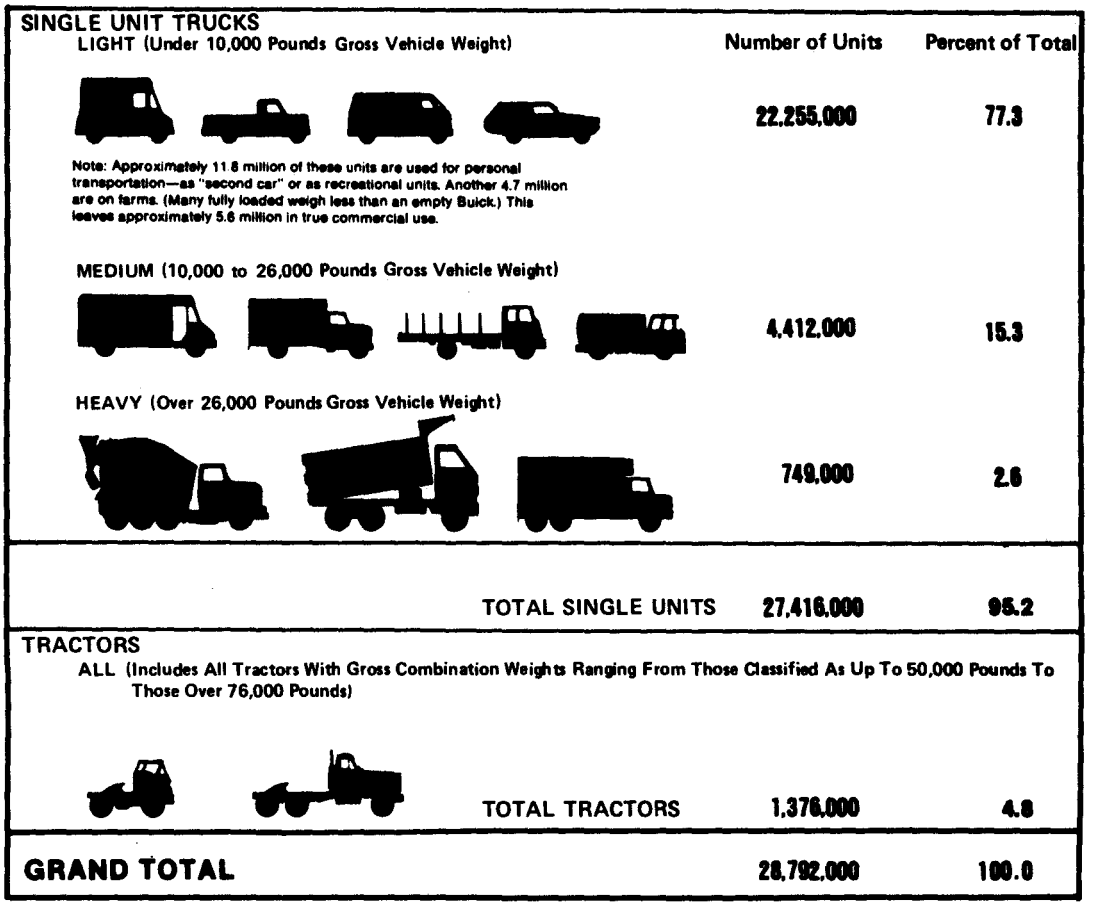
Ninety-one percent of trucks at government facilities in Ohio were found to be overweight, 25 percent by more than 30,000 pounds.

The GAO found that federal contractors regularly ship and receive cargoes in trucks that are overweight. The Forest Service, Department of Energy, General Services Administration, U.S. Army Corps of Engineers and The Federal Highway Administration all accept overweight deliveries.

States are responsible for enforcing their weight limits and they must certify each year to the federal government that they are doing so. However, the GAO found that state agencies are enforcing weight limits on only 40 percent of the nation's highways.

Few states are enthusiastic about enforcement of truck weights. In one recent year Oregon issued 40,000 citations for overweight trucks while Pennsylvania issued only 610 (19).

FIGURE 4. ESTIMATED TRUCKS IN USE -- 1977



Most states depend on fixed weigh stations to enforce weight limits. These are often closed and are easily avoided. For example, the "secret" locations in Illinois' 31 permanent weigh stations are listed in a "USA Trucker's Guide" which is sold at truck stops. Some states do not even have permanent weigh stations. Portable scales have been developed, but their use is time-consuming.

GAO RECOMMENDATIONS

The GAO recommends several steps to deter overweight trucks:

- Mandatory fines that are high enough to offset profits from routine overweight operations;
- Mandatory offloading of excess cargo;
- Making shippers (as well as truck drivers) equally responsible for violations.

To identify overweight trucks, the GAO recommends:

- Allowing enforcement officials to direct suspected overweight trucks to the nearest scale, especially trucks on routes bypassing permanent scales.
- Location of permanent scales at places that are not easily bypassed;
- Operation of scales for an optimum number of hours;
- Use of portable scales at shipping and receiving facilities that frequently use overweight trucks;
- Use of files to identify chronic violators.

LEGAL OVERWEIGHTS

A grandfather clause in the 1956 highway act permits states with truck weights over the federal maximum as of July 1, 1956, to retain them indefinitely. At least 20 states have limits higher than the federal limit in at least one category. Federal limits do not apply on almost 13,000 miles, or 32 percent, of the Interstate System (7).

Some states have implicit authority under the grandfather clause to issue permits and exemptions routinely for overweight shipments, a practice that causes unnecessary damage paid for by all highway users.

- To protect the federal investment in the highways, the GAO recommends:
- Making federal weight limits applicable to all federal-aid highways, including the non-interstate system;
- Termination of grandfather clause provisions, so that federal maximums would apply to all federal-aid highways;
- Prohibition of all but a few special overweight exemptions and permits.

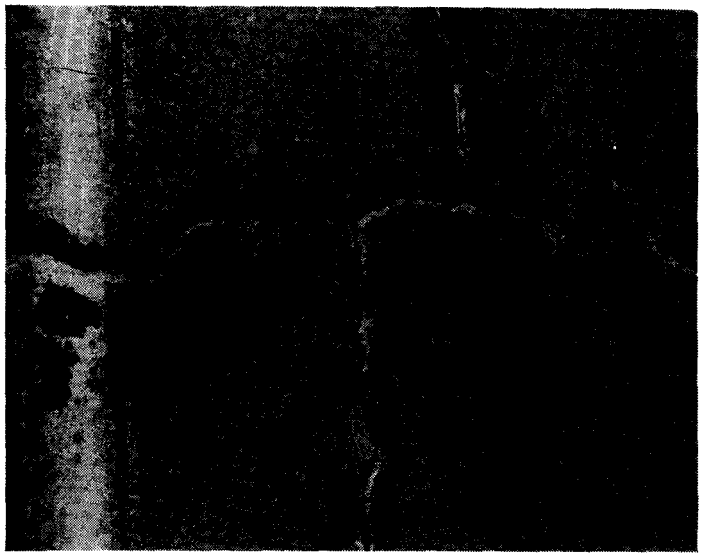
STATE HIGHWAY CONDITIONS VARY

Proponents of increased and uniform truck weights often claim that modern highways are designed for 80 and 90,000-pound trucks. While this may be true for new pavement in particular states, it is definitely not the case nationwide. Most of the Interstate Highway System was designed for 73,280 pounds and many older roads and bridges were built to handle far less.

In 1978, the FHWA inventoried the nation's bridges. It found that only 15 percent of the interstate bridges, nine percent of the primary bridges, 11 percent of the urban bridges, four percent of the secondary bridges and eight percent of the total number of bridges inventoried could carry 80,000 pound trucks without reducing serviceable life (Figure 5). Thirty-one percent of interstate bridges, 64 percent of primary bridges, 88 percent of urban bridges, 95 percent of secondary bridges and 72 percent of all bridges are not strong enough to carry trucks loaded to the previous federal maximum of 73,280 pounds without reducing serviceable life.

The present highway conditions should be given primary consideration prior to any weight increase. Pavement that is cracked and full of pot-holes will deteriorate much more rapidly if subjected to increased loads. Given the inability of road funds to keep up with needed repairs, increased weight would be counterproductive.

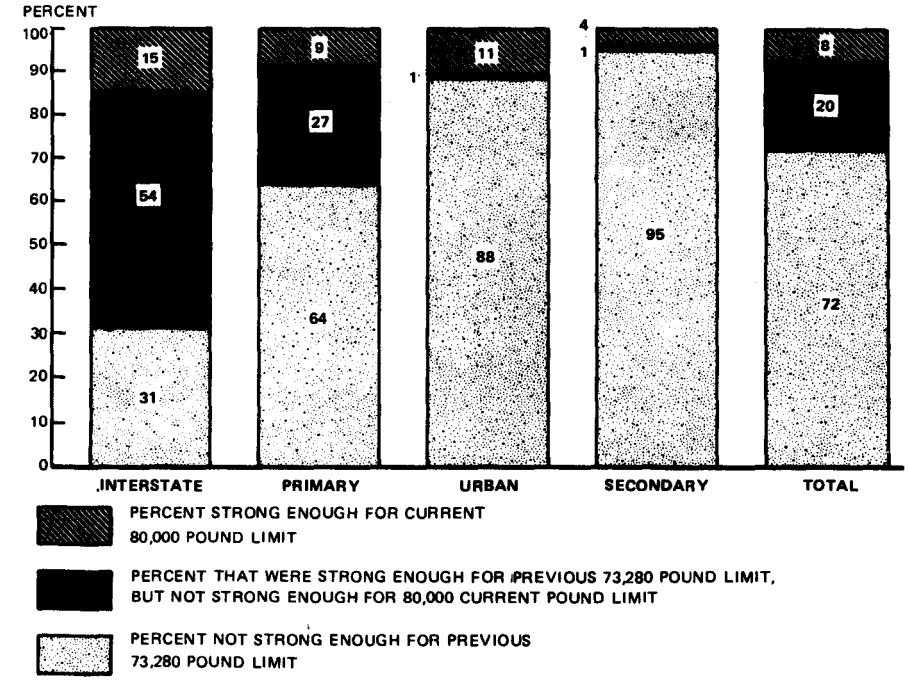
The goal of attaining uniform truck weights should be pursued in view of the varying conditions across the country. This matter was addressed in Congressional testimony by the Association of American State Highway and Transportation Officials (8):



"In our discussions and balloting on the matter of vehicle weight and size policy, we find a tendency for more liberalization in the western part of the country where there are more semiarid regions resulting to some extent in more stable soils and subgrades, and where the country is not served by the network of railroads that exist in the eastern part of the United States. Also, in the western part of the country, the area is more wide open, the highways generally have less circuitous alignment and they do not traverse towns and cities as frequently as in the East.

FIGURE 5.

PERCENTAGE OF BRIDGES BY HIGHWAY TYPE THAT ARE STRONG ENOUGH TO CARRY CURRENT TRUCKS WEIGHTS WITHOUT REDUCING SERVICEABLE LIFE (note a)



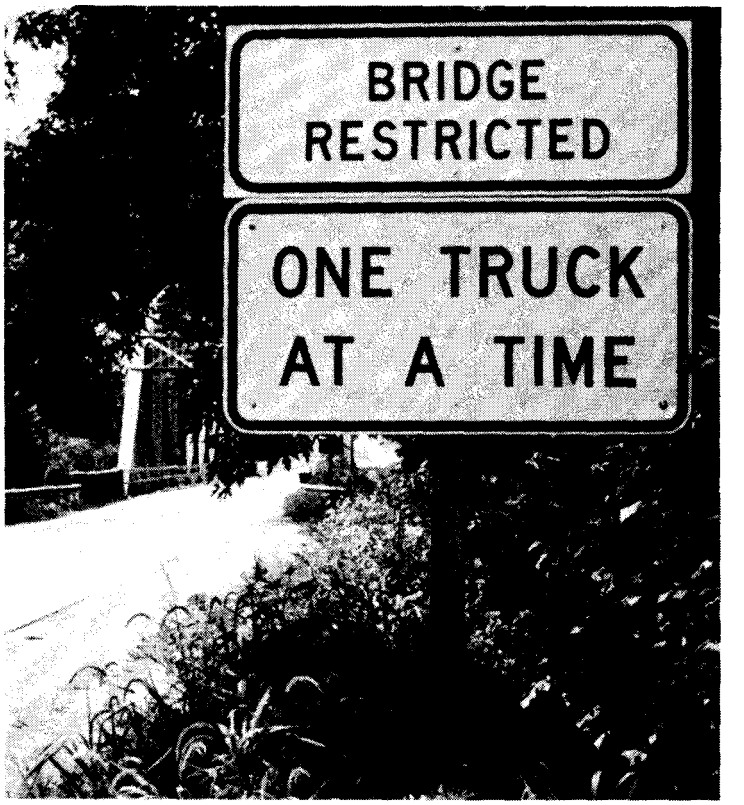
a/ Based on unverified FHWA 1978 bridge inventory data.

"In the Mississippi Valley States, generally poor soils exist that do not have the capacity to support heavier loads. Michigan and several of the states along the Canadian border are blessed with large deposits of sand and gravel left behind as glacial deposits. Michigan is able to permit much heavier loads than adjacent states due to these glacial soils.

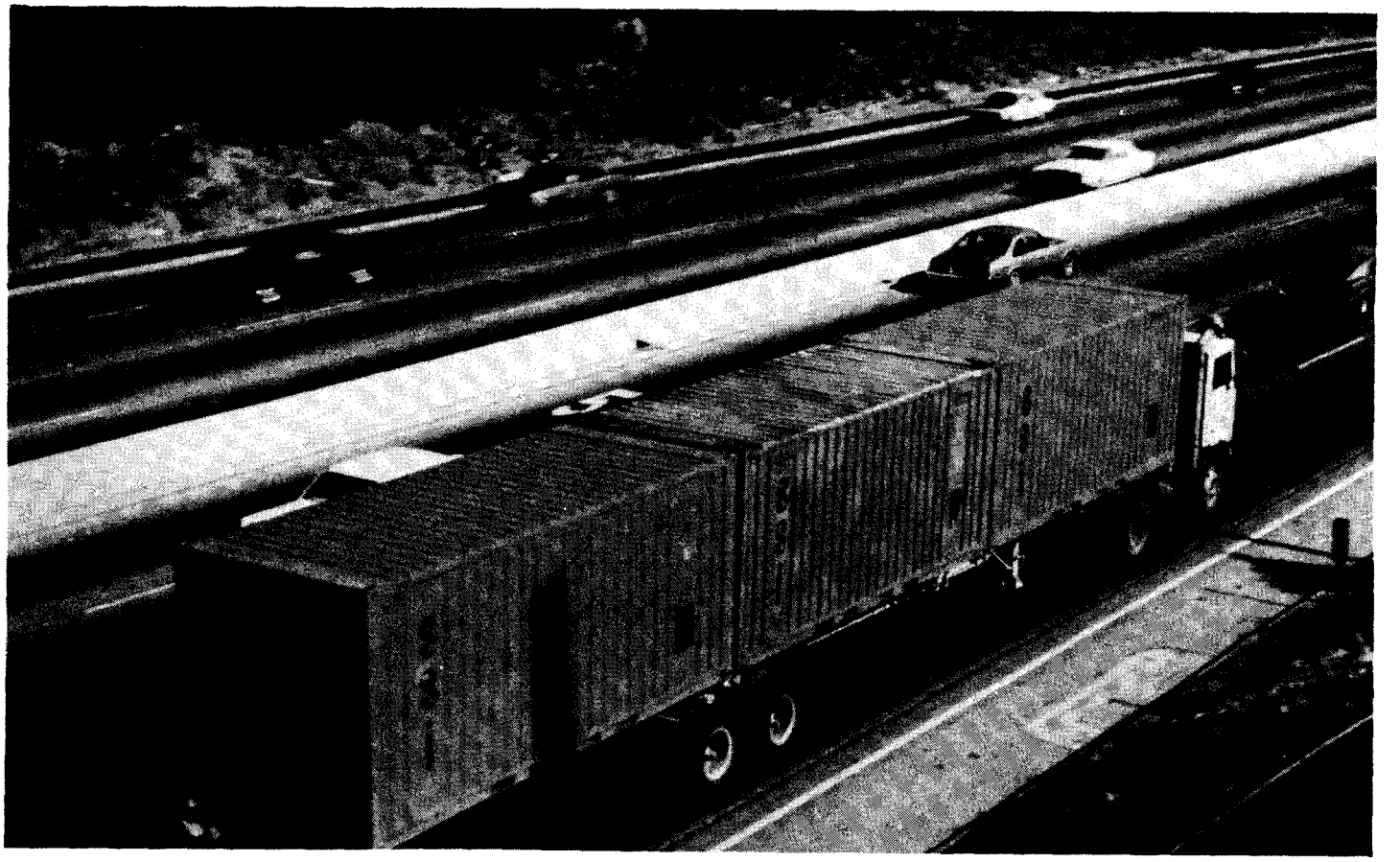
"In the Appalachian and southern parts of the United States, highways generally are of older vintage, are more circuitous in alignment, have rolling grades, and many have narrow pavements, yet because of financial reasons must remain in service.

"It is common for main highways to go through towns and cities at frequent intervals, in this part of the country, therefore, it is not surprising that highway engineers and administrators are more conservative in the matter of truck weights and sizes."

No state has weight limitations lower than 73,280 pounds. It would, therefore, seem possible to settle the national uniformity question by setting the maximum load at this level. To force all states to accept heavier loads simply does not take into account the fact that conditions vary. It is also important to realize that the trucking industry will not be satisfied with 80,000 pounds, as demonstrated by the attempts to pass 90,000-pound limits through Congress.



Only eight percent of the highway bridges in the nation are strong enough to handle 80,000 pound trucks without a decrease in service life.



Long trucks intimidate motorists on interstates, but can be a great menace on older two-lane roads. In many states roads are narrow and winding and large trucks and twin-trailers constantly cross center lines.

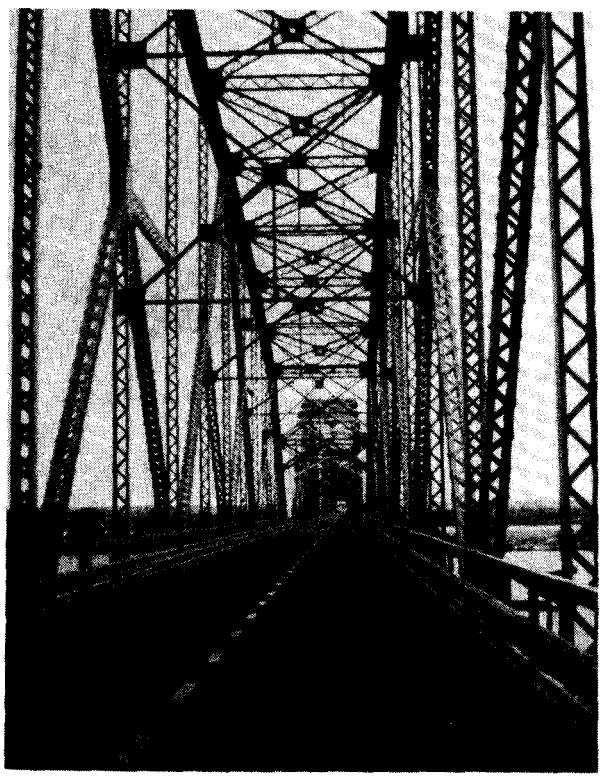
FINANCIAL IMPACT ON STATES

Because state and local governments maintain the highways under their jurisdiction, they have a vital interest in any legislation that changes weight limitations. Trucks that use Interstates generally use other roads to pick up and deliver their goods. Thus, any federal legislation that changes limits on the Interstate System will effectively change limits on the state systems. For this reason, a number of states have studied the impact heavier trucks would have on their roads and treasuries.

ILLINOIS

The Illinois Department of Transportation (IDOT) spent much of 1978 and 1979 drawing attention to the fact that the state road system is in urgent need of repair. Illinois has 133,000 miles of roads, of which 17,000 are state highways with a replacement value of $50 billion. More than two-thirds of the state system was built before World War II. The system has a backlog of 3,000 miles of rough and/or narrow pavement and 200 inadequate bridges (20).

In 1978, IDOT stated that an increase to 80,000 pound trucks would reduce pavement life on the state system by about 20 percent, from 20 to 16 years. It also predicted a 33 percent decrease in pavement life for city, township, and county roads. The cost of increasing pavement thickness was estimated at $5,000 per mile. In addition, IDOT pointed out that 12,151 bridges in the state cannot safely handle 73,280 pound trucks.



In 1979, IDOT secretary John Kramer told U.S. DOT officials that the 80,000 pound uniform weight proposal would increase the state's Interstate rehabilitation costs by $35 million over the next four years. At that time, the state was already planning to spend $275 million to rehabilitate 185 miles of Interstate. By comparison, only $7 million was available to the state under the Interstate Resurfacing, Restoration and Rehabilitation program. Kramer also stated that increased weights would cost Illinois an additional three million dollars annually in Interstate maintenance costs (21).

MINNESOTA

The Minnesota Department of Highways reported that the amount of road damage increases as much as 50 percent as a result of increasing single axle weights from 18,000 to 20,000 pounds. A heavy truck volume road needs 27 inches of pavement and underlay to last 15 to 20 years, as opposed to 12 inches for a high-volume passenger car road (22).

CALIFORNIA

A 1976 California DOT report confirmed a 20-to-25 percent decrease in pavement life with increased truck weight. Ninety-nine percent of highway damage in California was found to be caused by vehicles with a gross weight exceeding 6,000 pounds (13).

MISSISSIPPI

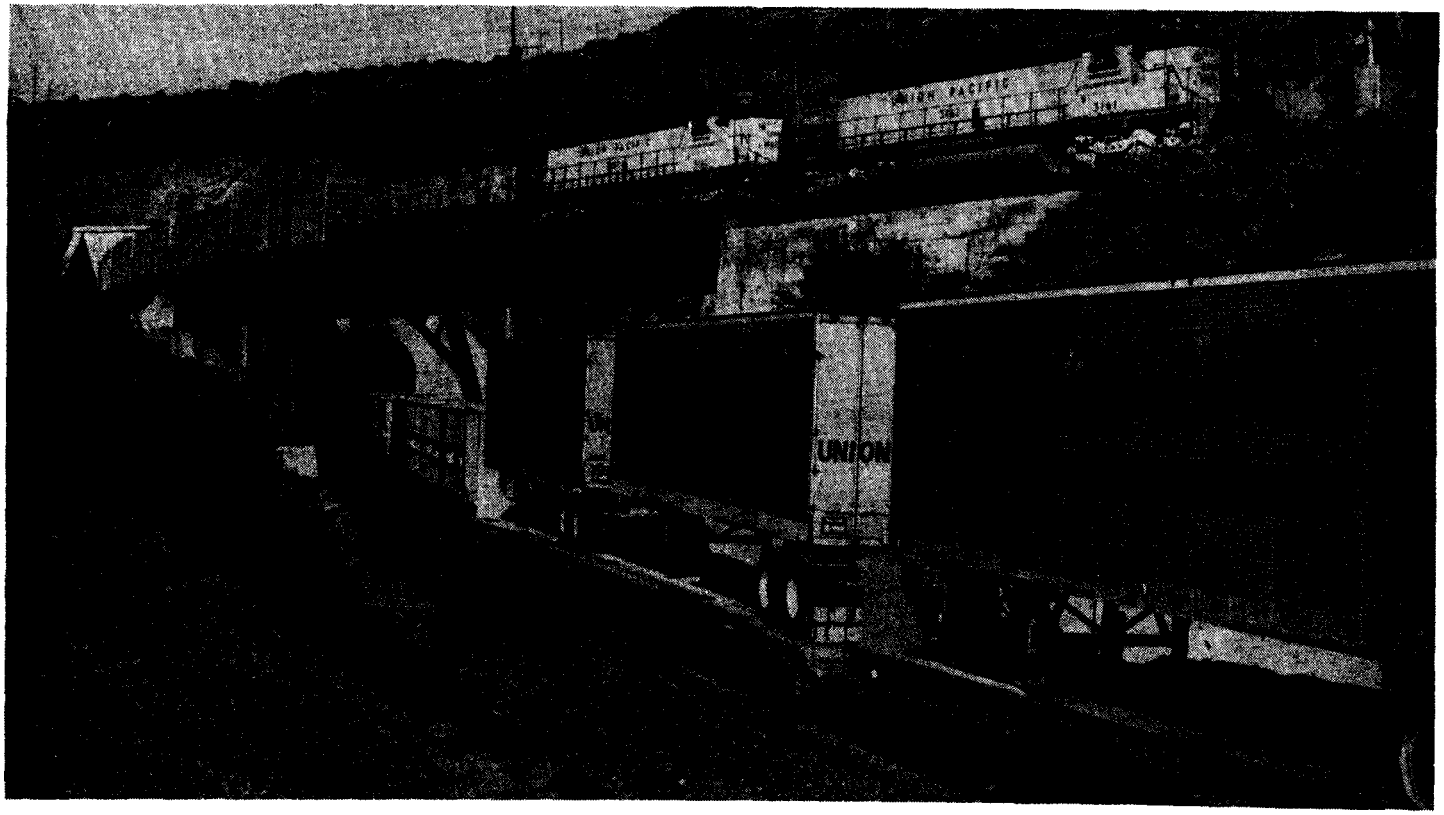
The Mississippi State Highway Commission in 1976 estimated that costs of new road construction would increase by $10,000 per mile, if maximum axle weights were increased to the federal maximums. Rehabilitation costs would increase by $25,000 per mile for roads in good condition and by $50,000 per mile for roads in poor condition. A total of $182,620,000 would be needed to resurface 3,800 miles of highway to accommodate 80,000 pound trucks. An additional $196,697,000 would be required to replace 601 bridges (23).

IOWA

Iowa's DOT concluded in 1979 that 80,000 pound trucks would cost the state an additional $10 million annually in 1978 dollars. This figure included $1.78 million in increased wear on Interstates, $4.41 million on primary highways, $3.18 million on county roads and $0.57 million on city streets. The benefits to truckers in increased operating efficiency was estimated at $41.3 million (24).

INDIANA

Lloyd Jennings of the Indiana State police made a presentation to the governor on the truck weight issue in 1976. He pointed out the state's highways were designed for 73,280 pounds and that an increase would cause a decrease in pavement life. He also estimated that annual maintenance costs would rise by $14 million.



Trucks can be carried cross-country by rail. This piggy back service prevents road damage, saves fuel, and improves highway safety by keeping freight away from motorists.

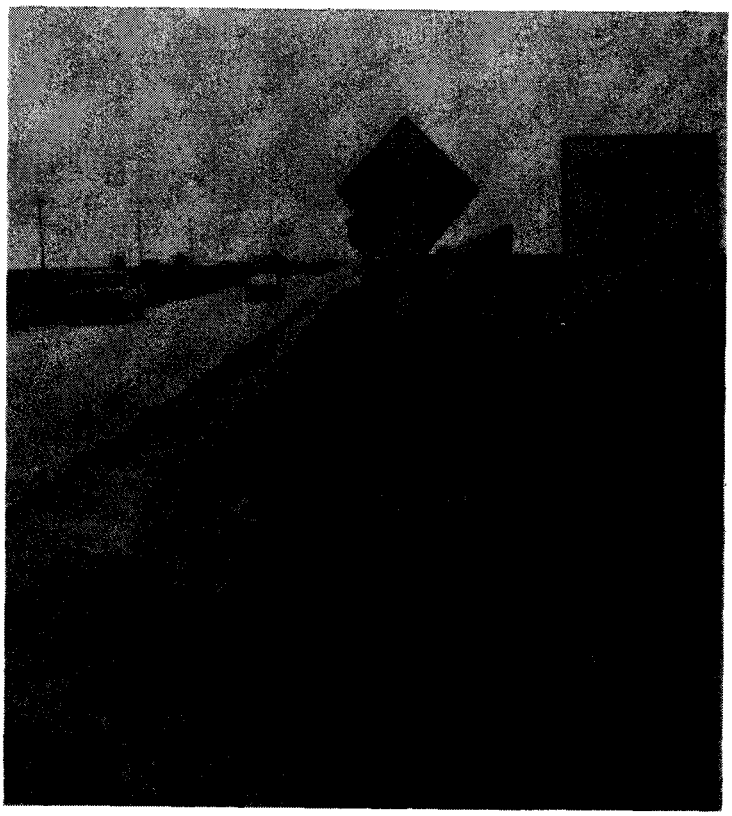
He then made the following observation: "At the present weight limit, the trucking industry is paying less road use tax than its percentage of travel on the public highways of Indiana. To increase the weight limit would compound this inequity by allowing the truck to put more stress and weight on the highway. Increases in amount of money for highway upkeep would be needed just to keep the pavement at present status. The other motorists using the public highways would have to pay about 1/3 of the trucker's damage under the present tax structure." (25).

ARKANSAS

Arkansas studied the impact of raising its 73,280 pound limit in 1979. It concluded that an increase in weights would cost the state an additional $370 million for projects in its current ten year budget. The Arkansas DOT decided that it cannot afford the increased cost (9).

VIRGINIA

A 1980 report of the Virginia Revenue Resources and Economic Commission found that the cost per vehicle-mile of maintaining and replacing highways is increasing dramatically. The cost for Virginia car-mile that was estimated 1.3 cents in 1976 had increased to 3.57 cents by 1978. The cost of a five axle line haul truck increased from 9.96 to 17.05 cents during the same period. Since fuel taxes and fees are not keeping pace with these increases, the actual cost of replacement is being deferred and the state is disinvesting in its highways (26).



Soil conditions in a number of states provide a poor base for highways. Because the ability of the roads to tolerate heavy weight trucks varies across the country, uniform national weights above the 73,280 pound limit for which the Interstate System was designed are unwise.

TRUCK LENGTH

Currently a 55-foot length is accepted by all states. This allows the common 40 and 45-foot trailers now in use to operate nationwide. The trucking industry is attempting to increase the cargo capacity of trucks by seeking increased lengths. In areas where that fails, they have sought to increase the trailer to 48 feet by decreasing the cab size. The safety problems associated with length are discussed in the safety section.

As with weight, the individual states have tailored their length laws to meet local conditions. Most states east of the Mississippi River do not allow truck lengths over 60 feet and prohibit the use of twin trailers or restrict them to lengths below the 65 feet desired by truckers (27). The western states, with lower population and more open space, allow larger trailers. Triple units up to 105 feet in length operate in some states.

Many trailers fill up or "cube out" before reaching the maximum legal weight limit. Since longer trucks allow more volume inside the trailer, they carry greater quatities of lightweight goods. This increased capacity in turn increases the trucker's profit margin. In other cases longer trucks are used to carry heavy items such as steel. In Michigan and on some highways in Ohio and Indiana triple trailers are loaded to 127,000 pounds. Heavily loaded multiple trailers have the potential to cause excessive damage since they generally have single rather than tandem axles.

Longer trucks create a number of problems. In older states and urban areas, they create great safety problems on narrow and winding roads where they have trouble negotiating turns. They are difficult to pass on two-lane roads. For example, a 65-foot combination is as long as five Chevrolet Chevettes or Honda Civics and as long as three Buick Electras. When trailer length is increased at the expense of the cab, the driver is cramped and handling and braking efficiency decreases.

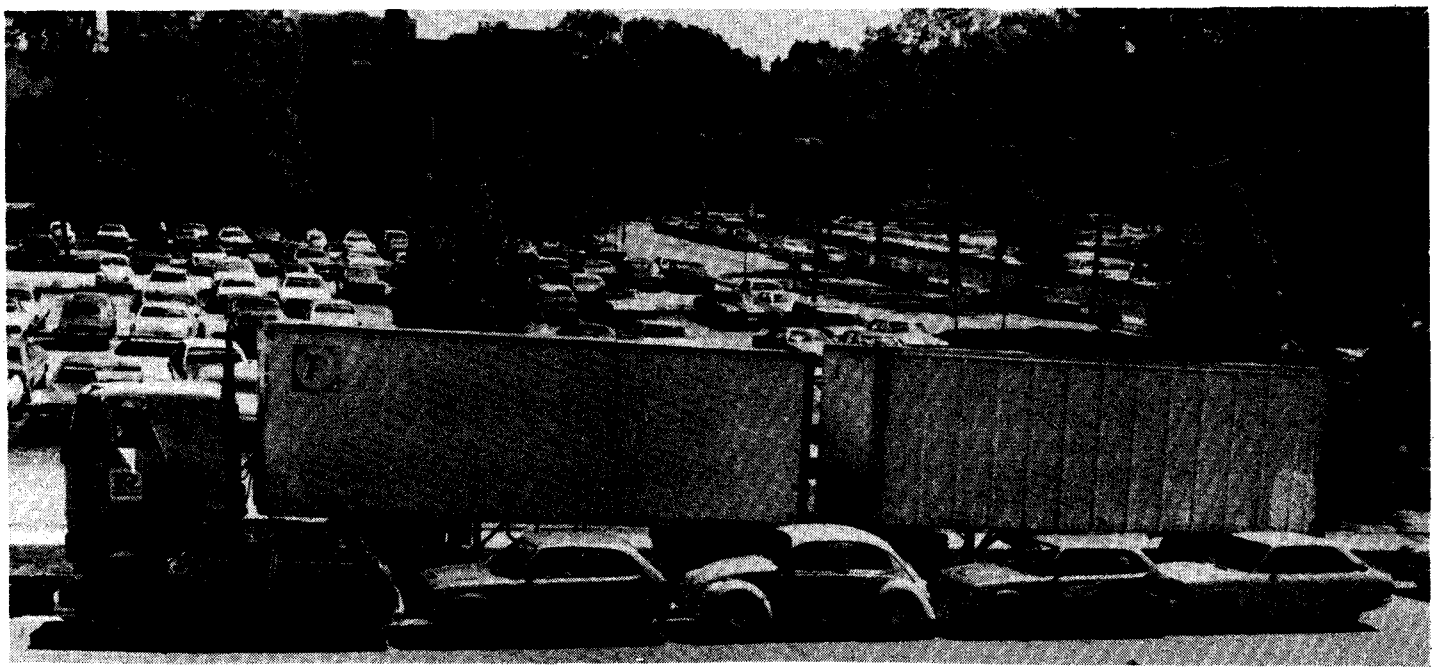
Thirty-four states allow some type of twin trailers. The standard 65-foot twin unit consists of as cab and two 27-foot trailers but western states allow twin 45-foot trailers. Twin trailers are more efficient for small shippers and allow increased flexibility. Two 27-foot trailers have a volume of 3,400 cubic feet compared to 2,900 cubic feet for a 45-foot trailer.

INTERMODAL CONSIDERATIONS

In 1978, 3,177,291 trailers and trailer-sized containers were carried by railroad piggyback service. This practice of combining rail and truck service provides quick, energy efficient service since it allows each mode to take advantage of its particular strength. Under this system, trailers are loaded and delivered to intermodal piggyback terminals by truck. They are then driven or lifted into special flatcars and moved to another terminal. Trucks then pick up the trailers and deliver them to a final destination.

Unfortunately, the trend toward larger trucks threatens piggyback service. If trailers reach 48 feet, it will be impossible to carry two on each rail car. This will drive the unit cost to the point where the service may become uneconomical.

Trailer Train owns the nation's largest number of non-railroad owned rail cars. Sixty-four percent of its 42,877 piggyback cars are capable of carrying one 40-foot and one 45-foot trailer. Most of the rest can carry two 40-foot trailers. A car capable of carrying two 45-foot trailers is under development but no car can carry more than one 48-foot trailer (28).



This experimental truck-tractor with seven trailers was tested on a private logging road in 1972. Although no such combinations are currently in service, the industry continually pushes for longer, wider, and heavier trailers. Their current efforts are concentrated on introducing twin trailers in the East and triple trailers in the West.

BIG TRUCKS AND PUBLIC SAFETY

The general public is exposed to trucks more than to other forms of freight transportation. As a result, the safety of the general public is a major consideration in any discussion of changes in truck sizes and weights. Although the safety aspect of truck size and weight is a complicated issue, several facts and trends are apparent. While the federal government has permitted trucks to become longer and heavier, it has required cars to become smaller and lighter. The number of fatal accidents involving heavy trucks and their percentage of all accidents have increased significantly since the federally-allowed truck weight maximums were raised in 1975.

FATAL ACCIDENTS

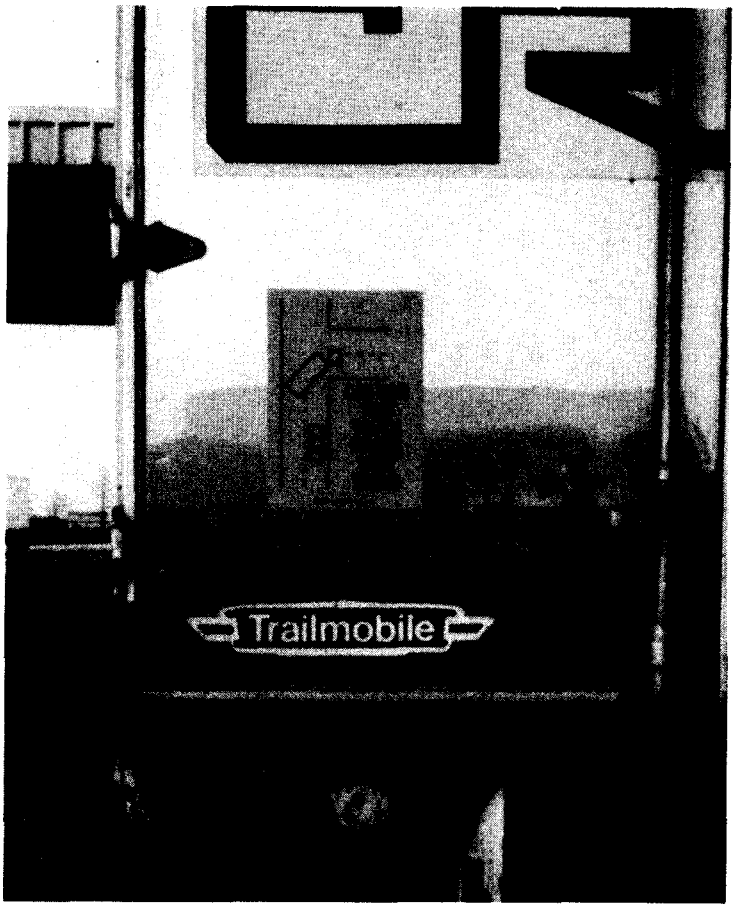
Traffic accidents involving heavy trucks (those weighing more than 26,000 pounds) killed an estimated 4,624 people in 1978, a 40 percent increase since 1975. In 1978, heavy truck-related deaths accounted for almost 10 percent of all traffic fatalities, even though heavy trucks comprise only slightly more than one percent of all registered vehicles (29).

From 1975 to 1978, a dramatic increase of 47.6 percent occurred in fatal accidents involving heavy trucks and the number of fatal accidents involving combination trucks increased 43 percent. During the same period, the number of fatal accidents involving all vehicles rose by only 13.2 percent and the number of fatal accidents involving passenger cars rose approximately seven percent.

Records are also kept on fatalities, the number of deaths per fatal accident. Between 1975 and 1978 the number of fatalities in accidents involving all heavy trucks increased by 43.4 percent while the number of fatalities in accidents involving combination trucks increased by 39.9 percent. The number of fatalities in accidents involving only passenger cars rose by only seven percent and the number of fatalities in accidents involving all vehicles rose by 12.8 percent (30). It should be emphasized that 1975 was the year in which the federally allowed truck weight maximums were increased from 73,280 to 80,000 pounds. It was also the year in which the Fatal Accident Reporting System was established within the National Highway Traffic and Safety Administration of the Department of Transportation.

The Bureau of Motor Carrier Safety (BCMS) establishes qualifications for drivers, enforces them, determines whether trucks are maintained in a safe condition, and determines whether drivers are operating trucks correctly. The BMCS,with fewer than 150 inspectors, is responsible for the safety of more than three million vehicles registered for interstate travel.

With a ratio of approximately one inspector to very 20,000 vehicles, the BMCS is greatly understaffed. As a result, the usual inspection procedure is a surprise "spot check." Inspectors work out of state weighing stations, and as the trucks roll off the highway, each truck is given a cursory visual inspection or a "once over." Those trucks which appear most likely to have defects are then inspected. Between August 1978 and February 1979, the BMCS placed nearly half (47 percent) of the trucks it inspected "out of service" (31). The "out of service" designation means there are enough serious violations that the truck is impounded and not allowed to leave the inspection site until the safety violations are corrected.



Long trailers take up two lanes when making right turns. This creates hazards for unsuspecting drivers in right hand lanes. State and federal legislators are being pressured to allow trucking companies to use 45 and 48-foot long trailers to replace the 40-foot trailers which used to be the industry standard.

Because the BMCS usually inspects only those vehicles that appear to have serious violations, questions arise as to whether the figures implying that 46 percent of all trucks have out of service violations are valid. With this in mind, the BMCS has altered the inspection procedure on several occasions. Instead of inspecting only the trucks that appeared to be candidates for violations, the inspectors selected trucks at random. Thirty-four percent of the vehicles inspected during random spot checks were found to have "out of service" violations.

TABLE 6. SELECTED HIGHWAY ACCIDENT STATISTICS

	1975	1978[1]	% change 1975-1978	1981	% change 1975-1981
FATAL ACCIDENTS INVOLVING					
Heavy Trucks*	2,858	4,244	48.5	4,009	40.3
Combination Trucks*	2,714	3,904	43.8	3,689	35.9
Passenger Cars*	29,788	32,028	11.5	30,735	3.2
All Vehicles	39,161	44,433	13.5	43,044	9.9
FATALITIES IN ACCIDENTS INVOLVING					
Heavy Trucks*	3,483	5,028	44.4	4,756	36.5
Combination Trucks*	3,320	4,650	40.1	4,396	32.4
Passenger Cars*	34,460	37,006	7.4	35,109	1.9
All Vehicles	44,525	50,331	13.0	49,268	10.6
OCCUPANT FATALITIES					
Occupants in Heavy Trucks	717	1,008	40.6	872	21.6
Occupants in Combination Trucks	675	941	39.4	815	21.2
Occupants in Passenger Cars	25,929	28,153	8.6	26,545	2.4
PASSENGER CAR OCCUPANT FATALITIES IN ACCIDENTS					
Involving Passenger Cars and Heavy Trucks	1,879	2,639	40.4	2,436	29.6
Involving Passenger Cars and Combination Trucks	1,800	2,432	35.1	2,249	24.9
FATALITIES PER 100 MILLION VMT[2]					
Combination Trucks	5.98	6.91	15.6	7.64	27.8
Passenger Cars	3.35	3.16	-5.7	3.15	-6.0
All Vehicles	3.35	3.25	-3.0	3.18	-5.1
FATAL ACCIDENTS PER 100 MILLION VMT					
Combination Trucks	4.88	5.80	18.9	6.41	31.4
Passenger Cars	2.90	2.73	-5.9	2.76	-4.8
All Vehicles	2.94	2.87	-2.4	2.78	-5.4
MILLIONS OF VEHICLE MILES TRAVELED					
Combination Trucks	55,560	67,328	21.2	57,548	3.6
Passenger Cars	1,028,121	1,171,092	13.9	1,114,330	8.4
All Vehicles	1,330,074	1,548,213	16.4	1,550,271	16.6

[1] Some numbers in this table differ slightly from those in earlier editions since data have been updated and refined by the reporting agencies.

[2] VMT = Vehicle Miles Traveled.

*Individual categories should not be totaled because of double counting in multiple-vehicle accidents.

This table was prepared from information supplied by the Highway Department of the American Automobile Association, (Falls Church, Virginia 22047) which was based on data compiled by the Fatal Accident Reporting System, National Highway Traffic Safety Administration, U.S. Department of Transportation; and Federal Highway Administration, U.S. Department of Transportation.

BRAKE DEFICIENCIES

Brake deficiencies are the most frequently recorded "out of service" violations. Other reasons for impounding the vehicles at the inspection site are malfunctioning lighting or electrical systems, emergency equipment, fuel system suspension, power source, frames and other items.

Brake deficiencies are a major cause of accidents involving heavy trucks. The National Transportation Safety Board (NTSB) recently investigated five heavy truck accidents in which a total of 24 persons were killed and 36 injured. The NTSB reported that improper adjustment of the foundation brakes was the "significant causal factor" in four of the accidents, and in the other, the trailer brakes were "totally inoperative." In all these cases, the NTSB says adequate vehicle inspection and maintenance programs would have prevented the accidents. "Although the adjustment of air brakes is a relatively simple mechanical task, it appears that industry cannot be relied upon to implement the periodic inspections and routine maintenance necessary to detect and correct maladjusted brakes," the NTSB report states (32).

DRIVER FATIGUE

Driver fatigue is a major cause of truck accidents. During vehicle inspections BMCS personnel examine the log books or records of drivers to determine if they have violated hours of service regulations. Hours of service regulations were established to reduce driver fatigue by requiring rest time and limiting the maximum number of straight driving hours. The driver is required to maintain a log book showing time of departure, time off for eating or resting, time of arrival, miles traveled and other pertinent data to demonstrate he is obeying the regulations. The log books have become a joke for many drivers. Many admit to keeping two logs: one that will pass BMCS inspection and another that reflects the actual time spent driving.

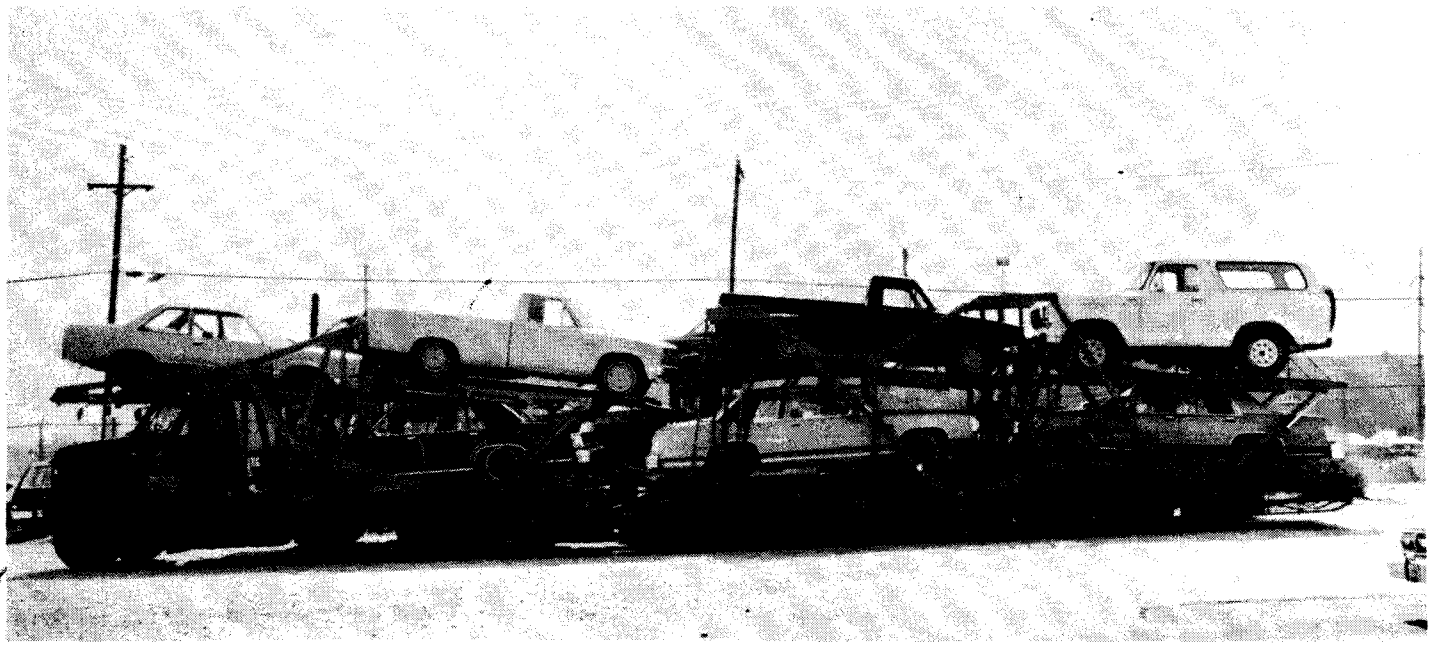
"Ten hours off and eight hours on is the rule," an article in a trucking publication noted. "And we are going to testify that it is the rule that makes a liar out of all America's truckers" (33).

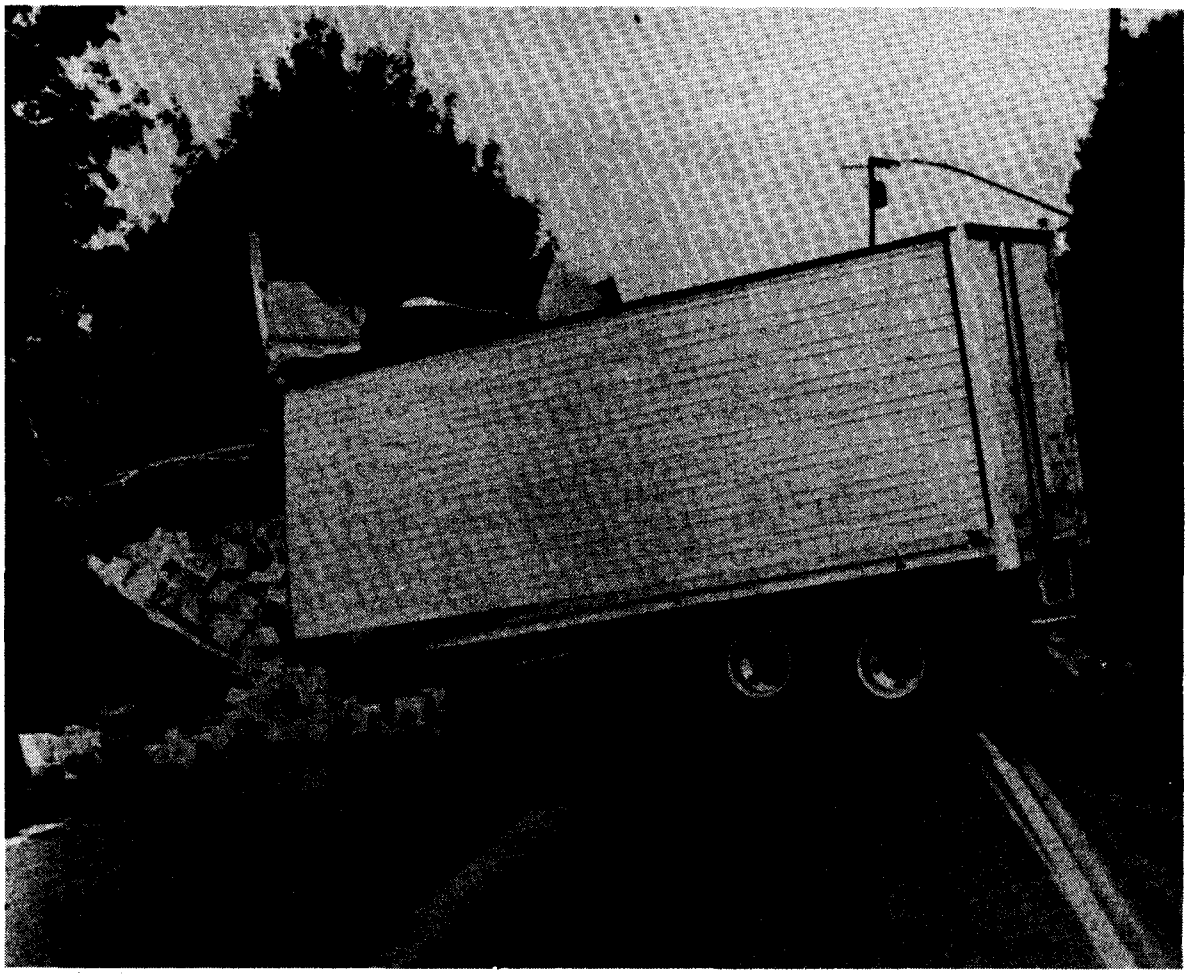
In a study on driver fatigue, the U.S. DOT reported that after four hours, drivers begin making a "significant number of accidents based on a decline in alertness." After seven hours of driving, the number of accidents increases disproportionately, and after nine hours the drivers are too exhausted to recover during an ordinary rest break. Despite this information, any proposal to decrease the maximum number of successive driving hours or increase the required rest time between driving stints brings protest from elements within the trucking industry. "Safety First--Making a Living Last" was the headline for an article on proposed hours of service changes which appeared in an independent truckers' magazine. The subtitle of the same article was "How the Bureau of Motor Carrier Safety Is Not So Subtly Trying to Make It Harder For You to Bring Home the Bacon..." (34).

The problem with the hours of service regulation is that truckers have an incentive to violate it, and knowledge of lack of enforcement by the BMCS is widespread. As far as the trucker is concerned, time is money. The faster he can transport his load and drop off his shipment, the sooner he can be on his way to pick up the next. If he can drive 3,500 miles on three successive 20-hour days he can make more money than driving in 10-hour segments.

DRIVER CONCERNS

Long hours are not the only cause of physical and mental fatigue. Drivers endure extremely crowded and uncomfortable conditions in the cab. Defective exhaust stacks can produce dangerous fumes, and noise levels in the cab have been recorded at 110 decibels. Cab size has become smaller as truck designers have attempted to get the maximum amount of cubic space for payload area with-





Although trucks share the roadway with cars, they cannot stop as quickly. As truck size and length increase, braking efficiency decreases. Only 65 percent of the five axle trucks tested in 1974 could stop within required distances.

in the overall length limits. The constant pounding of the truck on the pavement jostles and shakes the driver, causing back and kidney ailments.

Drivers become hypnotized after hours of staring at the roadway; vibrations from powerful engines can actually cause fluid shifts within their bodies that upset the balance of vital organs. The documentation of these and other medical effects of poor driving conditions were reported to the Senate Labor Committee by a team of medical researchers in 1971. A poll was released in 1971 showing 61 percent of the drivers interviewed admitted using pep pills and assorted amphetamines on a regular basis to stay awake. Perhaps more ominous was the admission by 80 percent of those drivers that they had dozed off while driving, despite the pills (19).

Truck drivers have been fired for refusing to take unsafe vehicles out on the road. Several of these drivers have taken their cases to PROD, The Professional Drivers Council, whose objectives are reform of the Teamsters' Union and improvement of working conditions for truckers (35).

In 1977, PROD joined the Oil, Chemical and Atomic Workers Union and two Tennessee environmental groups to seek stricter enforcement of laws banning overweight trucks. Citing increased road damage and an increase in truck-related fatal accidents, the groups noted that the weight of the trucks is a contributing factor to many accidents.

In accidents in which trucks weighed less than 10,000 pounds, twice as many car occupants as truck drivers died. When the trucks in the accidents weighed more than 25,000 pounds, the ratio increased to 41 passenger car deaths for each truck driver death (35).

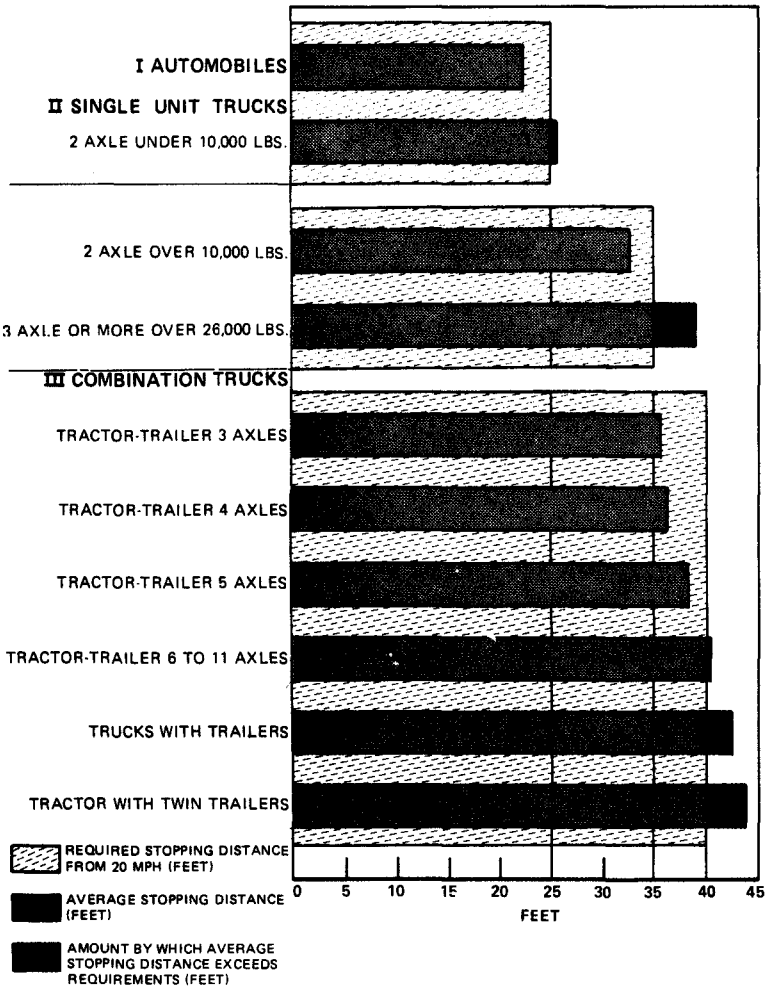
In all collisions between heavy trucks and other vehicles, 91 out of every 100 fatalities occur to the occupants of the smaller vehicles (36). Despite the relative safety for truck drivers implied by these figures, the number of fatalities for truckers is large. More than 800 truck drivers were killed in 1976. Statistics showed 90 deaths per 100,000 workers for long haul truckers in 1976, compared to 70 deaths per 100,000 workers for coal mining, an occupation that has long been considered among the most dangerous (37).

BRAKING AND STEERING

The distance required for braking and the probability of a tire blowout or jacknifing all increase with additional truck weight. Steering

FIGURE 6.

COMPARISON OF AUTOMOBILE AND TRUCK
REQUIRED AND AVERAGE STOPPING DISTANCES



ability and maneuverability also decrease with added weight. A press release from PROD noted, "As every student of common sense and elementary physics knows, the larger the mass hurtling down the highways, the more potential there is for loss of life" (35).

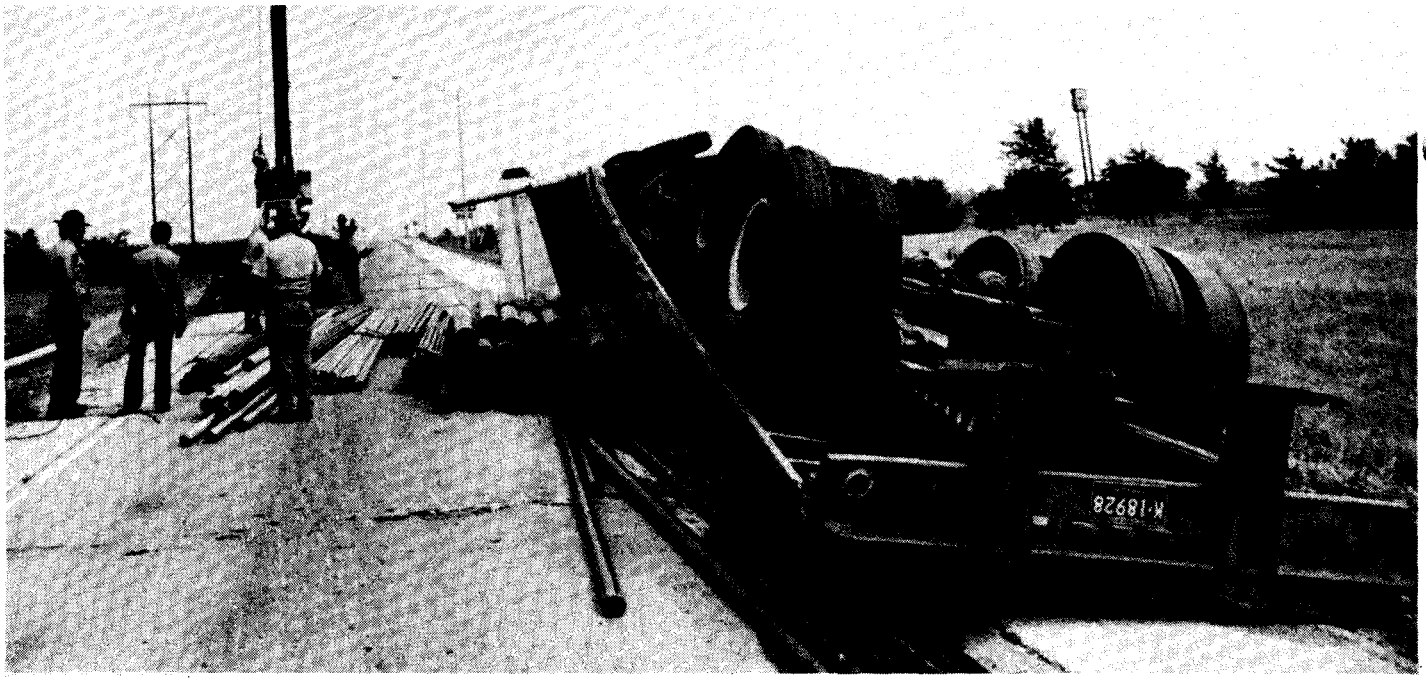
For safety reasons, all vehicles sharing the same highway should be able to stop within approximately the same distance. However, research by the Federal Highway Administration shows that larger and heavier trucks require longer stopping distances. Automobiles traveling 20 miles an hour are currently supposed to be able to stop within 25 feet. Since brake technology has not developed to stop trucks as quickly, trucks over 10,000 pounds traveling 20 miles an hour are required to stop within 40 feet (7).

Even though trucks have less stringent braking standards, fewer trucks than cars meet the minimum braking requirements. In 1974, the Federal Highway Administration tested the braking ability of 1,200 trucks and 366 automobiles selected at random from highway traffic. Eighty-seven percent of the automobiles tested could stop within the required 25-foot distance. Only 29 percent of the three-axle single-unit trucks, 65 percent of the five-axle tractor-trailers and 44 percent of the tractors with twin trailers could stop within their 40-foot distance requirement (7).

In the majority of collision accidents involving a heavy truck and a passenger car, it is the truck that strikes the car, a statistic that probably reflects the braking ability of trucks. In fatal collision accidents between heavy trucks and cars, 97 percent of the deaths are car occupants (36).

National Transportation and Highway Safety Administration officials say their own studies have shown that a 10 percent increase in truck weight causes a 20 percent reduction in speed in even the best performing trucks on a three percent grade. For a motorist driving at 55 mph several car lengths behind an 80,000 pound rig, a quick decrease in the truck's speed, even on a slight grade, means possible collision. Approximately 40,000 cars crash into the rear of trucks each year, resulting in several hundred fatalities and over 8,000 injuries (19).

Weight can affect the steering and maneuverability of heavy trucks, as well as the required braking distance and horsepower performance on a



As trucks become longer and heavier, the motoring public is exposed to greater danger because freight that was formerly moved by rail now moves on the highway. (Photo: Champaign-Urbana News Gazette)

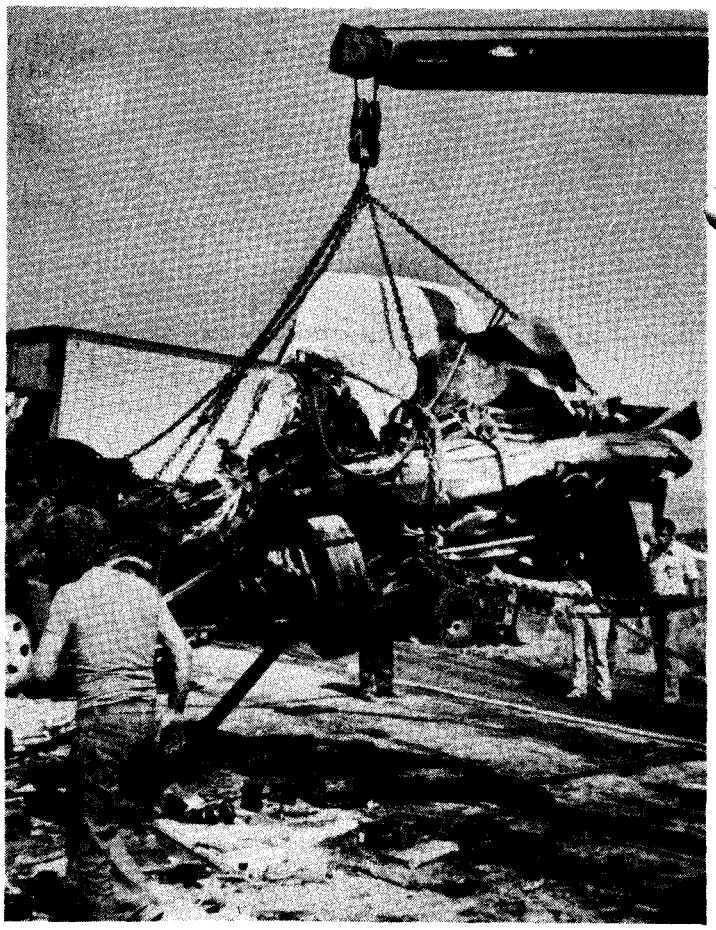
slight grade. Generally, truck drivers and labor union representatives have pressed for restrictions on the weight allowed on the steering axle. Truck manufacturers and trucking company officials, on the other hand, say a maximum weight for the front axle need not be specified if the front axle steering, suspension systems and tires are designed for the load being carried (38).

Drivers have testified that steering with more than 10,000 pounds on the steering axle is difficult, dangerous and, at times, impossible. Tire failure is responsible for a significant number of truck accidents and heavier weights on the steering axle increase the chance of a front tire blowout. A steering axle tire blowout at highway speeds causes a loss of control and direction for the entire vehicle. With retread tires, the chances of such a blowout are even greater.

SPEED

Speed is often a contributing factor in highway deaths. The 1978 increase in traffic deaths reflects, in large part, failure to obey the 55 mph speed limit, according to National Highway Traffic and Safety Administration officials. The effect of higher speeds on the potential for truck accidents is great. Faster trucks, like heavier trucks, require longer braking distances. Speed, like weight, increases the chance of a tire blowout or jack knifing.

Tailgating by high speed trucks has made expressway driving a terrifying experience for many motorists. Accident statistics once showed that cars ran into the rear of slow-moving trucks. More recent figures show that trucks tend to be the following vehicle in rear-end collisions (39). The exception to this trend is collisions which occur on an incline.



A runaway triple trailer truck plowed into a pickup, a bus, and three cars stopped at an interstate construction site in July, 1980. Four persons died and 50 were injured. Road and weather conditions were good and the truck was doing 55. The crane is lifting the remains of the pickup truck.

MUTIPLE UNITS

The safety implications of the truck size and weight increases being requested by the trucking industry are significant under ideal driving conditions but become more serious when weather is bad. The size of tracks relative to other vehicles in the stream of traffic create hazardous situations such as visual obstruction, splash and spray, wind blasts and partial vacuums. Anyone who has ever been passed by a tractor-trailer during a rainstorm knows a big truck creates its own weather system.

Maintenance problems associated with multiple trailer units are greater than those of single trailer units. The twin and triple units in use today are generally operated by firms with the manpower and facilities to properly maintain them. If they are allowed to become as common as single trailers, individuals who lack both time and equipment may begin owning and operating them. If this happens, it is reasonable to assume that their maintenance will be as poor as that of the single trailer rigs on the road today.

Double trailers are already allowed in 26 states; triple trailers are allowed in four. Common sense suggests that the interests of safety will not be improved by allowing multiple unit trucks. Passing a 110-foot unit is like passing six large cars at once, no easy feat in good weather or bad. Braking distances required by twin trailers are substantially longer than those required by single unit trucks (7).

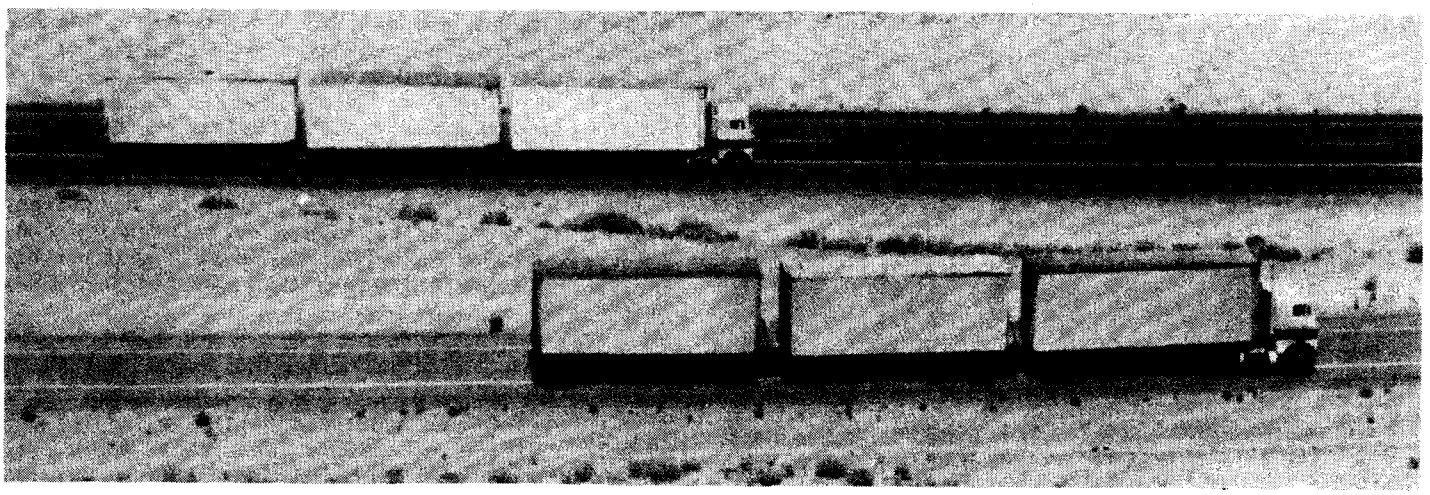
A recent proposal in Congress to limit all trailers to 40 feet and rule out all multiple trailer units was described in one trucking publication as "another case of the government attempting to make the roads safer and the trucker poorer" (34).

Passing time, particularly in wet weather, is a major consideration in the discussion of longer and multiple unit trucks. Many states now have a maximum overall length requirement of 55 or 60 feet. The trucking industry would like to see this increased to 65 feet for single trailer trucks. They want even greater lengths for double bottoms and twin and triple trailers. A few western states allow triple trailer units over 100 feet long.

Proponents of twin trailers say the safety records for the multiple rigs are no worse, and in some cases are a bit better, than those of single trailer trucks (40). Multiple trailer unit skeptics interpret these studies as inconclusive at best. The very nature of the tests--using only impeccably maintained equipment, relying on experienced drivers who have often had special training to handle multiple units, adhering to the speed limit and traveling predominantly on four-lane divided highways--biases the results in favor of the multiple unit trucks, critics claim.

Most of the studies on twin or triple trailer safety emphasize the comparison of accidents per million miles traveled by multiple units with the accident rate per million miles traveled by single units. Using this standard, the safety record of multiple units is not significantly worse than that of singles. However, single unit trucks travel over a greater variety of road types and conditions, while the doubles or triples are used almost exclusively on four-lane divided highways. In view of this, opponents claim the test results are virtually meaningless.

Multiple unit tractor trailer combinations are more difficult to operate. Controlling the sway of the rearmost trailer, especially in triple trailer combinations, is a major complaint of the drivers Another serious problem is the tendency toward off-tracking, which is the lateral distance between the tracks made by the front wheels and the tracks made by the rear wheels of the same vehicle. If the unit is long enough, it is possible for the rear axle to cross over into the opposing lane of traffic, particularly on curves. Off-tracking presents a special problem in negotiating interchange ramp curves if the ramps were designed with a shorter vehicle length in mind. Multiple unit proponents say these problems are solved if the individual unit lengths are short enough (40).



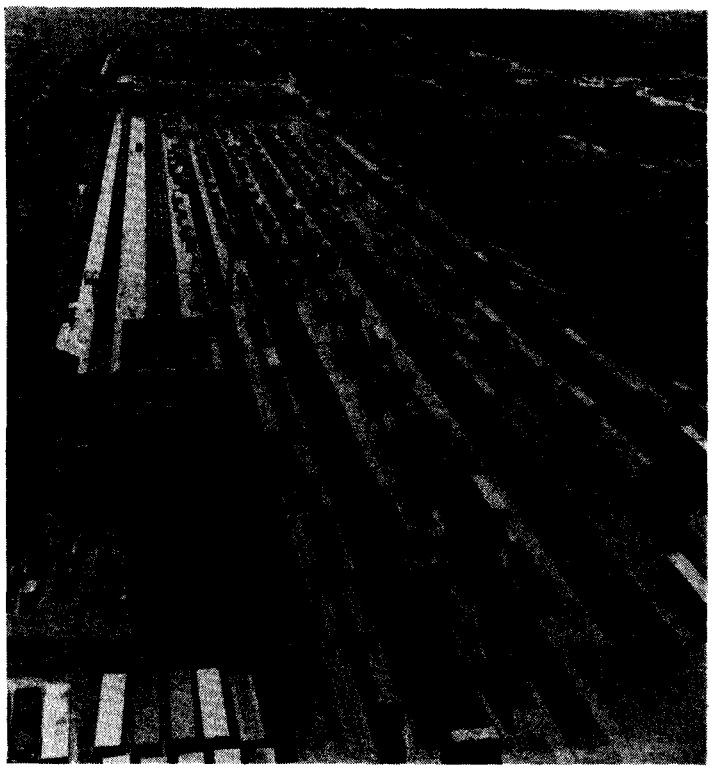
Triple trailers over 100 feet long are becoming common in several states. The trucking industry sees no limit to truck size and weight and can be expected to take all legislators will give it. The industry attempted to pass a 90,000 pound limit through Congress in 1974. This will again become the goal if 80,000 pound limits are passed.

FUEL EFFICIENCY

Transportation accounts for 53 percent of the petroleum used in the United States (41). The government is attempting to decrease this percentage by requiring private automobiles to become more fuel efficient. Truckers claim that increasing truck weights would save fuel since efficiency increases with size. Opponents of a weight increase point out that it would increase national fuel consumption by diverting traffic from the more fuel-efficient railroads to trucks. Researchers generally agree that trucks use over three times as much fuel as railroads to move a ton-mile of freight.

According to DOT figures (42) combination trucks used an average of 2,161 Btu's to move a ton of freight one mile in 1975 while railroads used 687 Btu's to move a ton-mile. A study prepared for the Department of Commerce reported that trucks use about 2,800 Btu's per ton-mile and get 50 ton-miles per gallon, while railroads use approximately 700 Btu's per ton-mile and get 198 ton-miles per gallon (43).

Peter Penner at the University of Illinois (44) compared the energy use of railroads and various segments of the trucking industry. Class I railroads use 800 Btu's per ton-mile, owner-operated trucks use 1,530, regulated trucks use 2,580, and private trucks (used mainly for short-haul delivery) use 4,780.



In modern piggyback terminals trucks are loaded into flatcars for long distance trips. The trailers are then pulled to local destinations by truck tractors.

The energy demand created by various types of investment was reported in Science in 1974 (45). The authors compared the energy demand generated by investing five billion 1975 dollars in seven programs, including highway, railroad, and mass transit construction. Highway construction demanded more coal, refined petroleum, electricity and natural gas than railroad and mass transit construction. Highway construction demanded six times as much refined petroleum as railroad and mass transit construction.

There is little doubt that individual trucks can attain better ton-mile fuel consumption with higher loads. The Iowa DOT predicted that an increase in state weight limits to 80,000 pounds would save 7.8 million gallons of fuel or four-tenths of one percent of the fuel now used in Iowa. The fuel saved would result in a 2.2 percent decrease in vehicle miles of travel assuming the same amount of goods were carried on fewer trucks with heavier payloads (24).

The problem with this contention is that the number of trucks does not decrease as payloads increase, since the trucks use the increase to divert traffic from railroads. The federal 80,000 limits went into effect in 1975 and by 1977, truck tractor registrations had increased by 310,000. Weight increase is in fact a subsidy since it decreases the unit cost of moving freight by truck. This in turn allows truckers to capture freight that is now on the railroads. Such items as steel and lumber could be diverted to trucks by a slight decrease in unit trucking costs. Since railroads consume far less fuel than trucks, this will lead to increased national fuel consumption.

The result of increasing truck weights will be a short-term surge in the trucking industry profitability and a decline in rail revenues. Railroad sources estimate that a national increase to 80,000 pounds will divert approximately $800 million in revenues to trucks and a 90,000 pound limit would divert approximately two billion dollars. When future fuel shortages and prices eventually eliminate this short-term advantage, the nation may find itself even more dependent on trucks.

The importance of healthy railroads to energy conservation was recognized in a 1978 statement by the Secretary of Transportation: "The rail freight mode is energy efficient and can be a significant asset in the effort to reduce overall energy consumption. Government policies that result in diversion of traffic to less energy-efficient modes will hamper that effort"(42).

SPEED LIMITS

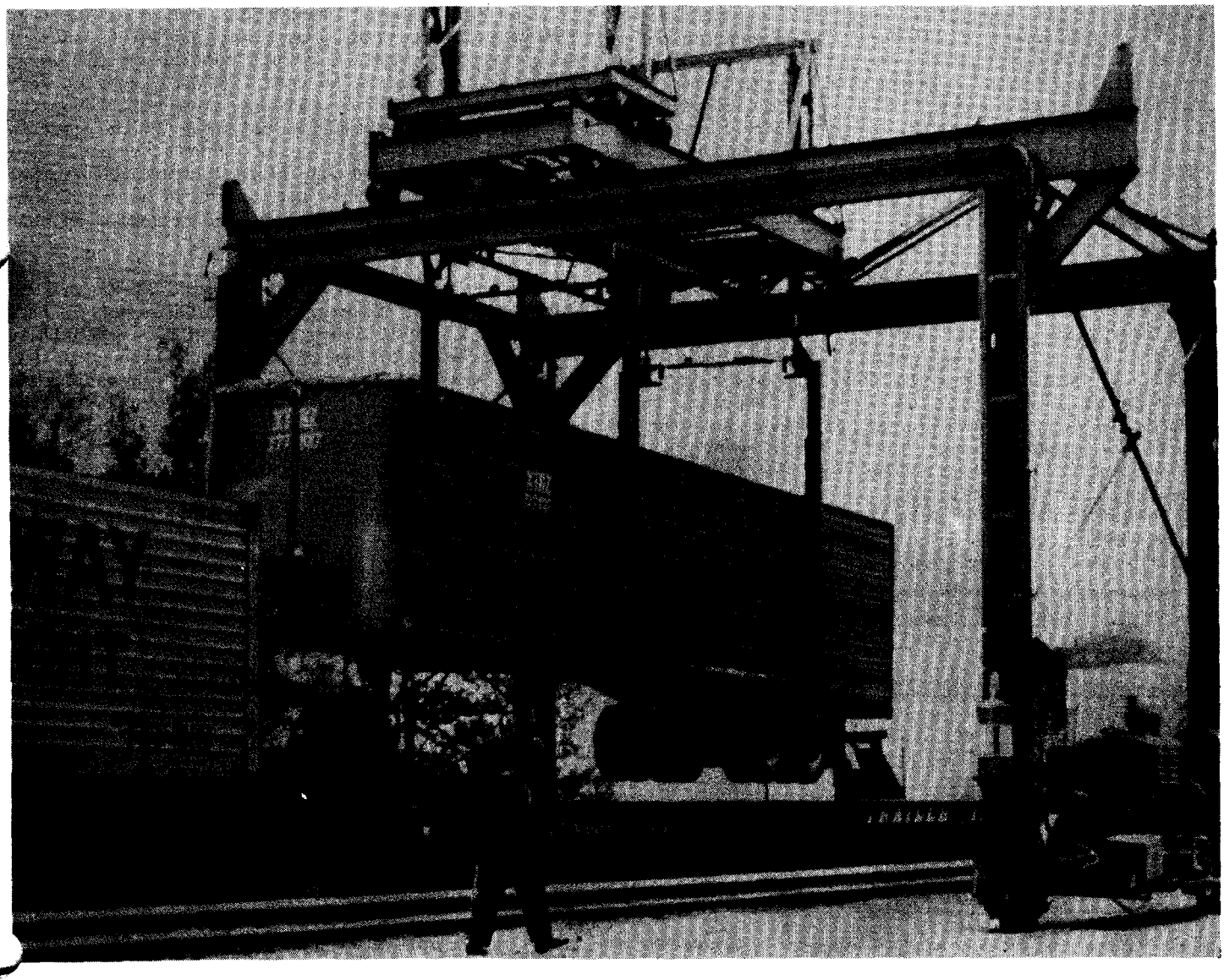
The 55 mile per hour speed limit was legislated to help conserve fuel. This decrease in speed cuts the productivity of truckers which obey the limit. Truckers want a uniform national weight limit of 80,000 pounds to offset the lost productivity. Evidence that the limit is being obeyed should be produced before this argument is even considered.

Purdue University researchers performed speed checks on Indiana highways for several years in cooperation with the Indiana State Highway Commission. The chairman of that commission summarized the results as follows: "A recent report of this statistically sound study indicates that the mean speed of heavy trucks on rural Indiana highways is only three miles per hour below the speed prior to lowering the speed limit from 70 to 55, a 15 mile per hour reduction. This would appear to refute the connection between the need for increased weight due to a reduction in speed" (46).

Two Chicago Tribune reporters who monitored Chicago expressways found that two out of three trucks exceeded the 55 mph limit, often going more than 70 mph (39). In the belief that speeding trucks and buses intimidate other motorists into driving faster, Maryland troopers have started a crackdown on speeding trucks and buses. They figure that slowing the big commercial vehicles is the key to slowing the overall traffic flow. To accomplish this, they have equipped an unusual patrol car. It looks, drives and sounds like a tractor-trailer, but it is the Maryland Highway Patrol's "Mother Goose" (47).

Some of the larger trucking firms have been convinced by their own tests, as well as by studies done by U.S. DOT, that obeying the 55 mph limit saves substantial amounts of fuel and money, as well as lives. American Trucking Association members have been asked to adhere to the 55 mph limit, an ATA spokesman said. However, the organization has asked Congress to increase the speed limit to 60 mph for cars in order to lessen dangerous tailgating (39).

Other segments of the trucking industry are not so supportive of the 55 mph speed limit. A number of independent trucking spokesmen have asked to have the speed limit raised. Many independents claim that 55 mph costs them time and money (48). Traveling at faster speeds would mean they could average more round-trip hauls per month.



A "piggypacker" crane lifts a trailer onto a flatcar. If truck lengths increase to the point where standard trailers exceed 45 feet, fuel-efficient piggyback service will no longer be economical since only one trailer will fit on a flatcar instead of two.

TRANSPORTATION POLICY CONSIDERATIONS

The United States is rapidly approaching a decision point in transportation policy. The three major modes of surface transportation (rail, barge, and truck) are facing costly problems relating to maintenance of existing rights-of-way and future expansion. It is time to consider the extent to which these transport systems will be rebuilt or repaired, how much it will cost, who will benefit, and who will pay. Among other things, transportation decisions must take into account energy consumption, public safety, environmental impacts, carrying capacity of the major transport modes, government subsidies, and regulation.

REGULATION

The current practice of differential regulation and unequal government subsidy among the transportation modes underlines the need for a rational transportation policy. The Interstate Commerce Commission (ICC) regulates almost all rail industry freight movements, approximately 40 percent of the intercity truck movements and about 10 percent of the barge movements. Trucks and barges carrying agricultural and other unregulated bulk commodities can raise and lower rates to meet market conditions. This gives them a competitive advantage over railroads which have regulated rates. Railroads must go through a relatively complicated ICC procedure to change rates.

SUBSIDIES

Government subsidies have influenced the growth of the major modes of transportation. Federal, state and local governments construct and maintain the highway system used by trucks. Likewise, the federal government constructs, maintains and operates the inland waterway system for barges. Some 25 percent of the rail mileage was initially constructed under federal land grants. However, the railroads hauled government freight at half price until after World War II to compensate for the grants. Railroads are now entirely responsible for buying and maintaining their rights-of-way, an expense which consumes an estimated 20 percent of their annual revenues.

State and local property taxes paid by the modes differ greatly. In 1977, American railroads paid $451,324,000 in state and local taxes (49). Since barge lines operate on federal rights-of-way they pay property taxes only on shore facilities. In 1975, fourteen of the largest barge lines, carrying approximately one-third of the tonnage of the Mississippi System, paid only $1,103,041 in state and local taxes in 18 states. Railroads paid $258,244,000 in these same states (50). The trucking industry also operates on government-owned right-of-way and pays property taxes only on facilities such as warehouses.

Public expenditures in the 1950's and 1960's stimulated the growth of the trucking and barge industries at the expense of the railroads, according to the U.S. General Accounting Office (GAO) (7). Federal construction, operation, and maintenance of waterways represents a direct subsidy to the barge industry. According to the U. S. DOT, over 40 percent of the cost of moving a ton of domestic freight by marine mode is paid for by the government (51). Although trucks contribute funds for highway construction and operation through various taxes and fees, they do not cover the costs of construction, maintenance, and replacement attributable to heavyweight vehicles.

According to a U. S. Conference of Mayors report, the total federal subsidy to highways from World War II to 1978 was $110 billion. Federal aid to air transportation during that period was $32 billion and aid to domestic water transportation totaled $17 billion. Railroads received $6 billion during that period; of this, $4.4 billion was granted to Conrail and Amtrak, which are semi-public corporations. Funds given to Conrail are not available to the rail industry as a whole and Amtrak funding subsidizes passenger service only (52).

TABLE 7. Federal Aid to Transportation, Obligations and Outlays[a] in Millions of Dollars

Years	Highway	Air Transportation	Domestic Water Transportation	Ocean Shipping	Mass Transit	Rail	Total - All Modes
WW II and Prior	7,314.8	1,085.7	4,013.2	592.7[b]		533.5	13,539.9
1946-1978	102,787.8	30,615.1	13,272.2	7,443.2[c]	13,257.6[d]	5.872.4	173,248.3
Total All Years	$110,102.6	$31,700.8	$17,285.4	$8,035.9	$13,257.6	$6,405.9	$186,788.2

(a) Figures for outlays are provided for highways for all years after 1953, and for FY 1970 and prior for ocean shipping; all other figures reflect obligations.

(b) This figure reflects the period from 1936-1955.

(c) This figure reflects the period from 1956-197

(d) This figure reflects the period from 1962-1978.

Source: (52)

INTERCITY FREIGHT

Stimulated by construction of the Interstate Highway System, the trucking industry has grown rapidly during the past two decades. Trucks travel 307 billion miles a year, 21 percent of the total miles traveled nationally. From 1965 to 1976, annual travel by combination trucks increased 82 percent, from 32 billion to 59 billion miles, while annual travel for all types of trucks increased 76 percent.

The percentage of the volume of intercity freight carried by trucks and barges has increased steadily since 1929, while the share of total intercity freight carried by railroads has been halved. Although the volume of intercity rail freight in the U. S. increased between 1929 and and 1977, the percentage of total revenue ton-miles decreased from 74.9 to 36.1. Intercity freight carried by trucks in the same period increased along with the percentage of total freight moved, from 3.3 percent in 1929 to 24.1 percent in 1977. The share of total intercity freight carried by barge also increased from 1.4 to 12.0 percent during the same time period (49).

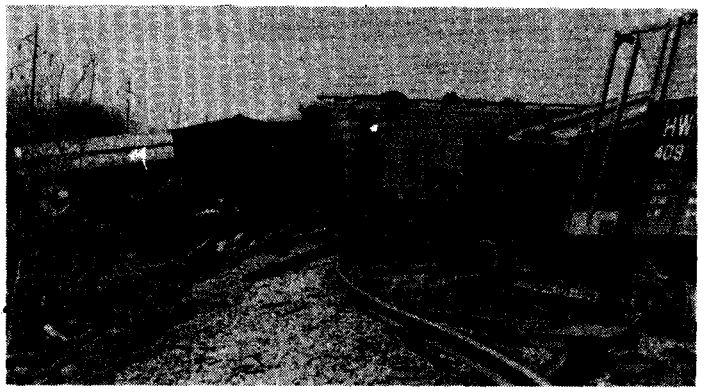
FATALITIES PER TON-MILE

A study by the National Transportation Safety Board found that regulated interstate trucks had a fatality rate of 10.9 per billion ton-miles, while the rate for railroads was 2.5 fatalities per billion ton- miles. Unregulated trucks have higher accident rates than regulated carriers (53). The NTSB said in 1972 that if 25 percent of long-haul truck traffic were diverted to rail, an estimated 775 lives would be saved and 10,200 injuries avoided each year.

ENVIRONMENTAL DAMAGE

Most of the possible physical environmental damage by railroads has already occurred. Tracks are in place and, if anything, there is an excess of rail mileage. Existing corridors and track are underutilized and could handle more freight tonnage than they now move.

Highways occupy many times more land than railroad tracks and there is constant pressure to expand the system, despite the existence of a nationwide four-lane interstate system. In Illinois, for example, a plan to convert two-lane state and federal highways to four lanes - the Supplemental Freeway System - was only recently defeated. As new roads are built or old ones expanded, valuable land is lost and wildlife habitat is disrupted. Highway repair and maintenance are more disruptive than railroad maintenance. One double-track railroad is equal to 10 lanes of multiple-lane highway in terms of number of people and amount of freight that can be moved over it each hour (54). There now one linear mile of highway for each square mile of land in the United States. Each mile of interstate construction requires approximately 48 acres of land (55).



Spectacular train wrecks cause few fatalities because, unlike trucks, trains seldom interface with the motoring public. (Photo: Champaign-Urbana News Gazette)

Other environmental considerations include air pollution and energy consumption. Truck exhaust emissions, on a ton-mile basis, are at least 3.7 times as high as emissions from railroad locomotives (56). Trucks use three times as much fuel as railroads on a ton-mile basis while fuel consumption by rail and barge is essentially equal for movements over similar terrain. Fuel efficiency of the various modes of transportation is discussed in an earlier section.

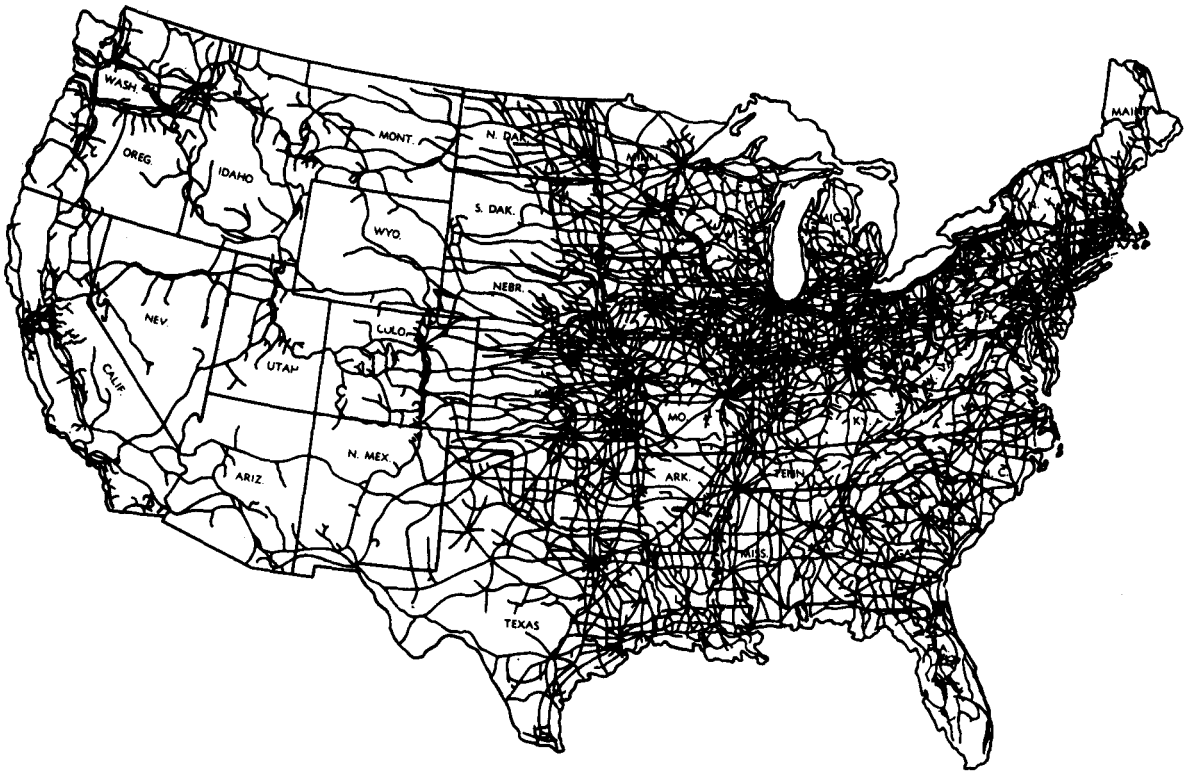
FLEXIBILITY OF MODES

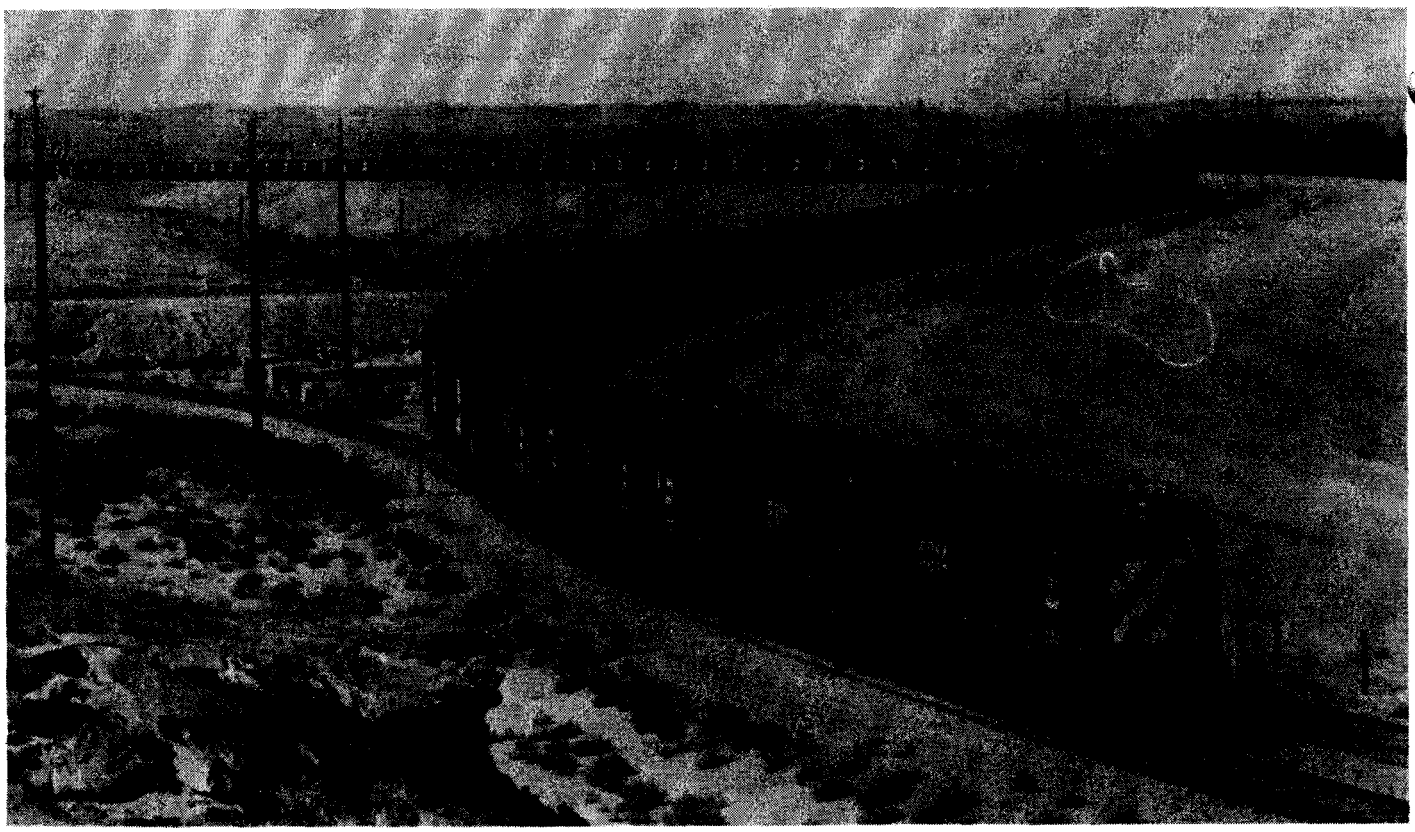
It is assumed that America will need to move greater volumes of freight in the future. In order to plan ahead to meet this need, the strengths and weaknesses of the major modes must be understood. The ability of various modes of transportation to operate under adverse circumstances depends, to some extent, on their flexibility. This in turn depends upon the alternate routes available and the number of circumstances that can interfere with service.

TABLE 8. Volume of U.S. Intercity Freight

	Percentage of Total by Mode					
Year	Rail Roads	Trucks	Great Lakes	Rivers & Canals	Oil Pipe Lines	Air
1929	74.9%	3.3%	16.0%	1.4%	4.4%	-
1939	62.4	9.7	14.0	3.7	10.2	-
1944	68.6	5.4	10.9	2.9	12.2	-
1950	56.2	16.3	10.5	4.9	12.1	-
1960	44.1	21.7	7.6	9.2	17.4	-
1970	39.8	21.3	5.9	10.5	22.3	0.2
1974	38.6	22.3	4.9	11.2	22.8	0.2
1977	36.1	24.1	3.9	12.0	23.7	0.2
1978	35.8	24.7	4.0	12.0	23.3	0.2

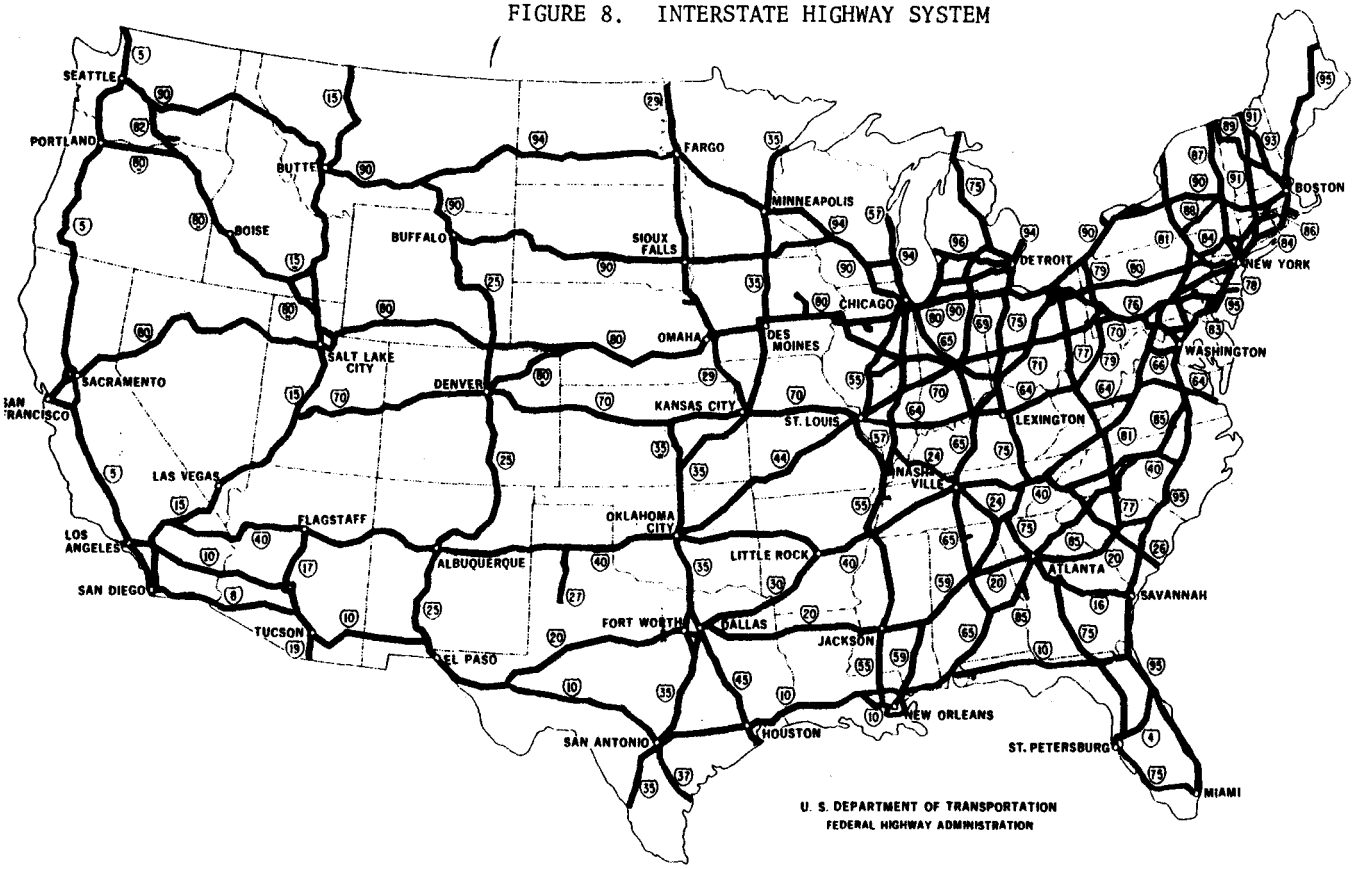
FIGURE 7. CLASS 1 RAILROADS





Unlike trucks and barges, railroads can deliver both bulk and manufactured goods nationwide. They use one third as much fuel as trucks and cause fewer fatalities per ton-mile. Although the railroad industry has a poor public image and many miles of deteriorated track, it could become the backbone of an economically and environmentally sound national transportation system.

FIGURE 8. INTERSTATE HIGHWAY SYSTEM



The trucking industry is expanding its long-haul business at the same time the nation faces a fuel shortage and declining highway maintenance budgets. It is doubtful that the nation's economy can provide the fuel and highways that an ever-increasing number of larger trucks will require.

Trucks are capable of distributing high value produce and manufactured goods nationwide. Truck routes are flexible; roads reach small towns and isolated places that are not served by railroads. They are limited, however, in what they can efficiently carry. They are unsuitable for the movement of bulk commodities over great distances. Trucks are best-suited for short hauls and the movement of small high-value manufactured items and perishable products for which rapid delivery is crucial.

Barges are essentially limited to hauling bulk commodities such as grain, coal and oil between river communities. However, the inland waterway system is inherently vulnerable to accidents and weather conditions. The Upper Mississippi Waterway closes during the winter because of ice; severe winter weather has forced closure of the Ohio and Illinois waterways for extended periods in recent years. Winter closings occur when the need for coal, petroleum, and salt is critical. Flood conditions and low water also hamper barge movement. Barges have no alternate routes. When a lock is damaged or destroyed, river traffic often cannot pass until that structure is repaired or replaced. Such was the case when a lock on the Warrior River in Alabama collapsed and all river traffic to Birmingham was stopped for eight months. In 1976, accidents at Lock 26 on the Mississippi and Lock 51 on the Ohio reduced traffic for more than a week in each case.

The rail network is flexible and redundant with several alternative routes between destinations. Railroads can efficiently handle bulk commodities and manufactured goods for distances of several hundred to thousands of miles. Loaded trucks can be carried long distances by rail and then make local deliveries.

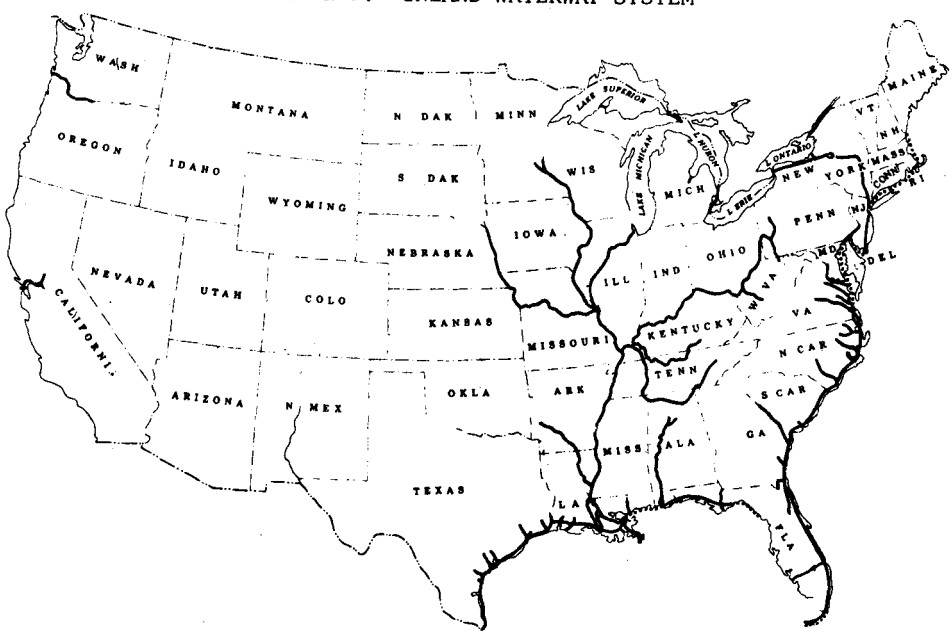
A primary consideration is the ability of existing modes to handle additional freight. The highway system is suffering because it was designed for less freight than it currently carries. An investment of billions of dollars is required to rebuild and repair roads to handle existing truck traffic, not to mention additional billions needed to meet the demands of increased truck traffic.

With a few exceptions such as major portions of the Ohio River, the nation's waterway system is approaching the end of its design life. Many sections are becoming congested. A multi-billion dollar investment would be required to substantially increase waterway capacity by increasing the number and size of locks and other facilities.

The railroads, on the other hand, have demonstrated excess capacity in existing facilities. This was clearly shown during the Russian grain sales in 1973. The railroads increased the carloads of grain hauled to the Gulf ports by 175 percent over the previous year. These cars handled 37,653,200 tons of grain. During that same year grain barged through Locks 26 on the Mississippi River increased only five percent to 23,500,000 tons. Once the Russian surge was over, rail movements decreased to an average of 260,000 carloads in 1974-1976. The fact that railroads increased their grain car loadings by 175 percent compared to the barge industry's five percent says a great deal about the ability of the two modes to operate under stressed conditions. Investment in track repair, rolling stock, and modernization of control systems would be needed to meet increased transportation demands.

An investment in waterways would serve bulk movements between river ports while investment in highways would provide for the nation-wide movement of non-bulk items. Investment in the rail system would provide transport for both bulk and manufactured goods nationwide. A rational transportation system would maintain barge traffic at its present level, encourage rail transport for long-haul bulk items, promote trucks for short-hauls, and encourage truck-rail combinations for long-haul transport and delivery of a wide variety of non-bulk items.

FIGURE 9. INLAND WATERWAY SYSTEM



HIGHWAY TAX STRUCTURES

Unfortunately, the financial situation of most state highway departments is deteriorating as rapidly as the condition of the roads they build and maintain. As shown in Figure 10, lower income from fuel taxes, coupled with inflation, caused constant dollar fuel tax receipts from 1978 to drop 30 percent below their 1972 level (57). Taxes and fees are so low in relation to today's costs that many states are actually "disinvesting" their highways. Disinvestment rarely means that roads are abandoned, but rather that needed maintenance is deferred, and the highways are allowed to deteriorate. Simply stated, roads receive inadequate care because the states either cannot or will not raise taxes and fees to a level adequate to cover maintenance and replacement. Eventually pavements deteriorate to the point where they must be completely rebuilt at a cost that far exceeds the maintenance cost.

This shortfall has brought renewed efforts to raise fuel taxes, sometimes by indexing the tax rate so that it increases automatically with the price of fuel. To many, such an increase seems an easy and fair way to raise money. In fact, however, fuel taxes are paid overwhelmingly by cars and light trucks, which do little or no road damage. Under a fuel tax, the heaviest vehicles pay essentially the same rates as light vehicles, despite their far greater cost responsibility.

In 1956 Congress established the Highway Trust Fund to finance major highway construction programs. The fund, kept separate from general revenues, is supported by a variety of taxes on highway users. In setting up the trust fund, Congress decided that the tax burden ought to be distributed equitably among users of the federally aided highway system.

To help develop an equitable tax structure and tax rates, Congress directed the Bureau of Public Roads to undertake a cost allocation study to determine which portion of highway costs should be assigned to each class of highway user. The study was undertaken in conjunction with a test conducted by the American Association of State Highway Officials to determine the impact of different vehicle types and axle loadings upon pavement life. The Federal Highway Administration completed the original studies in 1965 and updated them in 1969.

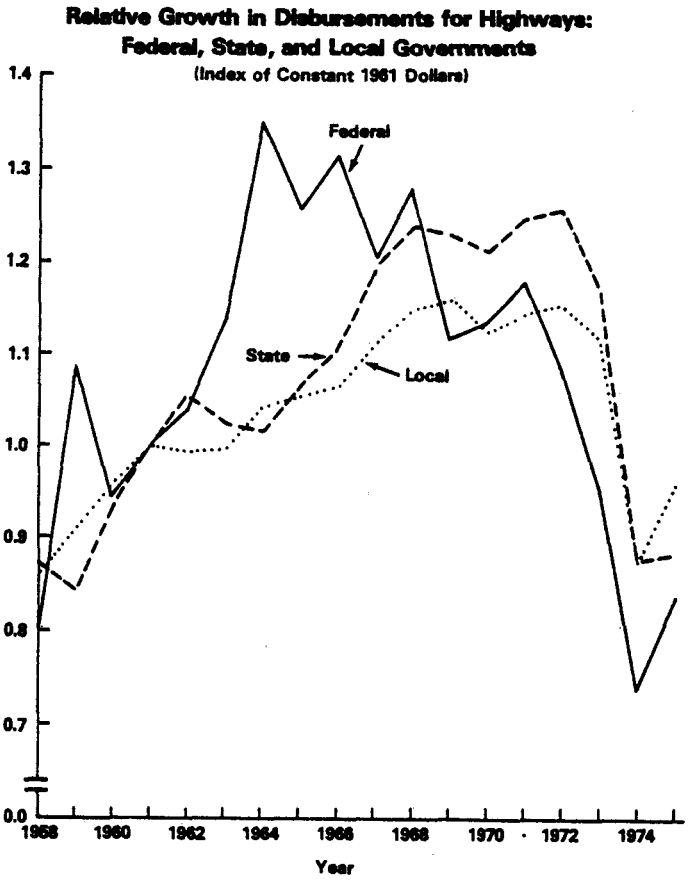
The information compiled and examined in the first cost allocation study is out of date. Since 1965 there has been an increase in overall traffic volume, the number and percentage of heavy trucks, gross vehicle weight, and axle weight. These factors influence the lifespan of pavement, bridges and other highway elements. The pattern of highway spending has also shifted from new construction to maintaining a system that has been essentially completed. All these elements call for a reassessment of the highway cost responsibility question that reflects the current situation.

Congress authorized a new highway cost allocation study to be completed in January 1982, as part of the Surface Transportation Assistance Act of 1978. Changes in highway trust fund taxes appear inevitable as trust fund revenues are outstripped by inflation and emphasis shifts from new construction to maintenance and rebuilding. This change in program emphasis should significantly alter the ways in which costs are attributed to classes of highway users (58).

COST ALLOCATION METHODS

The principle that highways should be funded through revenues provided by users and beneficiaries of the highway system is well accepted. Although some highway benefits are collective in that the general population benefits from increased mobility, motor vehicle owners and operators are clearly the primary beneficiaries. They can be identified and charged for highway use through fees (taxes on fuel, tires, or parts), permits (driver licenses and vehicle registration), and weight-mileage charges. These user fees are passed along to the general public as part of the price paid for goods and services transported by highway. This is consistent with the free enterprise concept that consumer costs should reflect the costs of a service. The major problem is developing a highway financing tax structure that requires each vehicle to pay all expenditures required on its behalf, plus an equitable portion of any common or overhead costs.

FIGURE 10.



In the past, most cost allocation studies have used the incremental method to allocate highway costs. This approach allocated the fixed costs of highway construction according to which class of vehicle was responsible for a particular element in the design of a highway. All vehicles are assumed to share in the initial costs or first increment of the highway such as surveying, right-of-way acquisition, drainage, first layers of pavement, etc (see Figure 11). Although the costs of this first increment are the shared responsibility of all road users, they have generally been assigned in large part to passenger traffic by allocating costs on the basis of vehicle miles traveled. As additional design elements, such as increased pavement width, stronger bridges, and climbing lanes, are added to the highway the class of responsible vehicles is charged. In general, larger vehicles are charged for these increments. There are several defects in the incremental approach other than its arbitrary assignment to passenger motorist of most first increment costs. There is no hard and fast rule for determining responsibility for a particular sort of highway design. There seems to be no particular reason why passenger vehicles are considered the basic vehicle and are held responsible for most initial construction costs. It would make as much or as little sense to consider trucks the basic vehicle. Since incremental costs are apportioned largely on the basis of past construction costs, they often do not charge efficiently for present highway use. In other words, some vehicles pay more and others less than they should to pay adequately for the true cost of their presence on a highway. When this happens one group of vehicles actually subsidizes another.

To avoid inefficient use of the road system, it is necessary to allocate highway costs so that each vehicle pays its own way. Such cost-based highway taxes should equal the curreent costs to society of highway use by each class of vehicles. No attempt should be made to determine responsibility for past costs since they are no longer an important element of current highway budgets. Instead, rates should be set according to the current costs that would be avoided if a vehicle class did not use the road system. For example, highway maintenance costs would be lower if axle weights were lower. Thus vehicles with heavy axle loadings should pay more toward road maintenance than light vehicles. Cost-based rates would ensure that the cost of a vehicle's use of the road would be weighed against the private benefit to the user.

Any remaining highway expenses that would not be covered by such cost-based user charges are common or unallocated costs. Such costs should be charged for in some politically agreed upon manner. There is no logical reason for charging any particular vehicle type for the common costs of highway operation. Specifically, they should not automatically be assigned to the passenger vehicles.

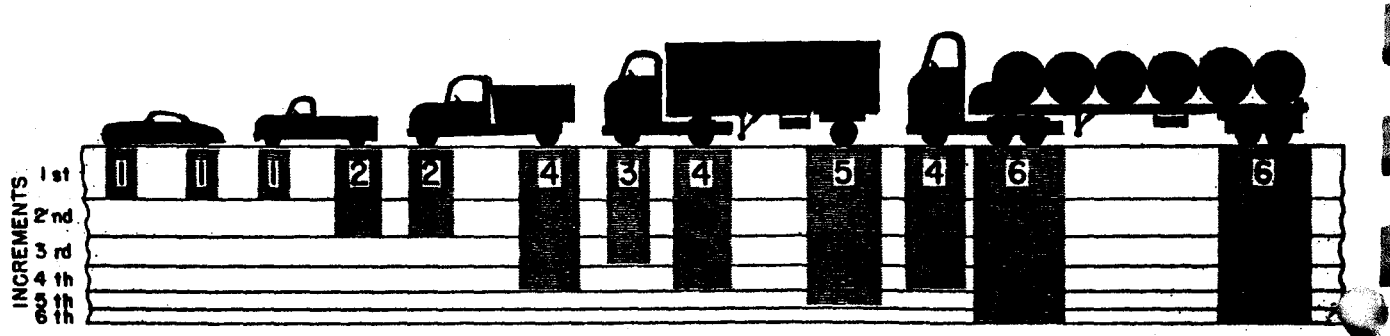
TAXES AND FEES

Traditionally, road user taxes have been placed into three general classes. First structure taxes are motor fuel taxes and other fees incidental to fuel taxation. Second structure taxes are motor vehicle registration, license, title, and related fees. Third structure taxes include taxes on ton-miles, axle-miles or gross receipts.

Given the fact that highway maintenance and repair requires a major portion of highway budgets, a cost-based user fee that is tied to a vehicle's potential to create road damage makes sense. Such a fee system must take into account both the axle-weight of a vehicle and the distance it travels.

Both fuel taxes and registration fees surfer from defects that make them unsuitable for use as cost-based user charges. Fuel consumption rises slowly with vehicle weight, while highway damage increases sharply. Thus, fuel taxes cannot keep up with a vehicle's damage costs. Registration fees are inadequate since with a flat fee, a vehicle pays less on a per-mile basis as it travels more miles. Registration fees favor increased vehicle use and thus increased damage to the highways. Moreover, as discussed below, widespread reciprocity agreements for commercial trucking operations allow many trucks to escape registration fees in many states where they operate. Despite these defects, registration fees and fuel taxes are used by most states and will probably remain as a means of collecting common costs. It is, therefore, important that states which continue to rely on them seek ways to improve their efficiency and enforcement.

FIGURE 11. INCREMENTAL CONCEPT OF HIGHWAY COST ALLOCATION



TOTAL PAVEMENT BROKEN INTO INCREMENTS. SHADING UNDER EACH AXLE GROUP IDENTIFIES THE NUMBER OF PAVEMENT INCREMENTS FOR WHICH THEY MUST SHARE THE COST.

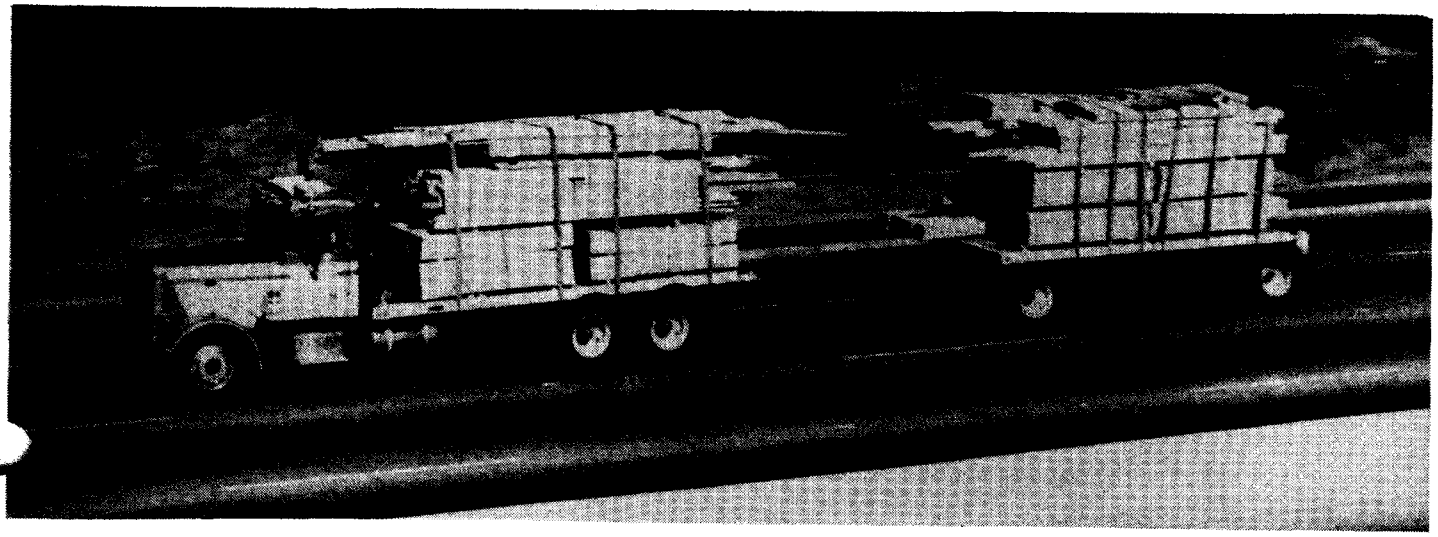
Registration fees differ widely from state to state. If a five-axle, diesel-powered privately-owned tractor semi-trailer is used as an example, annual registration fees might vary from a low of $33 in Colorado to a high of $1659 in Vermont. However, states with higher-than-average registration fees are likely to have lower-than-average fuel taxes. Interstate carriers seldom locate in states with high registration fees although they will still be able to operate in the state under reciprocity. Under reciprocity agreements a state allows vehicles registered in another state to use its roads, provided the other state acts in a reciprocal manner. Reciprocity for automobiles became common in the 1920s as the gasoline tax replaced car registration fees as the major income for most state highway trust funds. Reciprocity for motor carriers became widespread during World War II when a number of states adopted such agreements to improve motor carrier efficiency.

The problem with traditional reciprocity is that it allows trucks to escape the payment of registration fees in all but one of the states in which the truck operates. Naturally, the truck will usually be registered in the state with the lowest registration fee. To get around this problem several states and Canadian provinces have formed the International Registration Plan. This pact provides for apportioned registration fees to be paid in each state according to the proportion of a vehicle's annual mileage traveled in that state.

Third structure taxes, while not as widely used as first and second structure taxes, represent the only current cost-based user charge. Such taxes are now used in Colorado, Idaho, New Mexico, New York, Ohio, Oregon and Wyoming. Only a tax varying with both weight and distance can recover total damage costs. Third structure taxes raise significant revenues in all states where they are used. They require the owners or operators of motor carriers to submit regular mileage reports and tax payments. It might seem that this reporting requirement would entail excessive administrative costs. However, the fuel-use and registration pro ration schemes currently used in most states impose essentially the same record-keeping requirement. In fact, all but four states have enacted fuel purchase laws which require motor carriers to report their mileage and fuel purchases so as to ensure that they pay an amount of fuel tax proportional to their in-state mileage.

Third structure taxes can take several forms. A ton-mile tax is based on actual vehicle weight and miles traveled. It is generally a flat fee per ton-mile traveled. A flat fee assumes a constant relationship between damage and vehicle weight and thus understates user cost responsibility as weight increases. Such a charge would, however, be easy to introduce and involves essentially the same administrative problems as a good weight enforcement program. At present, Colorado is the only state in the country with a true ton-mile tax.

A mileage-tax with the per-mile rate varying according to registered gross vehicle weight is simpler to administer than a ton-mile tax. Oregon's weight-distance tax is an example of such a tax. In Oregon 80,000 pound trucks are charged about 6.5 cents per mile while 50,000 pound trucks pay about 5 cents per mile.



The most efficient type of third structure tax would be an axle-mile tax whose rates varied according to axle weight. A weight-distance tax of the sort that exists in Oregon does not consider the difference in highway damage attributable to vehicles with the same gross weight but different axle loadings. In contrast, the Ohio axle-mile tax, by imposing the same tax on all vehicles of the same axle configuration fails to charge for the difference in damage potential that result from differences in axle weight.

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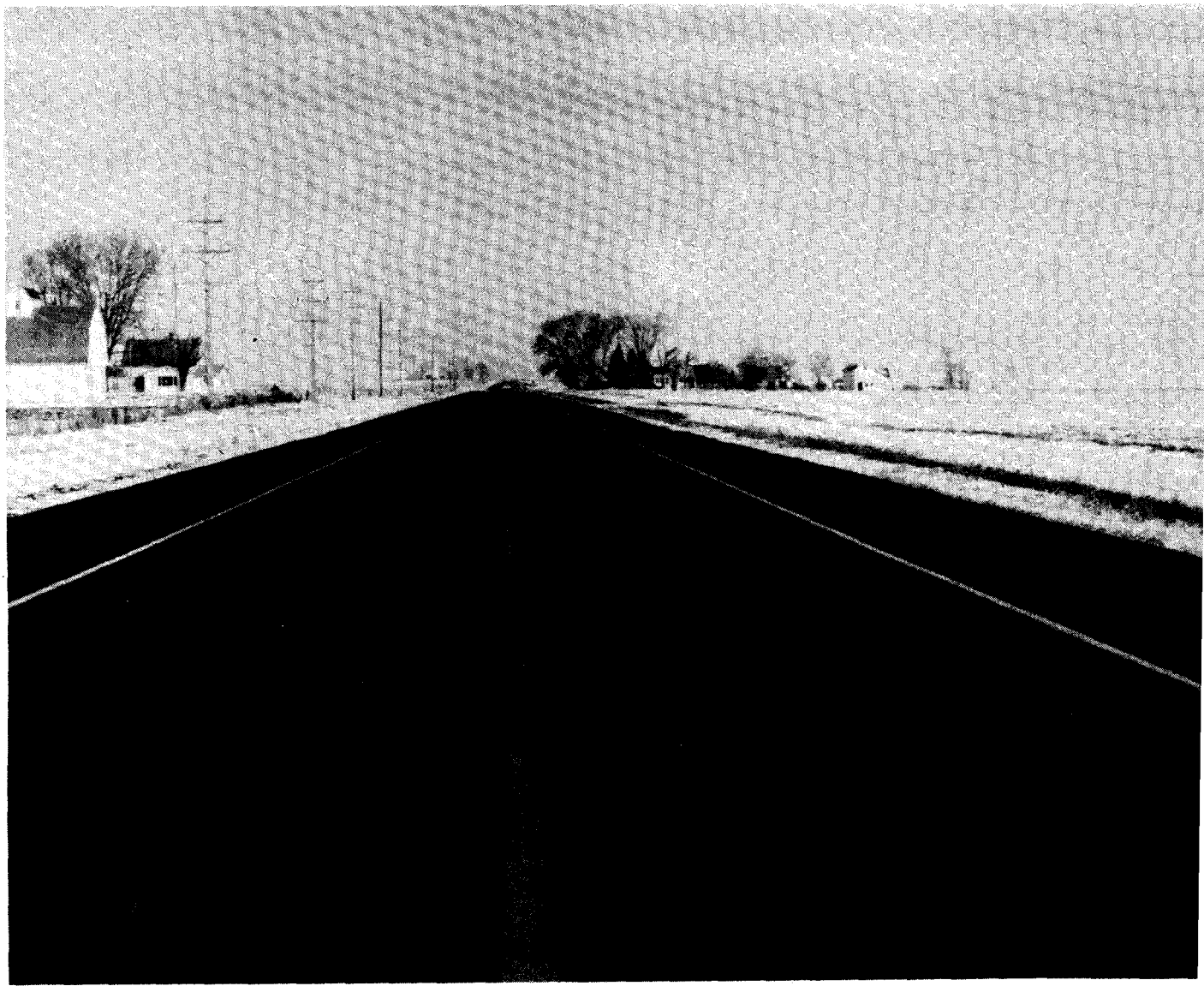

America's highways are a valuable national resource which deserve care and protection commensurate with the financial sacrifices the public made to build them. The nation's roads should not be sacrificed so that the trucking industry can increase profits.

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(continued next page)

GLOSSARY

AASHO. American Association of State Highway Officials. Now AASHTO.

AASHTO. American Association of State Highway and Transportation Officials. Formerly AASHO.

Axle load. The amount of a vehicle's weight supported by an axle. Axle weight. Road damage increases with axle load.

BMCS. Bureau of Motor Carrier Safety.

BTU. British thermal unit. A measure of energy counsumed.

DOT. Department of Transportation.

DVMT. Daily vehicle miles traveled.

Equivalent 18-KIP Single Axle Load Factor. Axle Loads expressed in the amount of damage done to a roadway by one 18,000 pound axle. A 20,000 pound axle is equivalent to 1.57 18,000 pound axles.

Fatality. One death.

Fatal accident. An accident that takes one or more lives.

First Structure Tax. A tax based on fuel consumption such as a motor fuel tax.

FHWA. Federal Highway Administration.

GAO. General Accounting OFfice.

KIP. One thousand pound load. 18-KIP is a load of 18,000 pounds.

NTSB. National Transportation Safety Board.

Out of Service Violation. A safety violation serious enough that officials take a vehicle off the highway until the violation is corrected.

Second Structure Tax. A tax such as a registration, license, or title fee.

Tandem axle. A double axle such as is found at the rear of five axle trucks.

Third Structure Tax. A tax based on mileage such as a mileage, ton-mile, or axle-mile tax.

Twin Trailer. Two truck trailers pulled by a tractor or cab.

VMT. Vehicle miles traveled.

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GLOSSARY

AASHO. American Association of State Highway Officials. Now AASHTO.

AASHTO. American Association of State Highway and Transportation Officials. Formerly AASHO.

Axle load. The amount of a vehicle's weight supported by an axle. Axle weight. Road damage increases with axle load.

BMCS. Bureau of Motor Carrier Safety.

BTU. British thermal unit. A measure of energy counsumed.

DOT. Department of Transportation.

DVMT. Daily vehicle miles traveled.

Equivalent 18-KIP Single Axle Load Factor. Axle Loads expressed in the amount of damage done to a roadway by one 18,000 pound axle. A 20,000 pound axle is equivalent to 1.57 18,000 pound axles.

Fatality. One death.

Fatal accident. An accident that takes one or more lives.

First Structure Tax. A tax based on fuel consumption such as a motor fuel tax.

FHWA. Federal Highway Administration.

GAO. General Accounting OFfice.

KIP. One thousand pound load. 18-KIP is a load of 18,000 pounds.

NTSB. National Transportation Safety Board.

Out of Service Violation. A safety violation serious enough that officials take a vehicle off the highway until the violation is corrected.

Second Structure Tax. A tax such as a registration, license, or title fee.

Tandem axle. A double axle such as is found at the rear of five axle trucks.

Third Structure Tax. A tax based on mileage such as a mileage, ton-mile, or axle-mile tax.

Twin Trailer. Two truck trailers pulled by a tractor or cab.

VMT. Vehicle miles traveled.

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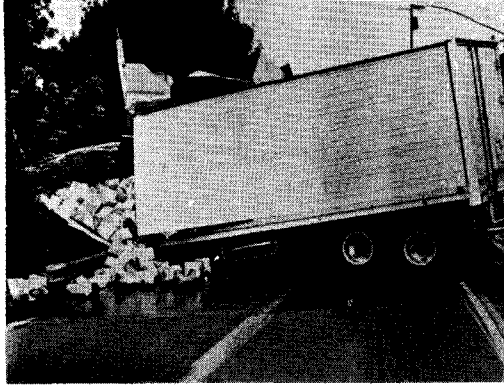
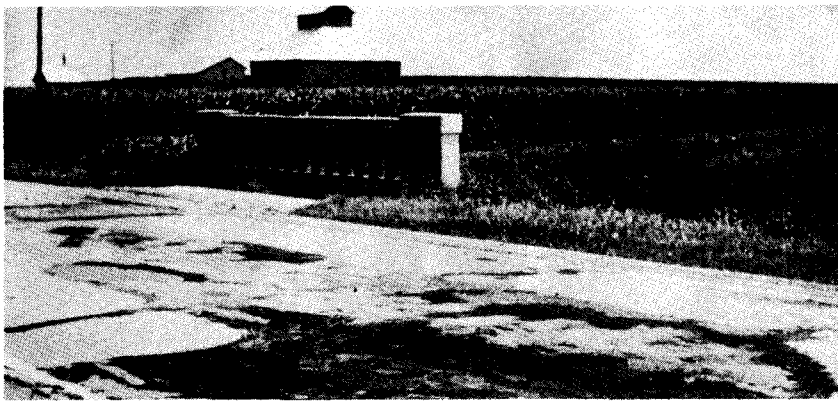
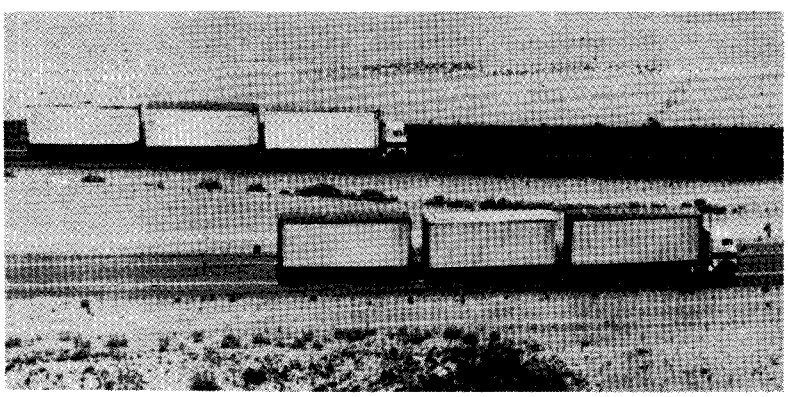
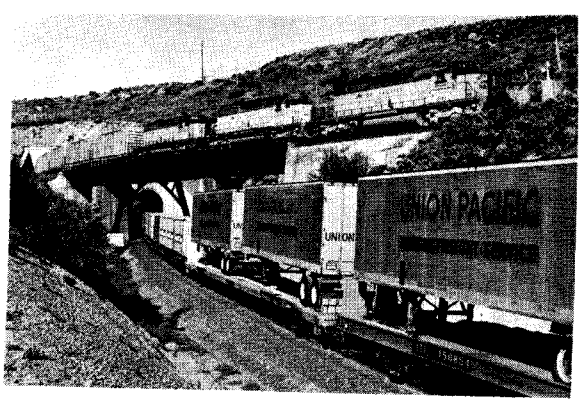



BRIDGE
RESTRICTED
ONE TRUCK
AT A TIME




ROUGH
ROAD
SPEED
LIMIT
55

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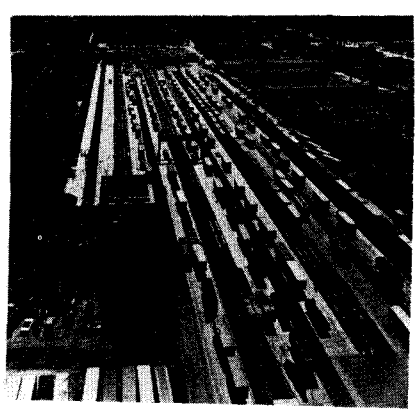

TESTIMONY ON HB 539

PRESENTED BY REPRESENTATIVE CLYDE SMITH...DISTRICT 18

AT THE PRESENT TIME 5 AXLE LOG TRUCKS ARE LICENSED TO HAUL 78,000 POUNDS GROSS VEHICLE WEIGHT IN THE STATE OF MONTANA. HB 539 WILL PERMIT 5 AXLE LOG TRUCKS TO HAUL 80,000 POUNDS GROSS VEHICLE WEIGHT. THERE ARE 4 REASONS WHY THIS LEGISLATION IS NECESSARY:

FIRST, LOG HAULERS NEED INCREASED PAYLOAD CAPACITY TO PARTIALLY OFFSET THE INCREASED OPERATING EXPENSES THEY MUST ABSORB BECAUSE OF ESCALATING STATE AND FEDERAL TAXATION;

SECOND, RECENT FEDERAL LEGISLATION INTENDED THAT 5 AXLE TRUCKS BE PERMITTED TO HAUL 80,000 POUNDS GROSS VEHICLE WEIGHT IN ALL STATES;

THIRD, MANY LOG HAULERS IN WESTERN MONTANA HAUL IN AND OUT OF IDAHO WHICH PERMITS LOG HAULERS 80,000 POUNDS GROSS VEHICLE WEIGHT; AND

FOURTH, MONTANA'S DEPARTMENT OF HIGHWAYS IS REQUESTING A TIGHTENING OF THE OVERWEIGHT TOLERANCE ALLOWED TRUCKS BECAUSE THEY LOAD THEIR CARGO AWAY FROM CONTROLLED WEIGHT PLATFORMS.

CURRENTLY, TRUCKS ARE ALLOWED A GROSS WEIGHT TOLERANCE OF 7%. THE AMENDMENT ATTACHED TO HB 539 WILL REDUCE THAT TOLERANCE TO 5% OF GROSS WEIGHT, NOT TO EXCEED 5% ON ANY AXLE OR GROUP OF AXLES. IT IS THE INTENT OF THIS AMENDMENT TO PREVENT ANY AXLE FROM BEARING THE FULL FORCE OF ACCIDENTAL OVERWEIGHTS, AND AS THE SPONSOR OF HB 539 I SUPPORT THIS AMENDMENT.

SINCE HB 539 PROVIDES ADDITIONAL GVW AUTHORITY FOR LOG HAULERS THROUGH A SPECIAL TERM PERMIT, IT WILL ALSO PROVIDE INCREASED REVENUES FOR THE DEPARTMENT OF HIGHWAYS. I RESPECTFULLY REQUEST THIS COMMITTEE ACT TO PASS HB 539 AS AMENDED AND I REQUEST THE RIGHT TO MAKE A CLOSING STATEMENT FOLLOWING FURTHER TESTIMONY.

WITNESS STATEMENT

NAME Keith L. Olson BILL No. HB 539

ADDRESS P.O. Box 1716, Kalispell DATE 2-3-83

WHOM DO YOU REPRESENT Montana Logging Assn.

SUPPORT as amended OPPOSE AMEND

PLEASE LEAVE PREPARED STATEMENT WITH SECRETARY.

Comments:

FOR SEVERAL MONTHS THE MONTANA LOGGING ASSOCIATION HAS BEEN INVOLVED WITH THE DOH AND OTHER ORGANIZATIONS ATTEMPTING TO FORMULATE A PACKAGE OF LEGISLATIVE PROPOSALS WHICH WOULD PROVIDE FUNDING FOR THE DOH WHILE ENHANCING THE PRODUCTIVITY OF THE TRUCKING INDUSTRY. HB 539 AS AMENDED IS A PART OF THAT PACKAGE AND WE REQUEST THIS COMMITTEES SUPPORT.

AS REPRESENTATIVE SMITH STATED, THIS LEGISLATION WILL ALLOW LOG HAULERS TO PARTIALLY OFFSET THE FINANCIAL BURDEN WHICH FEDERAL AND STATE TAXATION WILL PLACE UPON THE TRUCKING INDUSTRY. JUST AS IMPORTANT, HB 539 WILL PROVIDE CONFORMANCE WITH RECENT FEDERAL LEGISLATION WHICH INTENDED THAT 5 AXLE TRUCKS BE ALLOWED TO HAUL 80,000 POUND PAYLOADS IN ALL STATES. THIS IS ESPECIALLY IMPORTANT TO OUR MEMBERS WHO OPERATE NEAR THE IDAHO BORDER SINCE IDAHO CURRENTLY PERMITS LOG HAULERS 80,000 POUNDS GVW.

THOUGH THE REDUCTION IN TOLERANCE FROM 7% OF GROSS VEHICLE WEIGHT TO 5% PER AXLE HAS CAUSED SOME CONCERN, WE BELIEVE IT IS A PROVISION THE LOGGING INDUSTRY CAN ADAPT TO. LOADING A LOG TRUCK IS BY NO MEANS AN ACCURATE PROCEDURE, HOWEVER, MODERN DAY ELECTRONIC SCALES DO PROVIDE A REASONABLE DEGREE OF ACCURACY. FURTHERMORE, OUR INDUSTRY IS UNIQUE IN THAT WE POLICE OURSELVES WITH RESPECT TO OVERLOADS. THE MAJORITY OF LOG HAULING CONTRACTS CONTAIN A PROVISION WHICH STIPULATES THAT WEIGHT IN EXCESS OF A TRUCKS LEGAL CAPACITY WILL NOT BE PAID FOR. AN EFFECTIVE DETERENT TO OVERLOADS.

HB 539 WILL GENERATE ADDITIONAL FUNDING FOR THE DOH IN TWO WAYS:

FIRST, THE ADDITIONAL GVW FEE WILL GENERATE AN ADDITIONAL $50 FROM EVERY LOG TRUCK IN THE STATE.

SECOND, BECAUSE THE EXTRA GVW CAPACITY IS GRANTED WHEN THE SPECIAL TERM PERMIT IS PURCHASED, THOSE LOG TRUCKS WHICH CURRENTLY DO NOT PURCHASE IT WILL FIND IT TO THEIR ADVANTAGE TO SPEND $75 A YEAR FOR THE PERMIT.

IN CONCLUSION, THE MONTANA LOGGING ASSOCIATION RESPECTFULLY SUGGESTS THAT HB 539 AS AMENDED IS LEGISLATION BENEFICIAL TO BOTH THE LOGGING INDUSTRY AND THE DOH AND, THEREFORE, DESERVES A DO PASS RECOMMENDATION FROM THIS COMMITTEE.

MONTANA LOGGING ASSOCIATION

P.O. Box 1716, Kalispell, Montana 59901
(406) 755-3185

Rep Harris
34

February 8, 1983

Mr. Gary Wicks, Director
Department of Highways
Helena, MT. 59601

Dear Director Wicks:

The Montana Logging Association wishes to express our appreciation for your attention to our concerns as you endeavor to develop a legislative package intended to fund the Department of Highways without placing an undue burden upon the trucking industry. We sincerely appreciate the difficulty of this task and wish to go on record in support of the following legislation.

3/1

SB 106 An act to increase the penalties of overweight vehicles. The MLA believes this bill will effectively serve as a deterrent to illegal loads.

2/3

HB 437 An act to increase maximum legal weights and maximum legal lengths for highway trucks. This bill will increase the productivity of large trucks, thus, allowing the trucking industry to recover some of the enormous federal and state tax increases.

2/3

HB 539 An act permitting logging trucks for 80,000 pounds gross vehicle weight, and, amending the existing tolerance allowed overweight trucks from 7% of gross weight to 5% of axle weight. This bill will not only increase productivity for log haulers, it will also minimize damage to highways by restricting the overweight tolerance by axle.

The MLA further expresses our support for HB 16, your Departments request to increase state fuel taxes by 3 cents per gallon, effective July 1st, 1983, and by an additional 2 cents per gallon, effective January 1st, 1985. We agree that these increases are necessary to adequately fund your Departments highways program through 1987.

Our Association shall continue to lobby for the use of coal tax money to help fund highway programs. Director Wicks, the MLA is pleased that the excellent relationship the logging industry enjoys with the Department of Highways is stronger than ever.

Respectfully yours,

Keith L. Olson
Executive Director

cc: MLA Board of Directors
House Highways and Transportation Committee
Senate Highways and Transportation Committee

House Highways and Transportation Committee

Bill Summaries

HB 437 revises the overweight and overlength laws for motor vehicles. The bill revises the maximum axle weight values for determining allowable gross weight to a maximum of 34,000 lbs. each for 2 consecutive sets of tandem axles if the distance between the first and last axles of the set is 36 feet or more. The bill also allows a vehicle 95 feet in length to be issued a term permit instead of a trip permit. This permit would not allow more than 2 trailers.

HB539 would allow a 5-axle combination logging vehicle up to 80,000 lbs. in gross weight to operate under special overweight permits.

SB 10 gives the highway commission the authority to establish priorities and select projects for construction or reconstruction. This was formerly done by the commission prior to executive reorganization and is now done by the department.

GP2/BS 2/3

EXCUSE

DATE 2/3/83

REPRESENTATIVE Dave Brown

IS EXCUSED FROM COMMITTEE HEARING.

REP. HUGH ABRAMS, CHAIRMAN
HIGHWAYS AND TRANSPORTATION COMMITTEE

PROXY VOTE

Date 2/3/83

REPRESENTATIVE Dave Brown

BILL NO. _____

INSTRUCTIONS _____

HB-9 - NAY (unless amended)

HB-16 - NAY

SB-10 - AYE

SB-82 - AYE

HB-437 - AYE

(vote all with any Amdts)

Dave Brown
SIGNATURE