

D I G E S T

America moves on its roads and these roads are in trouble. They are deteriorating at an accelerated pace and sufficient funds are not available to cope with current needs or meet future requirements.

While there are many uncontrollable causes of highway deterioration, such as weather, excessive truck weight is one cause that can be controlled. By strictly enforcing their weight laws, States could virtually eliminate damage caused by overweight trucks. While controlling truck weights will not eliminate highway deterioration, applying Federal weight limits to all trucks on all Federal-aid highways could reduce it even further.

National statistics show that at least 22 percent of all loaded tractor-trailers exceed State weight limits. This percentage is even higher for other types of large trucks. (See p. 11.)

In 1956, Congress established weight limits for interstate highways as a precondition for Federal highway funding, but these limits do not apply to noninterstate Federal-aid highways--95 percent of the Federal-aid system. Even for interstate highways, higher weights are often allowed. The Federal investment in the Nation's highway system, over \$96 billion since 1956, must be protected. (See p. 37.)

Congress should amend the highway legislation to:

- Make Federal weight limits also apply to noninterstate Federal-aid highways in all States.
- Terminate current exceptions in Federal law that allow higher limits on some interstate highways.

--Prohibit overweight permits and exemptions when loads can be reduced to meet normal State weight limits. (See p. 47.)

Appendix I of this report contains proposed draft legislation implementing these recommendations.

#### HIGHWAY DETERIORATION

In 1977, the Federal Highway Administration reported that excluding routine maintenance expenditures, States need over \$18 billion to offset deterioration on the Interstate System through 1996. States will need \$67 billion over the next 20 years to meet similar needs on noninterstate roads on State highway systems. As the rate of deterioration increases, these needs will undoubtedly increase. (See p. 5.)

The American Association of State Highway and Transportation Officials reported that concentrating large amounts of weight on a single axle multiplies the impact of the weight exponentially. Although a five-axle tractor-trailer loaded to the current 80,000-pound Federal weight limit weighs about the same as 20 automobiles, the impact of the tractor-trailer is dramatically higher. Based on Association data, and confirmed by its officials, such a tractor-trailer has the same impact on an interstate highway as at least 9,600 automobiles. Increasing truck weight causes an ever increasing rate of pavement damage. (See p. 23.)

In 1975, the Federal limits were raised about 10 percent which could increase traffic-related pavement damage by up to 35 percent. Only 63 percent of interstate mileage and 15 percent of interstate bridges can adequately accommodate current heavy truck weights and volume without reducing serviceable life.

Although the Department of Transportation supported the increased Federal weight limits, it has no program sufficient to offset related increased costs to preserve the quality of the highways. The Secretary should address this problem. (See p. 24.)

While the 1975 weight increases were made to save fuel for heavy trucks, all vehicles use more fuel on deteriorated roads; heavier trucks use more fuel; and additional highway repairs require more fuel. Even though pressure is growing to further increase the Federal weight limits, the Department has not determined whether there has been an overall fuel saving since the higher limits were allowed. (See p. 29.)

The Federal-Aid Highway Act of 1978 requires the Secretary of Transportation to study various aspects of truck weight limits including the desirability of uniform maximum truck weights and the appropriateness of current maximum vehicle weights.

The Congress should be given sufficient information to help it establish the most economical and fuel-efficient weight limits for the Federal-aid highway system and to help it preserve the system. GAO recommends that the Secretary include the following in the weight limit study:

- Determine the net fuel consumption resulting from the impact of heavier truck weights taking into consideration that all vehicles use more fuel on deteriorated highways and fuel is used in maintaining and replacing these highways.
- Identify the economic effect of changes in weight laws, the cost and benefits, who will pay the costs, and who will receive the benefits.
- Determine the impact of any weight limit change on the current highway user tax structure and what changes may be needed to assure equitable allocation of costs.

#### INADEQUATE WEIGHT LIMITS

Current Federal weight limits do not protect the Federal-aid highway system from deterioration caused by excessive truck weights. This system constitutes only 20 percent of the Nation's highway mileage but carries about 75 percent of the traffic. Federal limits do not

apply to the noninterstate Federal-aid highways, which are generally much less capable of handling heavy trucks than the Interstate System. Currently, 27 States have at least one weight limit--single axle, tandem axle, or gross weight--higher than the Federal limits on these noninterstate roads.

For interstate highways, 20 States have at least one weight limit higher than Federal limits because a provision in Federal law allowed States to retain higher limits. This provision also allows States to issue permits and exemptions for millions of unnecessary excessively heavy truck shipments each year.

Differences in State weight laws and permit policies create enforcement problems in States with lower limits, accelerate deterioration in States with higher limits, and present problems for interstate trucking. (See p. 37.)

#### OVERWEIGHT TRUCKS ON FEDERAL-AID HIGHWAYS

GAO's review of shipping records in 10 States showed numerous instances of routine overweight truck shipments involving the Federal Government and private industry. For example,

- 90 percent of 179 grain deliveries to a Texas port facility exceeded State weight limits; one truck weighing 38,040 pounds over the State gross weight limit had traveled over 470 miles;
- 65 percent of 107 trucks hauling sand and gravel in Ohio were overweight. The average excess weight was 10,395 pounds; and
- 91 percent of 312 shipments from a Government facility in Ohio were overweight; more than 25 percent exceeded the State limits by 30,000 pounds.

#### STATE ENFORCEMENT EFFORTS

A good weight enforcement program requires effective enforcement techniques, stringent penalties, and adequate staff and funds. GAO identified numerous effective elements, but they were scattered among 50 State programs.

GAO found that many States efforts need improvement. For example:

- State agencies enforce weight laws on only 40 percent of the Nation's highways.
- There is little weight enforcement in urban areas.
- Many States devote only minimal resources to weight enforcement.
- Most fines for overweight violations are too low to be effective deterrents.
- Many States do not have effective enforcement provisions.
- Most permanent scales are ineffective because they are easily avoided. (See p. 61.)

#### FEDERAL ROLE IN WEIGHT ENFORCEMENT

By law, States must certify annually that they are adequately enforcing their weight limits and provide information on their enforcement efforts. The Secretary of Transportation uses this information to evaluate the adequacy of State efforts. If the Secretary determines that a State is not adequately enforcing State weight limits on Federal-aid highways, he must withhold 10 percent of that State's Federal-aid highway funds.

Despite congressional concern about the adequacy of State enforcement efforts, the Federal Highway Administration has not provided the guidance and assistance necessary to improve State programs.

Recently proposed new certification procedures will not assure adequate enforcement on a national basis because they provide for different performance criteria in each State. Evaluation criteria must assure that all State programs are directed toward a national enforcement objective.

States need a standard to evaluate their program that will enable them to identify problems and reliable alternative solutions.

The Highway Administration could fulfill this need by developing a model program and providing technical assistance through a small full-time group.

The Secretary of Transportation should direct the Federal Highway Administrator to:

- Establish criteria for evaluating weight enforcement certifications and weight enforcement programs that will result in uniform and adequate levels of State enforcement on a national basis.
- Develop, in cooperation with the States, a model weight enforcement program containing effective weight enforcement organization structures, methods, equipment, penalties, and laws.
- Establish a small weight enforcement operating group within the Highway Administration to administer the certification requirement and act as a focal point for gathering and disseminating weight enforcement information and providing ongoing technical assistance to the States.

These and other recommendations are included in chapter 7.

#### OTHER FEDERAL AGENCIES

A number of Federal agencies, their contractors, and grantees, ship and receive cargoes in trucks that exceed State weight limits. The Director, Office of Management and Budget, in cooperation with the Secretary of Transportation, should formulate a Government-wide policy including legislation, if necessary, to prevent overweight truck shipments involving Federal agencies. (See p. 52.)

#### A QUESTION OF SAFETY

Although GAO's review focused on truck weights, weight-related truck safety issues cannot be ignored. The public is being exposed to increasing vehicle size and weight differentials as automobiles get smaller and lighter while trucks become larger and heavier.

In 1969, the Highway Administrator told a congressional committee that he did not have enough reliable information to comment on the safety aspects of a proposed weight increase. As of June 1979, the agency was expecting a draft report on the relationship between truck weight and accidents. This is the first phase of a research project on truck safety scheduled to be completed by 1983. (See p. 30.)

#### AGENCY COMMENTS AND OUR EVALUATION

The Department of Transportation agreed with most of GAO's findings and supported its recommendations to the Congress. However, there were certain areas of disagreement and a lack of commitment to implement recommended agency action.

Department officials said that current diversity in State laws and practices clearly prevented them from establishing uniform enforcement criteria at this time. They agreed that a model program would be useful to the States but did not say they would develop one. Finally, the Department said it already had the basis for establishing a small operating group but did not discuss its plans to augment enforcement staffing.

Legitimate differences in State laws and practices do not preclude establishing uniform enforcement criteria because alternative approaches for effective enforcement currently exist in the States. Variances in State enforcement levels, methods, and laws will continue to reduce the effectiveness of weight enforcement. States need enforcement criteria to insure that their programs are directed toward a common objective. However, it must be broad enough to allow States to meet the criteria in the manner best suited to their particular needs.

The Department has information available to develop a model weight enforcement program but needs to make a commitment to do it. The Department's experience, the effective State enforcement elements identified in this report, and other information readily available in the

States is sufficient for both establishing the uniform criteria needed to evaluate and improve State weight enforcement and for developing a model program. In addition, the Department has not committed itself to establishing the small group needed to accomplish its enforcement objectives. (See p. 91.)

The Office of Management and Budget and the Department agreed that Federal agencies should be setting a better example in complying with State weight laws. They will discuss instituting a Government-wide policy to control overweight truck shipments and their ability to enforce it. GAO believes if such a policy cannot be developed under current law, OMB should propose new legislation because overweight shipments involving Federal agencies and their contractors and grantees need to be controlled by a unified Federal policy. (See p. 59.)

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ABBREVIATIONS

DOT	Department of Transportation
FHWA	Federal Highway Administration
GAO	General Accounting Office
TVA	Tennessee Valley Authority

## CHAPTER 1

### INTRODUCTION

Since 1956 the Federal Government has committed about \$96 billion to the Nation's highway system. One of the largest problems facing the Department of Transportation (DOT) and its Federal Highway Administration (FHWA) today is that the Nation's highways are deteriorating faster than they are being maintained and reconstructed. Coping with this deterioration is difficult and costly because many of its causes stem from factors that are not readily controllable, such as weather, lack of maintenance money, and the inevitable aging process. However, excessive truck weight, a major factor contributing to highway deterioration, can be controlled. Eliminating excessively heavy trucks from the highways will help preserve the Federal investment at relatively little cost compared to funding needs if truck weights are not controlled.

#### FEDERAL-AID HIGHWAY PROGRAM

The Congress initiated the Federal-aid highway program in 1916. In 1956 it created the Highway Trust Fund to finance the highway program. In addition to the interstates, the Federal-aid highway system includes highly traveled rural and urban highways in the following categories:

<u>Highway categories</u>	<u>Number of miles</u>
Interstate (urban and rural)	42,000
Noninterstate:	
Primary (urban and rural)	256,000
Secondary (urban and rural)	399,000
Urban	<u>113,000</u>
Total	<u>810,000</u>

Although this system represents only 20 percent of the Nation's 3.9 million highway miles, it carries about 75 percent of the Nation's traffic.

Between 1956 and 1979, FHWA committed \$64 billion to build and improve the Interstate System, while \$32 billion was committed to noninterstate Federal-aid highways. Generally, States may use Federal-aid funds for 90 percent of eligible interstate costs and for 75 percent of eligible noninterstate costs. The Congress authorized about \$9 billion for highway projects for fiscal year 1979.

FHWA, through its cooperative relationship with the States, is responsible for protecting this large public investment and the safety of the driving public. To do this, FHWA has a division office in each State which reviews, approves, and monitors State-selected highway projects. However, State highway departments have jurisdiction over only a portion of the total mileage. The following schedule shows the breakdown between State highway agencies and local communities, such as cities and counties.

	<u>Percent under State control</u>	<u>Percent under local control</u>
National mileage (3,900,000)	21	79
Federal-aid mileage (810,000)	65	35

In the Federal-aid Highway Act of 1956, the Congress established truck weight limitations for the Interstate System to protect the Federal investment. It generally required the Secretary of Transportation to withhold Federal-aid highway funds from States allowing trucks to have more than 18,000 pounds on a single axle, 32,000 pounds on a tandem axle (2 axles), and 73,280 pounds gross or total weight. Prompted by the 1973 energy crisis, the Federal weight limits in these categories were raised in early 1975 to 20,000; 34,000; and 80,000 pounds, respectively, to allow trucks to carry more cargo. According to DOT officials, these new weight limits would allow trucks to make fewer trips and thereby save fuel.

The 1974 act that raised the Federal weight limits in early 1975 also required each State to annually certify that it was enforcing State weight laws not just on the interstates but on all Federal-aid highways. The Secretary of Transportation could not approve any new highway project if that State did not meet this requirement. The Federal-Aid Highway Act of 1978 changed DOT's authority by providing that if the Secretary determines that a State is not adequately enforcing its weight limits, the Secretary must reduce that State's share of Federal-aid highway construction funds by 10 percent.

#### HIGHWAY DETERIORATION FACTORS

A recent DOT report shows that the Nation's highway pavement condition has declined from good to fair in the 1970s, thus giving rise to potentially ominous cost implications. This decline has been caused by many factors including harsh weather, highway age, lack of maintenance funds, and more traffic.

## Highway design

Pavement and bridge design is not an exact science. Many factors, such as soil support and material strength, must be considered in pavement design. Two considerations dominate pavement design: intended pavement life and the estimated weight and number of vehicles using the highway.

Intended highway life, or design life, is the number of years a highway is designed to remain in serviceable condition while carrying estimated traffic volume and vehicle weights. Although the current highway design life standard is 20 years, it is possible to design pavements that will last much longer and carry more traffic. DOT officials told us that although a longer design life might be far more cost effective, the 20-year design life is established by law for the Interstate System.

Projected traffic for highway design life includes the estimated number and weight of heavy truck axles. These projections are critical because heavy truck axles have a much greater impact on pavement life than automobile axles. Thus, highways with expected substantial heavy truck 1/ traffic require thicker pavements at additional cost to meet a given design life requirement. Relatively small increases in heavy truck traffic shorten pavement life exponentially if the pavement thickness remains the same.

Initial cost, replacement difficulty, and safety factors have led to bridges being traditionally designed for longer serviceable life. Bridge life depends on both axle and gross weights. Axle weight damages bridge decks and deck supports much as it does pavements, while generally gross weight causes stress to the spanning structure between the piers.

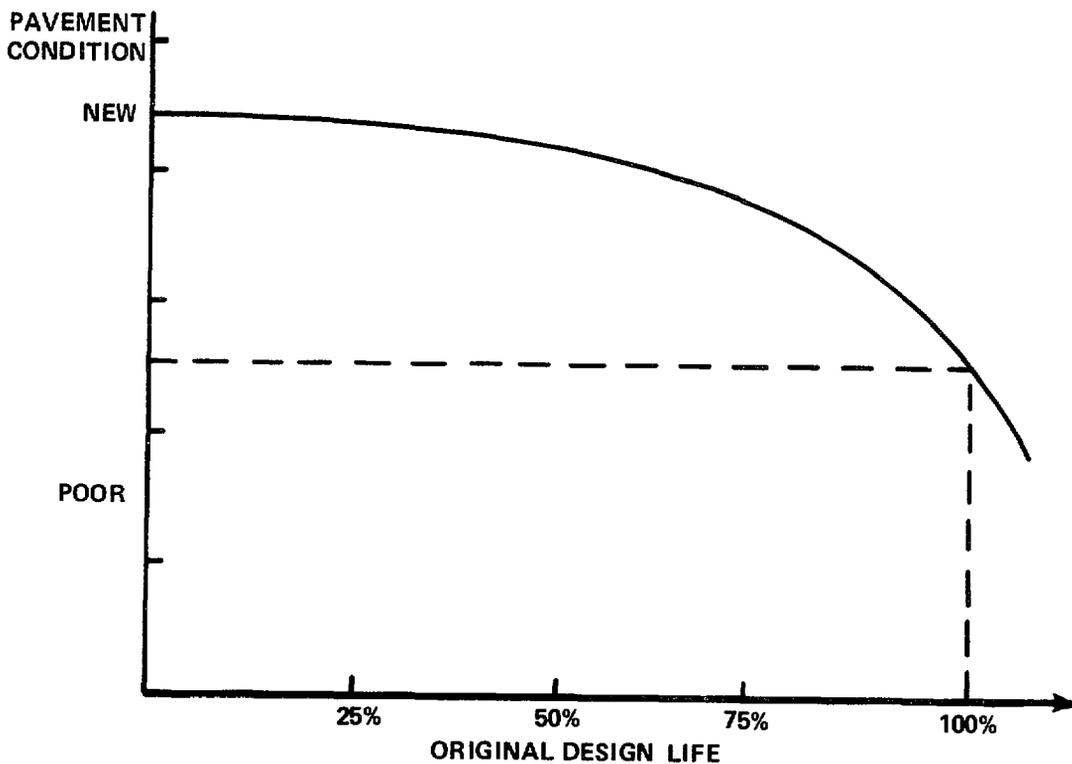
## The deterioration process

Pavement failure, seldom a spectacular event, is often not apparent until the condition is "poor"--pavement needs major rework to accommodate high speed and high traffic volumes. Research has shown that highway pavement generally deteriorates over its design life, as shown in the graph below. If highways are not repaired, resurfaced, or rebuilt at the proper time, they will rapidly become unserviceable and hazardous.

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1/The term "heavy truck" includes all single unit trucks with three or more axles and all tractor-trailers and trucks with trailers.

## PAVEMENT CONDITION DURING DESIGN LIFE



### Condition of the Nation's highways

The Nation's highways are deteriorating. Although deterioration varies from State to State and road to road, the overall picture is that billions of dollars for preservation work is needed.

In early 1977, we reported that FHWA officials believed Federal-aid highways were deteriorating faster than they had anticipated and were wearing out 50 percent faster than they were being replaced. Later that year, DOT reported to the Congress that the Nation's highway pavement condition shifted from good to fair from 1970 to 1975. <sup>1/</sup> In 1975 we reported to the Congress that FHWA statistics showed 31,000 bridges on Federal-aid highways were unsafe and had reduced load capacities. In a January 1979 report on bridge decks, we identified 32 States with 162,622 Federal-aid system bridges having moderate to very major bridge deck problems.

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<sup>1/</sup>The report does not reflect the unusually high damage caused by the severe winters of 1976-77, 1977-78, and 1978-79 in many parts of the country.

## Shifting funding emphasis

A 1977 FHWA report speculated that within the next 6 to 10 years, increased highway pavement deterioration may require shifting expenditures from new construction to preserving existing pavements. This shift may have already begun. One State did not start any new construction projects during 1978 in an attempt to meet increasing maintenance needs. During 1977, several States had difficulty providing sufficient money to match all available Federal construction funds because State funds were used for maintenance. In September 1977, DOT estimated that States faced a \$2.6 billion interstate resurfacing, restoration, and rehabilitation backlog and that they would need an additional \$15.8 billion to meet these needs through 1996. 1/

In response to a questionnaire we sent to all States, 46 States estimated that they needed \$67 billion over the next 20 years to meet their resurfacing, restoration, and rehabilitation needs for noninterstate mileage under State highway agency control. No data is available on these costs for the 3 million noninterstate highway miles under city and local control. As the rate of deterioration increases, these needs will undoubtedly increase.

## WHY HIGHWAYS DETERIORATE

There are several reasons why highways deteriorate. Principal among these are weather, deferred maintenance, highway age, and increased traffic.

### Weather

Moisture and temperature changes cause drainage and buckling problems and eventually pavement and bridge deterioration. Rapid recurrences of water freezing and thawing--common in the Northern and Central States--are especially harmful to pavements. The recent severe winters of 1976-77 and 1977-78 caused unusually high damage. Kentucky reported that 45 freeze-thaw cycles in the 1977-78 winter caused rapid and severe pavement damage. One Federal-aid highway section which Ohio rated excellent in 1976 became one of the 10 worst roads in the State by 1978. Responding to our questionnaire, 14 States said that recent severe weather was a major cause of deferred maintenance.

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1/Estimates are expressed in 1975 dollars.

### Deferred maintenance

Proper and timely maintenance can slow highway deterioration. Because money for maintenance is almost always limited, highway officials must decide which roads to maintain, meaning that some roads will not get the needed maintenance and will deteriorate further.

Responding to our questionnaire, 49 States said deferred maintenance was a problem contributing to highway deterioration. Thirty-two States felt it was a serious or very serious problem.

### Age

Some deteriorated pavements and bridges are old and were never designed for post-1960 traffic. Many roads, started as horse trails, evolved into gravel or stone roads which at most were modernized by an asphalt surface in the 1940s or 1950s. These roads have little subsurface pavement to support heavy truck volumes and weights.

Other highways, designed for heavy traffic, have already exceeded their intended life. Highway officials in 49 States told us that age has contributed to highway deterioration. About 38 percent of the Interstate System is already 4 years past its original intended life because those built before 1963 were designed to last until 1975.

### Increases in traffic

Today's highways are handling more traffic than they were designed for because earlier traffic projections were underestimated. Although both automobile and heavy truck traffic have increased, the increase in heavy truck traffic has caused most traffic-related deterioration.

Responding to our questionnaire, State officials told us that heavier truck weight and more heavy truck traffic cause most traffic-related highway deterioration as shown below.

#### Extent of Highway Deterioration Caused by Automobiles and Heavy Trucks

<u>Type of traffic</u>	<u>Very great or substantial</u>	<u>Moderate</u>	<u>Some or little</u>	<u>No response</u>
Automobile	1	3	44	2
Heavy truck	26	17	6	1

## SCOPE OF REVIEW

We reviewed FHWA's weight enforcement program at its Washington, D.C., headquarters and at the division offices of the nine States we visited: California, Florida, Kentucky, Michigan, Ohio, Oregon, Pennsylvania, Texas, and Virginia. We interviewed State and Federal officials, reviewed legislation and regulations, and analyzed available statistics. To obtain information on truck safety, officials from the National Transportation Safety Board were also interviewed. Discussions were held with officials from the Department of Energy, General Services Administration, U.S. Army Corps of Engineers, Tennessee Valley Authority, and several States to ascertain if public agencies have problems with overweight trucking.

We visited officials in 10 cities and contacted officials in 20 other large cities. Visits were made to various transportation organizations in Washington, D.C., including the American Trucking Association and the American Association of State Highway and Transportation Officials.

We visited a newly developed truck weight enforcement facility in Indiana and visited numerous hauling operations in several other States to determine how much weight trucks were hauling when there was little likelihood of being weighed.

A questionnaire was sent to all States requesting information on State truck weight legislation, special permits, enforcement efforts, and general highway data. A 100-percent response was received. We did not verify the information provided to us by the States, although followup inquiries were made to clarify and amplify some of the information. See appendix IV for a copy of the questionnaire. Copies of the summary of questionnaire responses may be obtained by following the instructions shown on the inside back cover of this report. The number of the summary report is CED-79-94A. It has the same issue date as that shown on the cover of this report.

## CHAPTER 2

### SIGNIFICANT NUMBER OF OVERWEIGHT TRUCKS.

#### USE THE NATION'S HIGHWAYS

Overweight trucks threaten the structural integrity of the national highway system. Our review showed that the number of trucks exceeding State weight limits and the amount by which they are overloaded is significant. Based on our analysis of nationally available statistics which FHWA obtained from the States, 25 percent of all loaded five-axle tractor-trailers--the most common type of tractor-trailer generally known as 18 wheelers--exceeded State weight limits. For certain commodities and specific types of trucks, the percentage is substantially greater.

The percentage and number of overweight trucks may be even higher because State officials believe that many overweight trucks avoid being weighed. Probably most disturbing is the fact that many of these trucks are exceeding State weight limits by large margins, which makes it doubtful that the overloading is unintentional.

Overweight operations are not restricted to any commodity or location. We found overweight trucks carrying commodities ranging from dirt to gasoline, traveling long and short distances, and using roads in both urban and nonurban areas.

Federal agencies are responsible for substantial truck traffic volume through their contractors and grantees. We found many overweight trucks at several Federal agency facilities and projects. This matter is discussed in chapter 5.

#### TRUCKING INDUSTRY DATA

Government and industry maintain statistical data on truck registration and miles driven, but there is little information on truck weights and traffic patterns.

Between 1965 and 1977, truck registrations doubled to about 28.8 million. Industry data <sup>1/</sup> for 1977 appearing on page 9 shows the total registrations by type of truck. Although there are 28.8 million registered trucks and tractors, only about 2.1 million (heavy trucks and all

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<sup>1/</sup>Based on information contained in the June 1978 Commercial Car Journal.

tractors) have the capacity to routinely exceed weight restrictions. For example, a pickup truck generally cannot carry enough cargo to exceed axle or gross weight limits.

ESTIMATED TRUCKS IN USE - 1977

SINGLE UNIT TRUCKS		Number of Units	Percent of Total
LIGHT (Under 10,000 Pounds Gross Vehicle Weight)			
		22,255,000	77.3
<p>Note: Approximately 11.8 million of these units are used for personal transportation—as "second car" or as recreational units. Another 4.7 million are on farms (Many fully loaded weigh less than an empty Buick). This leaves approximately 5.6 million in true commercial use.</p>			
MEDIUM (10,000 to 26,000 Pounds Gross Vehicle Weight)			
		4,412,000	15.3
HEAVY (Over 26,000 Pounds Gross Vehicle Weight)			
		749,000	2.6
<b>TOTAL SINGLE UNITS</b>		<b>27,416,000</b>	<b>95.2</b>
<b>TRACTORS</b>			
ALL (Includes All Tractors With Gross Combination Weights Ranging From Those Classified As Up To 50,000 Pounds To Those Over 76,000 Pounds)			
			
<b>TOTAL TRACTORS</b>		<b>1,376,000</b>	<b>4.8</b>
<b>GRAND TOTAL</b>		<b>28,792,000</b>	<b>100.0</b>

In 1976, trucks traveled 307 billion miles--over 21 percent of the national vehicle mileage. However, these numbers include light trucks such as pickups and passenger vans. Between 1965 and 1976 annual travel by combination trucks 1/ increased 82 percent from 32 billion to 59 billion miles. Annual travel for all trucks increased 76 percent during the same period.

1/Combination trucks include all tractor-trailers and all truck-trailers



While the volume and weight of heavy trucks has substantially increased over the past 10 years, the amount of overweight truck traffic is much harder to quantify.

#### Source of truck weight information

Sources of truck weight information include studies containing data on overweight operations in particular States or areas, statistical data available from State weight enforcement agencies, and FHWA biannual truck characteristics studies. There are no national studies that identify the extent of overweight trucks; however, FHWA's truck characteristics studies, intended to provide truck traffic and weight data for highway design and planning, contain substantial national truck weight statistics. FHWA has never used the truck characteristics study data to determine the extent of overweight trucking. We used this data to analyze the percentage of trucks that exceed State weight limits, the types of trucks involved, and the percentage of these trucks using urban and nonurban roads.

Truck characteristics study data is compiled at selected collection points by about half the States each year. During three 8-hour periods, all trucks passing a collection point are classified by type; during one of these periods, all trucks are weighed. Data collected includes truck body and configuration information, cargoes carried, and axle and gross vehicle weights. This data is reported to FHWA in a standard format and is used to compile a biannual national truck characteristics report. The 1975 National Truck Characteristics Report was the most recently issued report available during our review. States counted over 2.9 million trucks and weighed nearly 231,000--or 8 percent.

We believe FHWA's truck characteristics report identifies only a minimum range of overweight truck traffic volume, but even that is significant. States using regular enforcement facilities and equipment for the weight study generally did not issue overweight citations during the study. This was to encourage overweight trucks not to avoid the scales so that representative weights could be obtained. Officials in the six States we visited that used regular enforcement facilities, however, believed that many drivers of overweight trucks continued to avoid the scales because they feared they would be cited for weight or safety violations. As a result, they said that the characteristics studies underestimate the amount of overweight truck traffic.

TRUCKS EXCEEDING WEIGHT LIMITS: MORE THAN YOU THINK

Our analysis of FHWA's data showed that trucks are exceeding State weight limits on a widespread and continuous basis and that this represents a major problem for the Nation's highway system. Maximizing the cargo load size increases the profit per trip and provides a major incentive to overload the truck.

Officials in several States attributed substantial pavement deterioration to overweight trucks, but none knew the extent of overweight truck operations. Our review of FHWA's data showed that about one of every four loaded heavy trucks weighed exceeded applicable State limits. The FHWA data did not show if any of these trucks had overweight permits.

In comparing truck weights to State weight limits, FHWA data showed that about 10 percent of the 230,937 trucks weighed exceeded the limits; however, 37 percent of those weighed were empty. We eliminated empty trucks and compared the number of loaded trucks to the number of trucks over State weight limits as follows:

<u>Truck category</u>	<u>Total weighed</u>	<u>Number empty</u>	<u>Loaded trucks</u>		
			<u>Total</u>	<u>Over State weight limits</u> <u>Number</u>	<u>Percent</u>
Light and medium (two axles)	90,360	41,209	49,151	713	1
Heavy single units (three or more axles)	11,326	5,349	5,977	1,694	28
Tractor-trailers	125,747	36,620	89,127	19,386	22
Trucks with trailers	3,504	1,174	2,330	590	25
<b>Total</b>	<b><u>230,937</u></b>	<b><u>84,352</u></b>	<b><u>146,585</u></b>	<b><u>22,383</u></b>	<b>15</b>

Light and medium trucks generally do not have the capability to exceed State weight limits, as do heavy trucks.

The above figures show that a substantial percentage of all loaded heavy trucks exceeded State weight limits. When considering particular configurations within the above categories, the percentages are even higher.

<u>Truck subcategory</u>	<u>Loaded trucks</u>	<u>Over State weight limits</u>	
		<u>Number</u>	<u>Percent</u>
Heavy single units (four or more axles)	505	410	81
Tractors with three-axle trailers	788	441	56
Trucks with trailers (five axles)	1,394	469	34

#### LONG-HAUL TRUCKS

One-fifth of the Nation's intercity cargo is hauled by truck. In 1975, 443 billion ton miles of intercity freight were hauled by truck, almost double the 1955 total. The two main reasons for this increase were the opening of the interstate highway system and the use of larger and heavier trucks.

The most prominent segment of the trucking industry is the long-haul truck. About 80 percent of interstate commercial vehicles are heavy trucks, with the vast majority being tractor-trailers. Between 1955 and 1974 the average haul distance by tractor-trailers increased 36 percent from 235 to 319 miles. The principal reason for the increased haul range is the interstate system.

The continuing increase in trailer size has allowed average capacity to increase. In 1956, 75 percent of the new trailers were over 34 feet long, but none were over 38 feet long. By 1976, however, 83 percent of the new trailers were over 40 feet, and 37 percent were 45 feet or longer.

A three-axle tractor pulling a tandem-axle trailer is commonly referred to as an "18 wheeler." Over 71 percent of all combination trucks weighed during the 1975 study were 18 wheelers. This is representative because 73 percent of all tractor-trailers are 18 wheelers. One of every four loaded 18 wheelers exceeded applicable State weight limits.

Loaded 18 Wheelers  
Over State Weight Limits

<u>Road category</u>	<u>Loaded</u>	<u>Over State weight limits</u>	
		<u>Number</u>	<u>Percent</u>
<u>Nonurban</u>			
Interstate	39,824	8,855	22
Noninterstate	<u>18,935</u>	<u>5,307</u>	28
Average	<u>58,759</u>	<u>14,162</u>	24
<u>Urban</u>			
Interstate	1,976	570	29
Noninterstate	<u>4,645</u>	<u>1,568</u>	34
Average	<u>6,621</u>	<u>2,138</u>	32
National average	<u>65,380</u>	<u>16,300</u>	25

Officials in 37 States identified cargoes carried in overweight long-haul trucks. Most of these cargoes were dense, heavy commodities, such as steel, agricultural products, and petroleum products.

Steel products

A number of State officials told us that trucks carrying steel operate most frequently on corridors between steel producers and industrial centers or port facilities. In Houston, Texas, 52 of the 61 overweight citations issued in June 1978 were to trucks carrying steel products. One tractor-trailer hauling steel pipe was apprehended in the Houston port area with 68,600 pounds on the rear tandem axles--more than twice the 34,000-pound State tandem axle weight limit.

Our review of an Ohio truck firm showed that a tractor-trailer hauled a load of steel 490 miles from western New York to central Michigan. The truck exceeded gross weight limits by 7,160 pounds in New York and Ohio and 13,880 pounds in Pennsylvania, but was well within Michigan's high gross weight limits. The problem of varying State weight limits is discussed in chapter 4.

## Agricultural products

State officials said various farm products, including grain, produce, meat, milk, and sugarcane, were often shipped in overweight trucks. Our review of an Ohio grain dealer showed that during a 4-week period, 61 percent of incoming trucks exceeded Ohio's 80,000-pound gross weight limit. The average overload was 5,600 pounds, with one tractor-trailer being 14,300 pounds over the gross weight limit.

Houston Port public elevator shipping records showed that 90 percent of 179 incoming grain trucks exceeded Texas 80,000-pound gross weight limit in a 10-day period. The average overload was 16,700 pounds. The gross weight of one tractor-trailer hauling grain 470 miles from southwest Oklahoma to the Houston elevator was 118,000 pounds. This truck was 38,040 pounds overweight in Texas and 28,040 pounds overweight in Oklahoma.

At a Portland, Oregon, grain elevator, one-third of the grain trucks in a 2-month sample exceeded gross weight limits. The average excess weight was 7,190 pounds.

## Petroleum products

Gasoline, oil, and other hazardous liquids transported in overweight tanker trucks pose an additional safety problem. In 1975, officials of the Oil, Chemical, and Atomic Workers International Union complained to FHWA and congressional representatives that independent truckers, hauling for major oil companies, were exceeding State weight limits. The complaint stated that oil companies knowingly used independent haulers because these drivers were willing to haul overweight loads, thus reducing the company's shipping cost.

In response to congressional inquiries, 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 of the trucks were ordered out of service because of safety deficiencies.

FHWA officials found similar problems in Vermont, New York, and New Hampshire, as shown below:

<u>State</u>	<u>Number of trucks weighed</u>	<u>Number of trucks overweight</u>	<u>Percent overweight</u>
Vermont	71	71	100
New York	26	19	73
New Hampshire	89	18	20

#### NATURAL RESOURCE HAULERS

The damage caused by overweight trucks is most apparent in those areas where trucks hauling natural resources are making numerous short trips each day on the same roads. Natural resource firms are often dominant economic forces and can exert considerable economic and political pressure to continue unrestricted operations. Such pressure can reduce weight enforcement or severely limit its effectiveness.

Overweight natural resource trucks generally haul large volumes of heavy cargo, such as coal, logs or wood products, and sand or gravel for short distances. These trucks make numerous trips each day on the same roads resulting in more heavy loads in a short period than the roads were intended to accommodate over many years. Perhaps the best documented example is the Appalachian coal area.

#### Appalachian coal haul area

Each of the four Appalachian coal States we visited-- Kentucky, Ohio, Pennsylvania, and Virginia--had numerous overweight coal trucks and had experienced related highway deterioration. Highway deterioration caused by heavy coal trucks increases highway and bridge maintenance costs and requires earlier than intended reconstruction of coal roads and bridges. Overweight coal trucks simply increase and accelerate these problems.

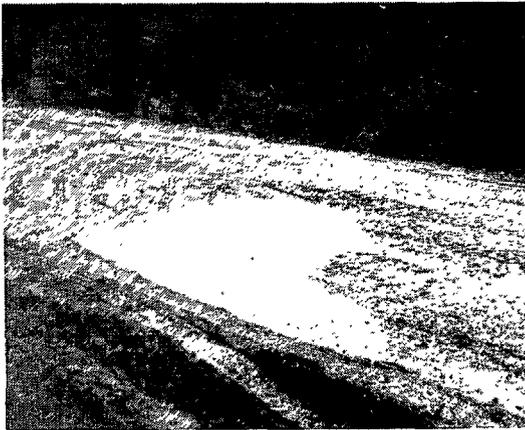
Over 60 percent of the Nation's coal is mined in Appalachian States. Although much of the actual coal mining is geographically isolated from interstate highways and industrial traffic corridors, much of the haul mileage is on the Federal-aid highway system. Kentucky officials estimated that two-thirds of the State's coal roads are on the Federal-aid system.

Several of these States have studied various aspects of coal hauling problems. In addition, DOT recently completed the first phase of a coal transportation study. This 1978 study concluded that adverse impacts on Appalachian coal highways have already occurred and that the

projected sharp increase in coal production will ruin these highways.

Much of the coal is hauled by large three- and four-axle dump trucks and five-axle tractor-trailers. Kentucky had 2,890 coal trucks registered in 1973; 5,860 in 1975; and its officials expect 12,000 to 15,000 by 1984.

We found that coal haul trucks had completely destroyed miles of Federal-aid primary and secondary highways in eastern Kentucky. We drove over a 17-mile section of a Federal-aid highway in April 1978 that had been resurfaced in 1973. The asphalt surface was gone and some water-filled holes were as long and wide as a full-size car, as shown in the following photographs.



Kentucky officials told us that the coal trucks from several recently opened mines had destroyed this Federal-aid highway. They also told us that they had stopped maintaining some roads until the nearby mining operations are over.

A July 1977 Virginia study compared 16 years of highway maintenance cost data for three coal mining counties in southwest Virginia with six comparable noncoal mining counties in the State. The average annual maintenance costs over the 16 years are shown below.

Comparison of Virginia's 16-Year Average Annual  
Maintenance Cost Per Mile: Coal Mining  
and Noncoal Mining Areas

<u>Road type</u>	<u>Southwest coal counties</u>	<u>Southwest noncoal counties</u>	<u>Eastern noncoal counties</u>
Primary	\$1,402	\$835	\$686
Secondary	933	517	448

The 1976-77 average maintenance cost per mile on primary roads in Virginia's three southwest coal mining counties (\$6,439) was over four times higher than in southwest noncoal counties (\$1,467) and three times higher than the eastern noncoal counties (\$1,886). This was much higher than the 16-year average shown above.

The damage caused by the coal trucks has resulted in significant reconstruction needs. DOT's 1978 Coal Transportation Study listed the coal hauling roads reconstruction needs estimated by the States in 1975. These estimates and the percent related to Federal-aid highways are shown below for the four Appalachian States we visited.

1975 Reconstruction Needs  
for Coal Hauling Roads

<u>State</u>	<u>Total backlog</u>	<u>Backlog for Federal-aid system</u>	<u>Percent related to Federal-aid system</u>
Kentucky	\$2,300,000,000	\$1,807,800,000	79
Ohio	47,474,000	41,065,000	87
Pennsylvania	596,909,000	303,229,000	51
Virginia	<u>199,756,000</u>	<u>194,961,000</u>	98
Total	<u>\$3,144,139,000</u>	<u>\$2,347,055,000</u>	75

Although overweight coal trucks are not the only factor contributing to this situation, we agree with State officials that the continual pounding by heavy and overweight coal trucks is a major cause of this backlog.

Logs and wood products

Replying to our questionnaire, 22 of 37 States cited logs or wood products as commodities hauled on overweight trucks. Logging operations are similar to coal since hauling generally originates in a particular area, terminates at one location, and has repeated overweight trips on the same roads.

We reviewed shipping documents of Oregon logging operations using U.S. Forest Service roads and Federal-aid highways at two timber sales areas. A random sample of 16 log shipments showed that 11 of the trucks were estimated to exceed the State's weight limit by an average of 11,891 pounds. One five-axle tractor-trailer's estimated weight was 112,900 pounds--32,900 pounds over Oregon's 80,000-pound gross weight limit.

### Sand and gravel

Twenty-one States listed sand and gravel as items frequently hauled in overweight trucks. While basically a natural resource industry, the trucking pattern for sand and gravel production is different from mining and logging operations. Sand and gravel pits are points of origin for overweight shipments to many locations within a 20- to 30-mile radius. Although many deliveries may be made to one site for a short period of time, generally there is no concentration of trucks on a particular group of roads except those adjacent to the sand and gravel pits.

At an Ohio sand and gravel pit we reviewed 107 shipments hauled primarily by three- and four-axle dump trucks within a 15-mile radius. Sixty-five percent of the trucks were over Ohio's gross weight limit, averaging 10,395 pounds overweight. One dump truck weighed 30,500 pounds more than Ohio's gross weight limit. Some of the overweight loads were delivered to a sewer line project funded by a Federal grant.

### URBAN TRUCKING

Cities are also experiencing street deterioration caused by overweight trucks. Urban truck traffic is concentrated at locations such as port facilities, gravel pits, construction sites, dumps, and incinerators.

About half the annual truck travel is on urban roads. In addition to freight movement between points in the same urban area, practically all long-haul freight movement in nonurban areas either begins or ends in urban areas.

Despite the high volume of urban trucking, little is known about the extent of urban overweight trucks. The relatively small amount of data on urban truck operations and our contacts with city and State officials, however, provided enough information to show that overweight truck traffic in urban areas is a problem.

Our analysis of the 1975 FHWA truck study data showed that 26 percent of loaded heavy trucks on urban roads were over State weight limits. On nonurban roads, 21 percent exceeded these limits. Other characteristics of urban trucks and traffic patterns which tend to indicate a serious urban overweight truck problem include:

- The percentage of smaller, four-axle tractor-trailers found to exceed State weight limits on urban roads was more than double the percentage on nonurban roads.
- Ninety-one percent of loaded heavy single unit trucks having four or more axles exceeded State weight limits on urban roads, while 78 percent exceeded these limits on nonurban roads.
- There was a higher percentage of heavy single unit trucks on noninterstate urban roads than on all other roads.

#### Combination vehicles

Urban areas with ocean, lake, and river port facilities have large volumes of overweight long-haul tractor-trailers and trucks with trailers. We visited two cities with major port facilities--Toledo, Ohio, and Houston, Texas. Both were experiencing extensive highway deterioration caused by overweight trucks servicing the ports. Toledo officials told us that their interstates and other major streets were attaining only 60 percent of their expected design life because of overweight truck traffic.

#### Single unit trucks

Heavy single unit trucks are more prevalent and more often exceed State weight limits on urban roads. Government and industry data indicates that about 750,000 such trucks are in use today. Both city and State officials cited dump trucks and various specialized haulers, including concrete mixers and garbage trucks, as examples of overweight heavy single unit trucks.

#### Dump trucks

Commodities such as sand, gravel, and excavation materials are hauled in single unit dump trucks to and from construction sites. Some of the excavation material for the Washington, D.C., subway, partially financed with Federal transportation funds, was hauled by overweight dump trucks.

The District of Columbia had two weight enforcement teams patrolling construction areas with portable scales. District weight enforcement officials issued 1,962 citations in fiscal year 1977 and 1,293 citations in fiscal year 1978. One large trucking firm received as many as 1,400 citations within 20 months.

### Concrete mixers

Concrete mixers are predominately short-haul trucks operating from plants in urban areas. In response to our questionnaire, seven States cited mixers as often operating overweight. One official told us the new mixers are so large that, fully loaded, they exceed most States legal weight limits.

### Garbage trucks

Most garbage trucks are equipped with compactors to convert loose refuse into a dense cargo. Responding to our questionnaire, officials in nine States indicated that compaction garbage trucks were overweight. FHWA officials told us that manufacturers will admit that many garbage trucks with compactor units are actually overweight when they come off the assembly line. They further explained that the accumulation of weight on a single rear axle is the problem.

### CONCLUSIONS

National statistics, our discussions with State and city governments, and examples obtained during our review, show that a large percentage of the loaded heavy trucks on the Nation's highways exceed State weight limits. One reason may be that transporting excess cargo on one truck increases shipper profits.

Although there are over 2,125,000 heavy trucks registered, much overweight hauling is by trucks identifiable by cargo. These include tractor-trailers hauling steel, logs, fuel, and grain; dump trucks hauling coal, sand, gravel, and excavation materials; and specialized trucks hauling concrete and garbage.

Overweight trucks travel on all highways and are concentrated at points of origin, such as quarries or steel mills, and at destinations, such as port facilities or construction sites. Knowledge of overweight cargoes, overweight truck types, and terminals where overweight trucks concentrate would allow enforcement at concentration points

rather than patrolling or monitoring 3,900,000 miles of open highway.

Although Federal truck studies contain a large amount of data on trucks exceeding State weight limits, this data has never been used effectively to establish patterns of overweight operations on a national or local basis. Such analysis would be useful to both enforcement officials and highway planners who are trying to preserve the existing highways.

## CHAPTER 3

### IMPACT OF HEAVY AND OVERWEIGHT TRUCKS

#### ON HIGHWAY DETERIORATION AND SAFETY

Officials of the Philadelphia and Lancaster Turnpike Road Company realized as far back as 1792 that overweight freight wagons caused deterioration. They limited vehicle weights to prevent destructive overloads from breaking up the turnpike, especially during the spring thaws. Although highway design has improved in the last 187 years, heavy vehicles still damage highways. Engineering data shows that a five-axle tractor-trailer loaded to the Federal weight limits causes as much pavement damage as at least 9,600 automobiles.

Although the damage resulting from heavy and overweight trucks cannot be precisely quantified, engineering data shows that it is extensive. The impact of weight on highways is shown by the effects of the 1975 increase in truck weight limits, which shortened the serviceable life of highways and bridges and requires substantial increases in Federal and State spending to preserve the highway investment. FHWA has not developed a program to effectively deal with this increased highway deterioration.

Increasing axle weights above current legal limits increases highway damage exponentially. For example, an excessively heavy 26,000-pound axle which weighs 30 percent more than a 20,000-pound axle--the Federal limit--does 200 percent more damage. While proponents claim that fuel savings and economic benefits would result from higher weight limits, these benefits have never been proven and the impact of such increases on highway costs has never been defined. A recently initiated DOT study may answer many questions on these benefits and other issues.

Despite the increases in numbers and size of heavy trucks over the last 10 years, DOT has little information on the impact of these vehicles on public safety. Available data, however, shows that many heavy trucks cannot meet minimal stopping requirements.

#### HEAVY TRUCKS DAMAGE PAVEMENTS AND BRIDGES

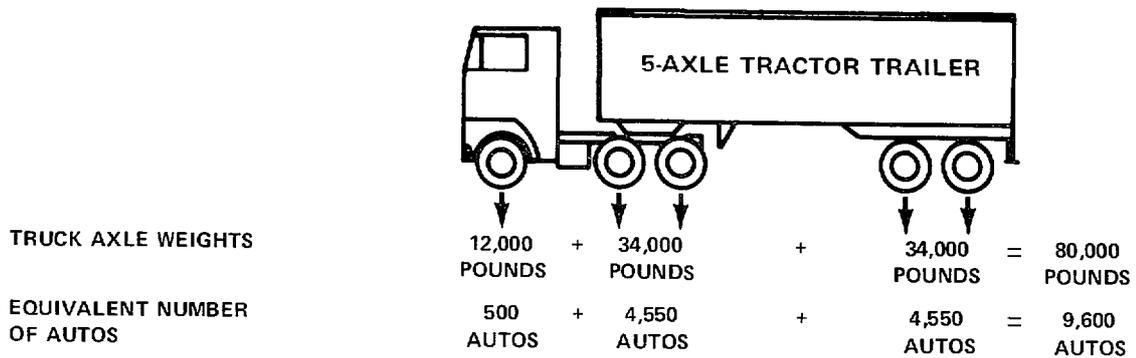
Although pavement and bridge damage caused by heavy trucks cannot be precisely quantified, it is extensive. This fact is critical because State officials generally agree that the number of heavy trucks, the percent of heavy trucks in traffic, and the average weight of heavy trucks

have increased over the last 10 years. The impact of one heavy truck on a pavement is not noticeable. Even the accumulated damage resulting from many heavy trucks may not be readily apparent as the surface slowly wears away. Occasionally a catalyst, such as severe weather, will cause this damage to suddenly appear.

A 1962 American Association of State Highway and Transportation Officials Road Test Report shows that concentrating large amounts of weight on a single axle multiplies the impact of the weight exponentially. Test results show that an automobile axle weighing 2,000 pounds would have to pass over an interstate highway 7,550 times to have the same impact as 20,000 pounds concentrated on a single truck axle. As a result, the impact of heavy trucks on pavement is disproportionately greater than the weight carried.

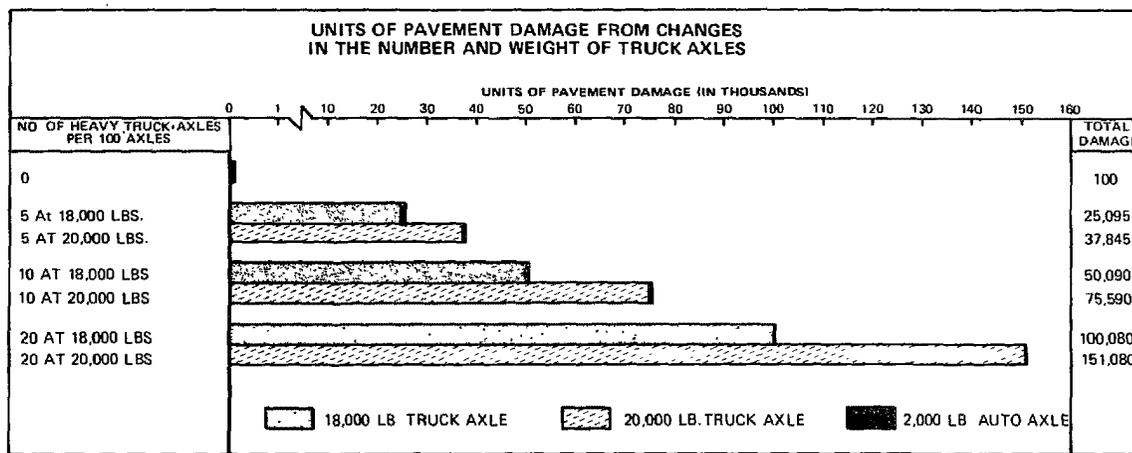
Although a five-axle tractor-trailer loaded to the current 80,000-pound Federal weight limit weighs about the same as 20 automobiles, the impact of the tractor-trailer is dramatically higher. Based on Association data, and confirmed by its officials, such a tractor-trailer has the same impact on an interstate highway as at least 9,600 automobiles as shown below. 1/

EQUIVALENT DAMAGE CAUSED BY LOADED  
5-AXLE TRACTOR TRAILER



1/Based on one automobile having two axles weighing 2,000 pounds each.

The amount of pavement damage varies depending on the number of heavy trucks in the total traffic volume and the related axle weights. Assuming pavement damage caused by a 2,000-pound automobile axle is one unit, then the pavement damage by 100 such automobile axles would be 100 pavement damage units. Damage caused by a single 18,000-pound and a 20,000-pound truck axle would equate to 5,000 and 7,550 pavement damage units, respectively. As the number or weight of heavy truck axles per 100 vehicle axles increases, pavement damage increases exponentially as shown below.



Truck weights affect bridges somewhat differently than pavements. Gross truck weights and axle weights affect bridge life as discussed in chapter 1. Truck weights that exceed bridge inventory ratings reduce a bridge's serviceable life. A single heavy truck that substantially exceeds bridge weight limits may do as much damage as 50 or more trucks that do not exceed the limits.

#### EFFECT OF INCREASED WEIGHT LIMITS

One indication of the impact of heavy truck weights on pavement and bridges and the related costs was demonstrated by the 1975 weight increase. The higher weights allowed under the new limits will shorten both pavement and bridge serviceable life. While FHWA supported the 1975 weight increases, it has no program sufficient to offset the accelerated deterioration caused by the increased weight limits.

In January 1975, the Federal weight limits were increased to save fuel. Single and tandem axle weight limits were raised by 2,000 pounds each, while the gross weight limit was raised from 73,280 pounds to 80,000 pounds. Since then, 32 States have raised at least one of these limits to the new Federal ceiling.

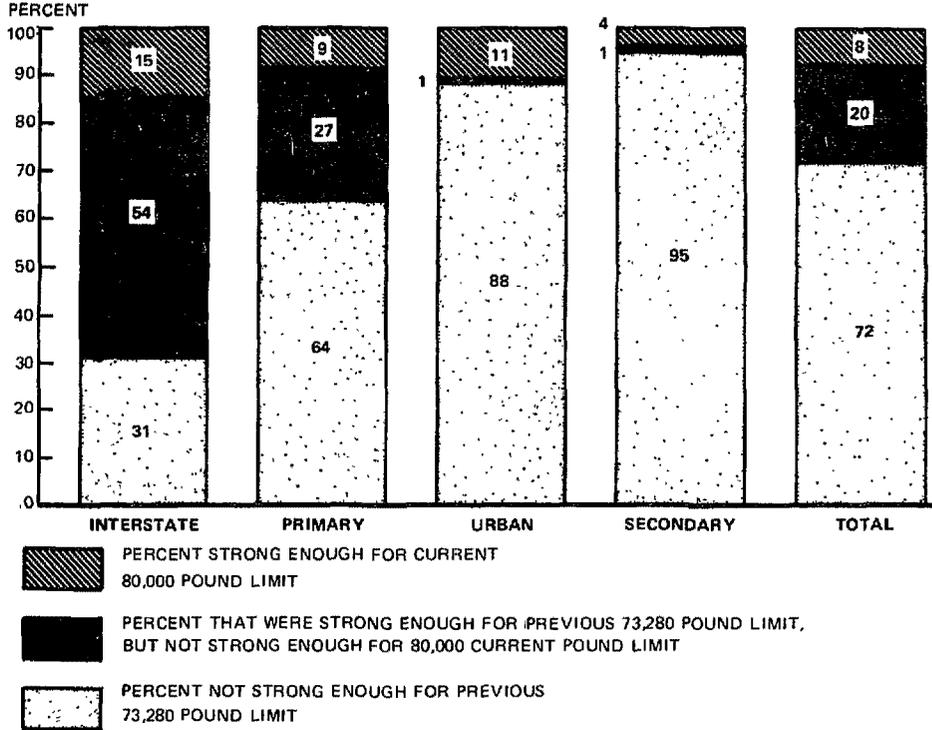
Because pavement life expectancy is highly sensitive to axle loads, any truck weight increase will shorten pavement life. The Director of FHWA's Office of Research estimated that the 1975 increases in axle limits could increase traffic-related deterioration by as much as 35 percent. Oregon, Utah, and Arkansas studies show that higher weight limits had and will continue to increase highway maintenance and reconstruction costs. Questionnaire data from 45 States indicated that only 38 percent of State highways and less than 63 percent of their interstate mileage can accommodate current heavy truck traffic without reducing highway life.

According to FHWA's 1978 bridge inventory listings, there are at least 235,000 bridges on the Federal-aid highway system. Bridges make up about 30 percent of the total highway investment. Bridges are generally designed to support a certain gross vehicle weight and include a safety margin. Trucks that weigh more than bridge weight limits reduce the structure's serviceable life.

FHWA's bridge inventory rating identifies the gross vehicle weight a bridge can safely carry without reducing its serviceable life. Of the 235,000 bridges, 217,961 have inventory ratings. The schedule on the following page compares the capability of Federal-aid bridges with inventory ratings to carry the original 73,280-pound gross weight limit and the current 80,000-pound gross weight limit--an increase of 6,720 pounds.

This increase in the gross weight limit made an additional 21,785, or 54 percent, of the interstate bridges--our Nation's newest and strongest--inadequate to safely accommodate loads at the new maximum Federal limit without reducing serviceable life. Looking at all Federal-aid highways, only 61,159, or 28 percent, of the bridges were strong enough to carry the 73,280-pound weight limit. After the increase, only 18,369, or 8 percent, of all Federal-aid bridges including 6,047, or 15 percent, of the interstate bridges could carry the allowable weight without reducing serviceable life. Although pavements can be rehabilitated to extend serviceable life, no easy or economical way exists to upgrade a bridge structure to handle increased gross weight. A 1972 FHWA study on the potential impact of increasing truck weight limits concluded that

**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.

"\* \* \* any substantial increase in legal loads without a massive program to update, monitor, and maintain the highway system would create disastrous effects in many States."

FHWA's Resurfacing, Restoration and Rehabilitation Program provides for needed major repairs on Federal-aid highways. Increased expenditures will be required under this program to offset the accelerated damage resulting from weight increases. Based on 1975 estimates, States need almost \$1 billion annually for the interstate system. FHWA has no program to meet these interstate needs and requested only \$175 million annually for fiscal years 1980 and 1981, and \$275 million annually for fiscal years 1982 and 1983. Postponing needed work will significantly increase future needs as the highways continue to deteriorate.

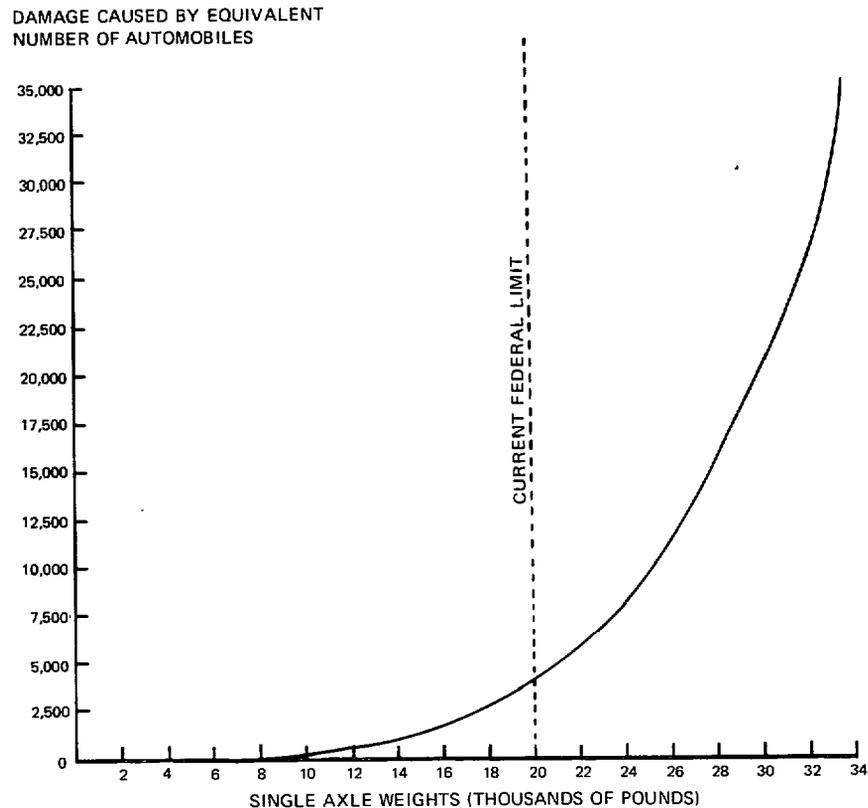
## Overweight trucks multiply highway damage

Damage caused by an overweight truck is much more than that caused by a heavy truck within State weight limits and is a major cause of highway deterioration. Highway officials agree that overweight trucks damage highways and many consider it a major cause of deterioration in their States.

Nineteen States responding to our questionnaire believed that overweight trucks contributed to highway deterioration to a very great or substantial extent; 16, to a moderate extent; 11, to some extent; 2, little or no extent; and the remaining 2 did not respond. Officials in 90 percent of the cities that expressed opinions felt that overweight trucks were a major cause of highway deterioration.

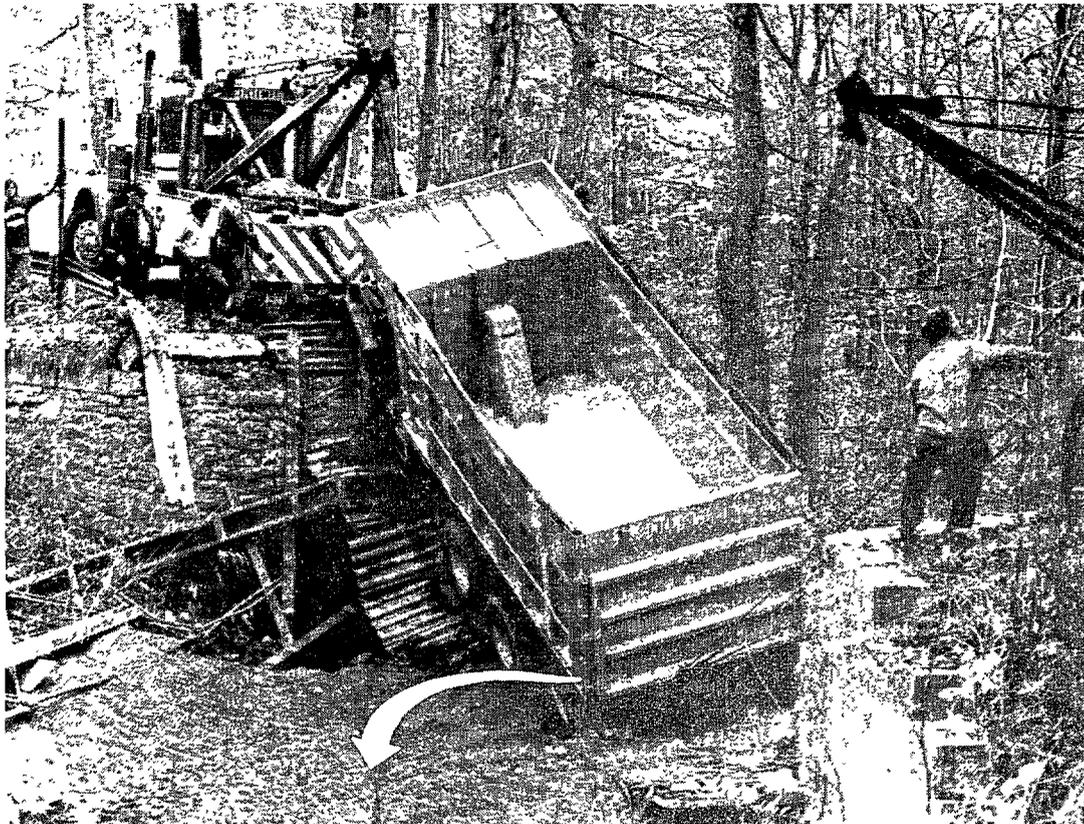
As shown in the following chart, as truck axle weights increase, the related pavement damage increases exponentially.

**RELATIVE DAMAGE CAUSED BY INCREASE IN SINGLE AXLE WEIGHTS  
ABOVE FEDERAL UNITS**



The chart demonstrates that the amount of damage increases much faster than the rate of weight increase. For example, a 26,000-pound axle which weighs 30 percent more than a 20,000-pound axle does 200 percent more damage. As a result, a few thousand additional pounds on a 20,000-pound single axle can cause major increases in pavement damage.

Bridge failure is commonly caused by heavy or overweight trucks. The following photograph shows a 70,600-pound dump truck that attempted to carry sand and gravel across an 18,000-pound-limit bridge on a rural Federal-aid highway in Ohio. A sign clearly indicated the bridge's capacity. Note that the load spilled into the stream bed when the bridge collapsed (see arrow).



COURTESY: BILL GRASER, CINCINNATI

Benefits of higher weights  
have not been proven

Despite the effects of recent weight increases there is pressure to raise truck weight limits even further. Although proponents claim that additional fuel savings and economic benefits would result from further increasing weight limits, the savings and benefits from the 1975 weight increases have never been demonstrated. Also, the higher deterioration costs resulting from such an increase need to be quantified. In May 1978, DOT stated these issues remain unresolved and require a coordinated Federal position.

One rationale for increasing weight limits is that fuel savings would result because fewer trips would be required to carry the same amount of cargo. Although fuel savings may result for those trucks that carry the heavier weight, these higher weights greatly increase highway deterioration. This increased deterioration may waste more fuel than was saved by the higher limits.

A 1977 DOT study, Energy Conservation in Ground Transportation, compiled findings of numerous transportation and energy-related studies and included the following:

- A 10-percent truck weight increase would decrease fuel consumption by 0.37 percent, but this fuel savings might be offset somewhat by the accelerated highway deterioration caused by the higher weights.
- If pavement deterioration continues to exceed repavement efforts at current rates, vehicle fuel efficiency in 1985 could decrease by 2.4 percent.
- Fuel consumption increases by 34 percent for vehicles traveling at 40 miles per hour on a badly broken, patched asphalt road as compared to a high quality pavement.

In addition, a Utah Department of Transportation study shows that fuel consumption increases as much as 40 percent as pavement conditions deteriorate. Finally, a 1977 study by The Road Information Program organization estimated that rough roads cost motorists \$7 billion annually in excess fuel consumption. Maintaining and resurfacing deteriorated pavements--making, hauling, and applying asphalt--will require additional fuel consumption.

Deteriorated pavement increases fuel consumption for all vehicles while weight limit increases reduce fuel consumption only for trucks capable of carrying heavier loads.

FHWA does not know if a net fuel savings results from these heavier loads. We believe more research is needed before it is proven that higher weight limits save fuel.

Another reason given for raising weight limits is the economic benefit of making fewer trips and lowering operating costs. A 1972 FHWA study and a 1976 Energy Resources Council study have indicated that benefits of increased weight limits would far offset the associated costs. The benefits of such an increase, however, accrue directly to the trucking industry, with the assumption that these benefits will be passed on to the general public, principally through reduced rates and better service. The increased highway maintenance, reconstruction, and construction costs, however, are borne directly by the traveling public.

Regardless of the reason for a weight increase, substantial increases in maintenance and resurfacing costs will result. To raise weight limits without establishing and adequately funding a program to offset the resulting highway deterioration would adversely affect the serviceability of the entire highway system. Because funds are not available to maintain and restore the existing highway system, the cost of further weight increases would be prohibitive without major increases in funding.

The Federal-Aid Highway Act of 1978 requires the Secretary of Transportation to study various aspects of truck weight limits and report to the Congress by January 1981. The report will also include recommendations on the desirability of uniform maximum truck weights and "the appropriateness of current maximum vehicle weights." Among the specific areas DOT will address are energy considerations, safety, and the impact of weight on pavement and bridge deterioration.

#### WEIGHT INFERS A NEED FOR SAFETY

Although our review focused on FHWA and State administration of truck weights, weight-related truck safety issues cannot be ignored. The public is being exposed to increasing vehicle size and weight differentials: cars are getting smaller and lighter and trucks are getting larger and heavier.

#### Responsibility for truck safety

Federal responsibility for heavy truck safety is divided. In general, DOT's National Highway Traffic Safety Administration establishes manufacturing standards to insure safe vehicle operation; the Department's Federal Highway

Administration develops regulations for safe operations and inspects commercial interstate motor carrier trucks to make sure they are adequately maintained; and the National Transportation Safety Board, an independent Federal agency, investigates truck accidents it believes catastrophic or of a recurring nature. As of June 1979, none of these offices had issued any comprehensive reports on the safety aspects of heavy or overweight trucks.

#### Braking distances are greater

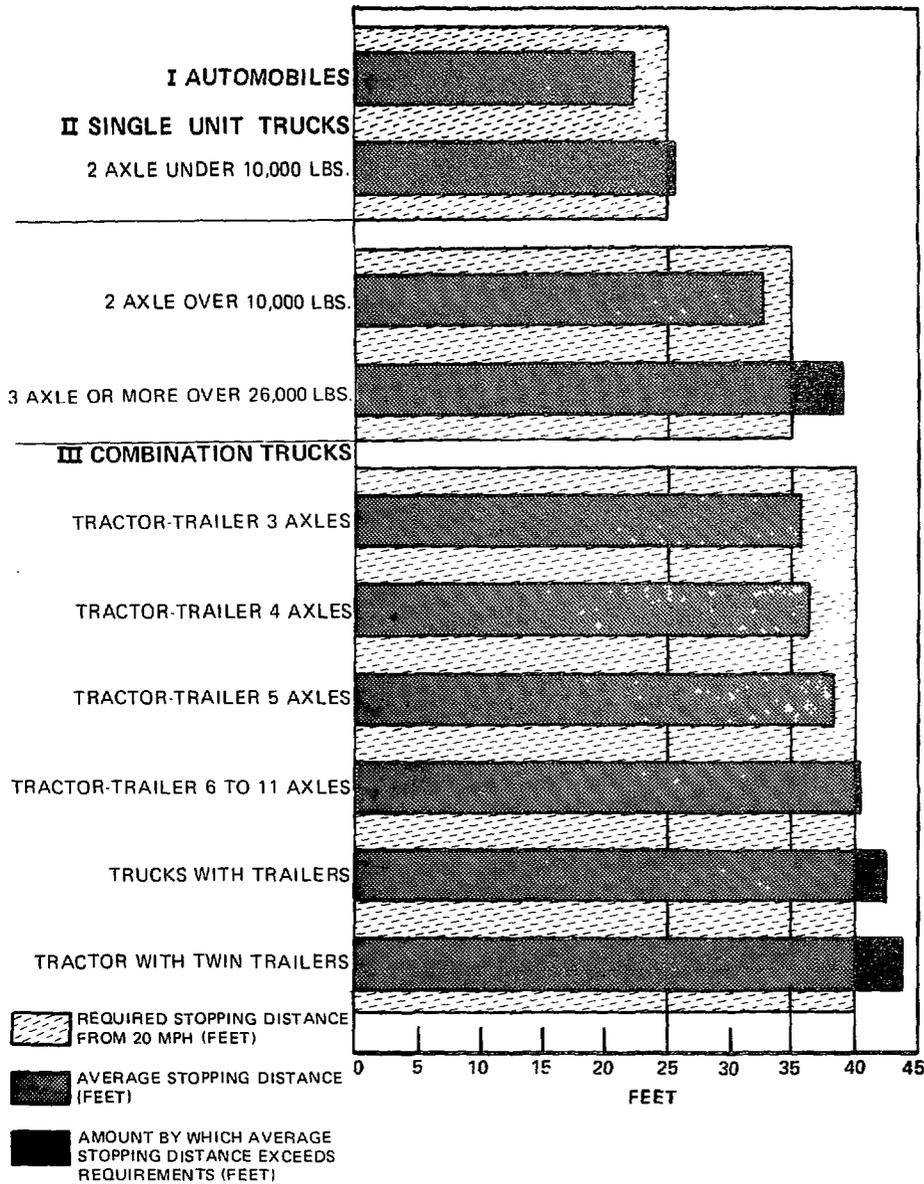
FHWA officials have said that ideally all vehicles should be able to stop within approximately the same distance at a given speed. DOT officials told us that brake technology for trucks has not advanced to the point that would allow trucks to stop as quickly as cars. In 1974, Federal Motor Carrier Safety Regulations required that trucks over 10,000 pounds traveling 20 miles per hour be able to stop within 35 or 40 feet. Automobiles traveling the same speed were required to stop within 25 feet.

In 1974, 1 year before the Federal weight increase, FHWA tested stopping capability from 20 miles per hour for 1,200 trucks and 366 automobiles selected randomly from highway traffic. As shown below, truck stopping distance lagged considerably behind the 22.4-foot average stopping distance for autos.

Since stopping distances theoretically depend on axle weight, a larger and heavier truck having additional axles--but with about the same axle weights as a smaller and lighter truck--should be able to stop in the same distance as the smaller truck. However, FHWA research showed that larger and heavier trucks require longer stopping distances.

Even though truck braking standards were less stringent than automobiles, fewer trucks met the requirements. Eighty-seven percent of the automobiles tested met the 25-foot distance requirement, but significantly fewer single unit and combination trucks met the longer 35- and 40-foot stopping distance standards. For example, only 29 percent of the three-axle single unit trucks, 65 percent of the five-axle tractor-trailers, and 44 percent of tractors with twin trailers met their respective stopping distance requirements. The 1974 FHWA study pointed out that these stopping distance requirements were reasonable and well within design capabilities. It recommended that motor carriers should devote more attention to brake system maintenance, especially brake adjustments.

**COMPARISON OF AUTOMOBILE AND TRUCK  
REQUIRED AND AVERAGE STOPPING DISTANCES**



**Accident statistics**

Currently, very little information exists on operational safety of heavy or overweight trucks. FHWA does not know whether heavy or overweight trucks have more, about the same, or fewer accidents per mile of travel than automobiles or light trucks. As early as 1969, the FHWA Administrator testified before the House Committee On Public Works concerning a proposed vehicle weight increase. At that time he told the committee that FHWA did not have enough reliable information to decide on the safety merits of the proposed weight increase. In 1976, FHWA initiated

research to determine truck accident frequency and severity by weight class. FHWA officials expected a draft report on this subject by June 1979. This is the first phase of a \$6 million FHWA research project on truck safety scheduled to be completed by 1983. Later phases will address accident causes and countermeasure development.

#### Questionnaire results

State officials showed considerable concern about truck performance, including maintaining speed and braking. Officials from 10 States observed that heavy trucks had problems maintaining highway speeds on upgrades, and responses from 11 States cited braking inadequacies as a safety hazard. Finally, when asked to identify safety hazards related to overweight trucks, officials from 28 States believed excessive weight increased stopping distance.

#### CONCLUSIONS

Heavy and overweight trucks are a major cause of highway deterioration. The damaging effects by these vehicles and their increasing number and weight over the last 10 years make it clear that these trucks are the principal cause of traffic-related deterioration on the highways. While eliminating excessively heavy trucks will not stop highway damage, it will reduce it. The impact of heavy and overweight truck traffic on aging and deteriorating highways has major implications for future highway funding needs and the potential source of those funds.

Similarly, the 1975 Federal weight increase has major cost implications, particularly regarding the needs under the Resurfacing, Restoration and Rehabilitation Program. Although the effects of the weight increase will require additional spending under this program, FHWA's program is not sufficient to fund the additional needs. The longer FHWA waits to implement an effective program which will meet resurfacing, restoration, and rehabilitation needs and will deal with the impact of the 1975 weight increase, the higher the cost will be.

Engineering data and the number of excessively heavy trucks demonstrate that highway damage caused by these trucks is extensive. Because of the exponential impact of excessive weight on the highway, a small percentage of overweight trucks will significantly decrease serviceable life of the Nation's highways.

Proponents claim that fuel savings and economic benefits would result from even higher weight limits. Currently, these benefits have not been quantified and the impact of higher weights on highways and the transportation industry has never been adequately assessed. The Congress has directed DOT to study weight-related issues and to make appropriate recommendations by January 1981. The Secretary of Transportation must assure that this study objectively assesses all aspects of weight limits. Particularly, we feel that potential benefits and resulting costs must be clearly defined and quantified to provide a realistic means of determining the appropriate weight limits for Federal-aid highways.

Despite the presence of heavy and overweight trucks on the Nation's highways, DOT knows little about the related safety hazards they pose to the driving public. The first phase of FHWA's 7-year study due in 1979 will identify the extent of these problems and provide data on accidents per mile traveled. Research on accident causes and prevention measures is scheduled for completion in 1983. A method is needed to monitor progress and insure that study findings are used as each study phase is completed.

#### RECOMMENDATIONS TO THE SECRETARY OF TRANSPORTATION

Needed resurfacing, restoration, and rehabilitation work must be completed in time to prevent further deterioration of the interstate highway system and offset the damage caused by the 1975 weight increase. We recommend that the Secretary of Transportation direct the FHWA Administrator to request adequate funding under the Interstate System Resurfacing Program to meet identified interstate needs.

The Congress should be given information to help it establish the most economical and fuel-efficient weight limits for the Federal-aid highway system and to help it preserve the system. We recommend that the Secretary direct that the current weight limit study assess all related areas. In addition to areas currently being considered, the study should:

- Determine the net fuel consumption resulting from the impact of heavier truck weights taking into consideration that all vehicles use more fuel on deteriorated highways and fuel is used in maintaining and replacing these highways.
- Identify the economic effect of changes in weight laws, the cost and benefits, who will pay the costs, and who will receive the benefits.

--Determine the impact of any weight limit change on the current highway user tax structure and what changes may be needed to assure equitable allocation of costs.

We also recommend that the Secretary direct the FHWA Administrator to report the truck weight safety findings to the Congress as each phase of the study is completed.

#### AGENCY COMMENTS AND OUR EVALUATION

DOT officials said (see app. II) that within their existing programs, they could fund improvements to offset increased deterioration caused by weight increases on the interstate system. They said that in addition to interstate Resurfacing, Restoration and Rehabilitation Program funds which can be used for this work, practically all Federal highway funds can be used to construct or reconstruct Federal-aid highways. For this reason, they did not believe they needed a specific program to fund truck weight-related damage.

While we agree that DOT does not need a specific program to fund truck weight-related damage, sufficient funds should be provided for interstate rehabilitation. DOT's interstate Resurfacing, Restoration and Rehabilitation Program provides only \$175 million annually through fiscal year 1981. For fiscal years 1982 and 1983, \$275 million is authorized. Even though its study issued in 1977 estimated continuing needs of almost \$1 billion annually for interstate rehabilitation, <sup>1</sup>/ DOT has never asked for more than \$275 million annually.

DOT contended that practically all Federal-aid highway funds may be used to rebuild or replace highways. About \$3.9 billion of fiscal year 1979 highway funds, including those substitution funds available because of States decisions not to build selected interstate segments, can be used for interstate rehabilitation. These same funds, however, are the principal funding sources for preserving 256,000 miles of primary highways and the 235,000 bridges on the Federal-aid highway system. In addition, over 90 percent of the interstate substitution funds have gone for mass transit projects. Extensive use of primary and bridge program funds for interstate projects would prolong

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<sup>1</sup>/Based on an inflation rate of only 7 percent continuing through 1996, FHWA's 1977 report said States would need an average of \$2 billion annually from 1977 through 1996.

the deterioration of the noninterstate system. To actually divert these funds to interstate rehabilitation would be unrealistic and could very well jeopardize other valuable programs, particularly with respect to the noninterstate system. When FHWA supported weight increases in 1964, it conditioned increases on additional funds to upgrade highway-carrying capability. Further, in 1974, in supporting the proposed weight increase, FHWA characterized the increase as only temporary.

In response to our questionnaire, 46 States estimated they needed \$67 billion over the next 20 years to meet their resurfacing, restoration, and rehabilitation needs for noninterstate mileage under State control.

We believe DOT should request additional funds for its interstate resurfacing, restoration, and rehabilitation program to meet the funding needs identified in its 1977 report. Adequately funding this program would be the most appropriate way to fund needed rehabilitation caused by a combination of deterioration factors including the 1975 truck weight increase.

DOT officials agreed to fully consider fuel consumption, economic effects, and user tax impacts as they perform the studies required by the Surface Transportation Assistance Act of 1978.

DOT officials also said they would give full consideration to providing the Congress reports on its research findings on safety issues surrounding heavy trucks. The most recent annual report on this study is a four-page document containing brief status summaries of 11 associated research studies. We do not feel that such a report contains the detailed information the Congress needs to adequately address important safety issues. We believe that specific periodic reports on research related to safety aspects of truck size and weight are needed to insure timely solutions to the problems identified. Because this is a phased study, we feel it appropriate that a detailed report of specific findings be sent to appropriate congressional committees as each phase is completed.

## CHAPTER 4

### REVISED FEDERAL LEGISLATION NEEDED

#### TO PROTECT ALL FEDERAL-AID HIGHWAYS

Federal weight limits do not protect Federal-aid highways from deterioration caused by excessive truck weights. Since the weight limits apply only to interstate highways, 95 percent of Federal-aid highway mileage is not protected. Even on the interstates, many States have retained higher weight limits through exceptions provided in Federal legislation. The Federal law also allows some States to issue permits for trucks to routinely operate over the weight limits, even though these trucks could easily stay within the limits.

If truck weight laws are to effectively protect the Federal taxpayers' current \$96 billion investment in the Nation's highways, Federal weight limits should apply to all Federal-aid highways. Federal legislation should be strengthened in three specific areas:

- Federal weight limits should apply to all Federal-aid highways rather than to only the interstate system.
- The "grandfather clause" should be repealed so interstate weight limits that are higher than Federal limits would not be authorized.
- Excessively heavy loads allowed by State-issued permits and exemptions should be prohibited on all Federal-aid highways unless the loads cannot be reduced to meet Federal weight limits or be shipped by another mode.

#### NONINTERSTATE ROADS ARE NOT PROTECTED

The 1956 Highway Act did not include Federal weight restrictions to protect the Federal noninterstate investment--over \$32 billion since 1956. The 768,000-mile noninterstate system represents 95 percent of the total Federal-aid highway system. Generally, the noninterstate roads were not designed or built to handle the current volume of heavy truck weights and therefore are more susceptible to the related damage.

Because Federal limits do not apply to noninterstate highways, States may establish higher weight limits on Federal-aid primary, secondary, and urban roads. At least 27 States, with over 47 percent (360,000 miles) of all

noninterstate Federal-aid mileage, have limits higher than Federal limits. These limits are as high as 24,000 pounds for single axles, 44,800 pounds for tandem axles, and 105,500 pounds for gross weight. One State has a 154,000-pound gross weight limit for trucks with 11 axles.

#### FEDERAL LIMITS DO NOT APPLY TO ALL INTERSTATES

Even on interstate highways where Federal weight ceilings would otherwise apply, many States weight limits exceed the Federal limits. Under certain circumstances, a provision of the Federal weight law allows States to have higher weight limits on their interstate highways without losing any Federal funds.

#### The grandfather clause

A provision of Federal law commonly referred to as the "grandfather clause" authorizes States to allow trucks to use the interstates if they "could be lawfully operated" with respect to weight limits in the State on July 1, 1956--the date the Federal law took effect. Therefore, whether a State can exceed Federal interstate weight limits depends primarily on the weight laws a State had in effect in 1956. States having higher than Federal weight limits as of July 1, 1956, can retain those limits indefinitely, but they may not raise those limits further and continue to receive full Federal funding. States with lower than Federal limits can raise their interstate weight limits to the current maximum Federal limit or adopt lower limits.

Some States had no weight limits in specific weight categories on July 1, 1956, and at that time allowed trucks regardless of weight in those categories to operate on their highways. If any truck regardless of its weight could have been lawfully operated as of July 1, 1956, such trucks could continue to operate forever under the grandfather clause without the States losing Federal-aid funds. Based on questionnaire data, we identified five States that FHWA agrees are permanently exempt from at least one of the three Federal weight limit categories--single axle, tandem axle, and gross vehicle.

When we first discussed the grandfather clause with FHWA officials in July 1978, they did not know how many States had interstate weight limits higher than the Federal limits. FHWA had not conducted an overall analysis to determine whether all current State weight limits which exceed Federal limits were allowable under the grandfather clause. They told us that they assumed the State weight limits met the grandfather clause requirements.

Since 1975, FHWA has required States to inform it of changes in their weight laws. FHWA reviews these changes because compliance with Federal weight limits is a precondition for Federal funds. An FHWA official told us that 20 to 30 States had increased their weight limits since 1975. FHWA did not object to about half of the changes as submitted but told the other States to adjust their new limits if they wished to remain eligible for full Federal funding.

Impact of the grandfather clause  
on interstate weight limits

The grandfather clause has allowed States interstate weight limits to be higher than Federal interstate weight limits. Responses to our questionnaire showed that 20 States have higher limits in at least one weight category. As a result, Federal weight limits do not fully apply on almost 13,000 miles--or 32 percent of the interstate system.

Single axle limits

The 1956 Federal interstate single axle limit, 18,000 pounds, was raised in early 1975 to 20,000 pounds by the 1974 act. Current State single axle limits for interstate highways appear below.

States Single Axle Weight Limits  
for Interstate Highways

<u>Limit</u>	Number of States ( <u>note a</u> )
(pounds)	
18,000	10
20,000	26
More than 20,000	13

a/Alaska does not have interstate highways.

Weight limits above the current Federal limit range from 20,340 to 24,000 pounds, with eight States listing 22,400 pounds. Most States with higher single axle limits are in the Northeast.

Tandem axle limits

The 1956 Federal interstate weight limit for tandem axles was raised from 32,000 to 34,000 pounds by the 1974 act. Current State limits are:

States Tandem Axle Weight Limits  
for Interstate Highways

<u>Limit</u> (pounds)	Number of States (note a)
Less than 34,000	9
34,000	25
More than 34,000	15

a/Alaska does not have interstate highways.

Weight limits above the current Federal limit range from 34,320 pounds to 44,800 pounds, with nine States showing 36,000-pound tandem limits. These nine States are generally the same northeastern States with higher single axle limits.

Gross vehicle limits

The 1956 Federal interstate gross weight limit--73,280 pounds--was raised to 80,000 pounds by the 1974 act. Current State limits are:

States Gross Weight Limits  
for Interstate Highways

<u>Limit</u> (pounds)	Number of States (note a)
Less than 80,000	14
80,000	32
More than 80,000	3

a/Alaska does not have interstate highways.

Weight limits above the current Federal limit are 80,800, 86,400, and 154,000 pounds.

Based on questionnaire responses, several States reported that since 1956, they had increased their weight limits to exceed current Federal limits. One State had raised its 1956 single axle limit from 18,000 to 22,400 pounds and its 1956 tandem axle limit from 26,000 to 36,000 pounds. If the information provided us is correct--a matter FHWA has not verified--these State limits exceed Federal

single axle and tandem axle limits by 2,400 pounds and 2,000 pounds, respectively. These excesses would be allowable only if trucks with these weights could have lawfully operated within the State as of July 1, 1956. If not, the excesses would not be consistent with the grandfather clause and the maximum allowable weights would be limited to Federal maximum limits. Three other States also increased their weight limits, but they reported they did not have applicable weight limits in these categories in 1956. If trucks of any weight in these categories could have lawfully been operated in those States as of July 1, 1956, these increases would be allowable under the grandfather clause.

#### Weight tolerances increase States legal weight limits

Weight enforcement authorities often add an allowance to the statutory limits because scales may not be exact. Several States, however, have statutory tolerances that raise the enforceable limits on all highways including their interstates.

Federal law specifically states that Federal weight limits include all enforcement tolerances. A January 1977 list of State weight laws prepared by the American Association of State Highway and Transportation Officials shows that 13 States have statutory weight tolerances. For four States, the tolerance in effect increased State weight limits above Federal limits. For five other States, statutory tolerances increased State limits which were already higher than Federal limits. Other States have nonstatutory tolerances based on enforcement policies or procedures which effectively increase State limits above Federal restrictions.

#### PERMITS AND EXEMPTIONS ALLOW EXCESSIVE WEIGHT

Every State allows some trucks to exceed State and Federal interstate weight limits by issuing permits and some grant exemptions for hauling certain cargoes or operating in specific geographic areas in excess of normal weight limits. These excessively heavy trucks operate within the law, while overweight trucks not having a permit or exemption do not; however, both cause accelerated highway damage. Although some permits are necessary, many are not. Nationally, such policies allow trucks in excess of State weight limits to make numerous overweight trips. Because almost all of these trucks could be easily kept within normal weight limits, trucks operating under permits and exemptions cause considerable unnecessary damage to the highways.

DOT's position on State permit policies is that:

"It has been the consistent and longstanding interpretation of FHWA that special permits may accordingly continue to be issued under the grandfather clause, but they are restricted to all the terms and conditions of the law or regulations authorizing their issuance in effect on July 1, 1956."

With minor exceptions, for a State to issue permits or grant exemptions to exceed Federal limits and still receive Federal-aid highway funds, authorization to issue the permits or exemptions had to be in effect as of July 1, 1956. If not, the State could not subsequently initiate a permit or exemption law allowing trucks to exceed Federal weight ceilings and still remain eligible for Federal funds.

FHWA has never determined what State permit and exemption laws and regulations existed on July 1, 1956. As a result, FHWA does not know whether or not States are issuing permits and granting exemptions that are contrary to Federal law. The 1978 Federal Highway Act requires FHWA to research State permit policies. FHWA expects to report to the Congress by January 1, 1980.

While we did not research State laws, questionnaire responses indicated that at least 12 States may be issuing permits that they would not have issued in 1956. FHWA has accepted State opinions on the legality of such changes and, based on these opinions, believes that State practices conform with Federal law.

Some State opinions seemed to base current permit practices on the general authority of State legislatures to pass permit laws or on general language in their 1956 laws that authorized the issuance of rules and regulations governing highway use. Presumably, several States believe that broad power to pass permit laws or authority to issue rules and regulations, though not exercised in 1956, is covered by the grandfather clause and, therefore, issuing overweight permits that were not issued in 1956 is allowable. We believe FHWA should closely review these opinions, since the grandfather clause would only authorize permits for trucks that could in fact have been lawfully operated under permit or otherwise within the State in 1956. The grandfather clause, in our opinion, does not authorize the issuance of permits to exceed State or Federal weight ceilings merely on the basis that a State could have passed a permit law on July 1, 1956, but failed to do so.

State practices allow too many trucks to exceed State weight limits

States unnecessarily allow numerous trucks to exceed State weight limits when hauling cargoes such as grain, petroleum products, timber, and coal. Such commodities are so heavy and dense that trucks cannot be fully loaded without exceeding weight limits. These loads could be divided and hauled within weight limits but are often allowed to exceed such limits by State permits. States also issue permits and exemptions for cargoes that cannot be divided, such as bridge beams and special equipment which cannot be hauled without exceeding weight limits. Permit costs are usually minimal and do not reflect the damage caused by the truck and are not high enough to encourage the use of other modes of transportation.

Overweight permits for divisible loads

Overweight permits for divisible loads usually allow an unlimited number of trips under a single permit and do not restrict movement to specific routes. Permits are generally issued for 1 year, but some are limited to 60, 90, or 180 days.

Questionnaire results showed that at least 13 States issue overweight permits for multiple-trip divisible loads. The divisible cargoes most frequently permitted are:

<u>Commodity</u>	<u>Number of States</u>
Farm products	6
Timber	5
Excavation materials	4
Cement or concrete	4
Petroleum products	4
Coal	3

In 1977, the 13 States issued 81,927 multiple-trip overweight permits to haul divisible commodities. If these 81,927 trucks averaged five trips a day, States allowed almost 85 million trips with excess weight in 1977, as shown in the following table.

<u>Number of multitrip permits</u>	<u>Permit time</u>  (days)	<u>Number of working days</u>	<u>Trips per day</u>	<u>Total trips</u>
76,694	365	220	5	84,363,400
50	180	110	5	27,500
1,144	90	55	5	314,600
5	60	35	5	875
<u>4,034</u>	5	5	5	<u>100,875</u>
<u>81,927</u>				<u>84,807,250</u>

These figures show that a relatively small number of trucks with multiple-trip overweight permits can make many trips with excessive weight in 1 year. These practices are especially troublesome because the cargo could easily be reduced and hauled within the normal weight limits to help eliminate accelerated highway pavement and bridge deterioration.

#### Exemptions for divisible loads

Questionnaire results show that at least 13 States exempted trucks carrying certain divisible cargoes from weight laws. For instance, Oregon exempts garbage trucks by allowing 22,000 pounds on a single axle--2,000 pounds over the State weight limit. Texas exempts concrete mixers by allowing 44,000 pounds on a tandem axle--10,000 pounds over the State weight limit. The following schedule shows the number of States which listed exemptions for certain commodities:

<u>Type of commodity exempted</u>	<u>Number of States</u>
Farm products	8
Timber	6
Cement or concrete	3
Excavation materials	2
Garbage	2

We did not estimate how many trips were made with exempted cargoes because the information was not available; however, the number is probably substantial. Since the loads could easily be divided and hauled within normal State weight limits, the accelerated highway damage caused by these trips could be eliminated.

### Overweight zones

At least three States issued permits and granted exemptions to allow trucks to exceed normal weight limits in specific zones as described below.

1. One State, with a gross weight limit of 73,280 pounds, has a toll road with a gross weight limit of 90,000 pounds. It issues permits up to 127,400 pounds for trucks carrying divisible and nondivisible cargoes within 7.5 miles of the 157-mile toll road. Permits for divisible loads are not issued in other parts of the State.
2. A second State, with a gross weight limit of 80,000 pounds and a turnpike gross weight limit of 90,000 pounds, issues permits up to 127,400 for certain trucks on the turnpike. Highway officials told us that to protect the State's steel industry, they issue permits up to 90,000 pounds for trucks hauling divisible steel coils within 15 miles of the 241-mile turnpike. The State does not issue permits for steel coils or other divisible loads in other parts of the State.
3. A third State exempts trucks from gross weight limits in its four largest cities.

While excessively heavy trucks traveling in these zones may be within permit and exemption limits, they would unlawfully exceed normal State weight limits when they leave the zone.

### Nondivisible loads

Often an extremely heavy item which cannot be readily disassembled must be shipped. Trucks hauling such items may exceed weight and size limits. States usually issue single-trip permits for these shipments and specify routing and hours of travel. According to questionnaire responses, in 1977, 50 States issued at least 1,036,056 single-trip nondivisible permits. Thirty States issued at least 104,672 multiple-trip nondivisible overweight permits.

### PROBLEMS WITH VARIATIONS IN STATE WEIGHT LAWS

The differences in State weight laws cause problems for State weight enforcement agencies and interstate truckers. Trucks taking advantage of higher weight limits in one State will often become overweight when they enter an adjacent

State, even though the adjacent State is at the Federal weight limits. For example, Pennsylvania has a 22,400-pound single axle limit and adjacent Ohio has a 20,000-pound single axle limit, the same as the Federal weight limit. This situation is further complicated when one State issues permits or grants exemptions to trucks that will also travel in States without similar permit or exemption policies. However, higher limits in one State have induced neighboring States to institute permit or exemption policies that allow trucks traveling between the two States to operate at the higher weight limit.

An interstate shipper or driver generally has three options: reduce the load to meet the lowest State weight limit encountered; run at the higher limit even though it will make him overweight in some States; or run at maximum capacity and be overweight in most or all States. We believe that the economics of the trucking industry, the slim chances of getting caught overweight, and the low fines imposed if a driver does get caught dictate the last two alternatives. Industry efforts to solve the problem concentrate on creating more uniform standards by increasing the lower weight limits rather than encouraging shippers to abide by the lower limits.

The current situation encourages overweight operation in many States, particularly interstate corridor States or areas where industrial hauling crosses State lines.

## CONCLUSIONS

Current Federal weight restrictions do not protect the Federal-aid highway system from damage due to excessive truck weights. States can legislate higher limits on 95 percent of the Federal-aid system because noninterstate roads are not protected by the Federal weight limits. These roads were not designed and built to higher interstate standards and are far more susceptible to deterioration caused by excessive weights. This Federal investment should be protected.

The Federal interstate weight restrictions are further weakened by the exceptions allowed under the grandfather clause. Because of the grandfather clause, current Federal limits do not fully apply to almost one-third of the interstate system. The resulting variations in State weight limits cause problems for State weight enforcement agencies and interstate truckers and encourage overweight operations in many States.

Most State permit and exemption policies, even if allowable under the grandfather clause, result in a large number of trips by excessively heavy trucks and cause unnecessary accelerated highway damage. Permit costs generally are not sufficient to compensate for road damage or to encourage use of other transportation modes.

Although we believe FHWA should closely review State opinions on permit policies, we do not believe that interpretations of the grandfather clause should be the primary concern relating to permits. A more fundamental issue is whether Federal law should continue to allow overweight permits for trucks carrying loads that could be reduced. Issuing such permits, particularly on an annual basis, grants immunity from otherwise applicable weight limits to those trucks that are most likely to exceed the limits. This situation is not only inequitable but has a debilitating and crippling effect on the States ability to protect highways from damage caused by excessive truck weights.

If truck weight laws are to effectively protect the Federal taxpayers' current \$96 billion investment in the Nation's highways, Federal legislation needs to be strengthened in two specific areas: (1) the Federal weight limits do not apply to all Federal-aid highways and (2) trucks with divisible loads are allowed to exceed normal State weight limits under permit or by exemptions, thus causing unnecessary highway deterioration. This unnecessary deterioration would be eliminated by restricting permits to those cargoes that cannot be broken down to comply with State weight limits.

#### RECOMMENDATIONS TO THE CONGRESS

To protect the Federal-aid highway system from continued deterioration caused by excessive truck weights, we recommend that the Congress amend 23 U.S.C. 127 as follows:

- Make Federal weight restrictions applicable to all Federal-aid highways, including the noninterstate system.
- Establish a termination date for the applicability of current grandfather clause provisions, so that current Federal limits would apply to all Federal-aid highways.
- Include a provision that specifically prohibits overweight exemptions and permits on the Federal-aid system, except for (1) those permits necessary for single

trips of cargoes that cannot be reduced to meet weight limits or be shipped by other transportation modes and (2) exemptions necessary for certain specialized hauling vehicles.

These legislative recommendations do not propose any changes to existing sanctions for noncompliance.

See appendix I for specific proposed legislative language.

#### AGENCY COMMENTS AND OUR EVALUATION

In supporting these proposed amendments, the Department of Transportation said that, taken together, these changes would solve or lessen many weight-related problems. DOT officials said all three of the proposed amendments have merit and deserve detailed investigation. They emphasized that the effects of these changes on the States would have major impacts on State enforcement and suggested that three ongoing studies--State permit policies, uniformity in State weight limits, and allocation of highway costs--mandated by the Surface Transportation Assistance Act of 1978 should be completed before legislation is advanced.

Changes resulting from this proposed legislation would be far-reaching, but we do not agree that this legislation should be delayed. We believe that the evidence in this report justifies prompt consideration of legislative changes. In addition, FHWA recommended, in congressional testimony, in 1969, that similar Federal weight legislation should be enacted. The same reasons for which FHWA supported the recommendations in 1969 are discussed in chapter 4 and remain valid today. In addition, FHWA's own information shows that highway serviceability has declined since the early 1970s. Finally, the three ongoing studies mentioned by the Department are not scheduled for completion until 1981. Waiting could delay the effective date of such legislation until the mid-1980s or later, and allow excessive truck weights to contribute to further highway deterioration.

## CHAPTER 5

### ENHANCING THE FEDERAL ROLE

#### IN HIGHWAY PRESERVATION

Federal agencies are not doing enough to reduce overweight trucking. Despite congressional concern with State weight enforcement, FHWA's actions to ensure that States are enforcing their weight limits have lacked clear direction, certainty, and consistency. FHWA has not provided adequate guidance to the States to ensure effective weight enforcement. As a result, FHWA does not know to what extent States are carrying out effective weight enforcement programs.

Federal agencies and their contractors receive and ship commodities in trucks that often exceed State weight limits. Although States are primarily responsible for enforcing their own weight laws, Federal agencies should cooperate with State enforcement efforts. We believe the Federal Government needs to establish a policy to actively discourage Federal agencies from receiving and shipping cargo in overweight trucks.

#### FHWA'S ROLE

Federal highway legislation requires States, as a prerequisite for receiving their full share of Federal-aid highway funds, to adequately enforce their weight limits, but FHWA has not established criteria for evaluating State enforcement programs or provided guidance to the States so they will know what is expected of them.

When Federal interstate weight limits were increased in 1975, the Congress required State Governors to certify that State weight laws were being enforced on all Federal-aid highways. The States were also required to submit statistical data on their weight enforcement programs to supplement the Governor's certification letter. This data is FHWA's principal source of information about State programs. In a July 1976 letter, DOT officials told us that they had inherent authority to evaluate States certifications and withhold Federal funding if States were not enforcing the weight limits. (See our report CED-77-27, Feb. 14, 1977.)

In November 1977, FHWA told the Subcommittee on Oversight, House Committee on Ways and Means, that while it could challenge a State's certification, the information it had requested from the States was not adequate to do so. During these hearings, the subcommittee chairman told FHWA

that it was not adequately protecting the Federal highway investment from deterioration caused by overweight trucks and that he wanted more action to protect the highways.

In February 1978, the FHWA Administrator testified that the agency's authority to question State certifications needed strengthening and that the complete cutoff of Federal funds was too severe a penalty for noncompliance. At the same time, however, he announced that the Secretary of Transportation had sent letters to 14 States informing them that, on the basis of 1977 certification data, he was considering withholding Federal highway funds for failure to enforce State weight laws. After individual hearings were held, the Secretary decided not to withhold Federal funds for highway projects in those States, since the 14 States said they would improve their enforcement procedures.

In addition, the Secretary wrote to 11 States and the District of Columbia. Although there was no threat to withhold Federal money, the Secretary requested that they also improve their weight enforcement effort. He asked them to confer with FHWA and explain their improvements. Subsequently, 11 of the 12 explained their proposed improvements to FHWA.

Although FHWA had previously acknowledged that certification data was not adequate to measure the effectiveness of State programs, FHWA used the 1977 certification data to rank State enforcement efforts. Arbitrary cutoff points were established to identify these States that were sent letters.

In January 1979, FHWA summarized the results of the hearings and conferences resulting from 1977 certification actions. The summary report details the improvements planned by each State but does not explain how FHWA intends to assure that these improvements are implemented. The report concludes that the States have not been devoting adequate resources to enforcing the law and cited a number of needed improvements, including coordination of State efforts, effective penalties, and procedures for determining program effectiveness. The report further concludes that the Federal Government has a role in improving State weight enforcement, but gives no substantive indication of what this role is or how it should be carried out.

The Federal-Aid Highway Act of 1978 contained several provisions relating to weight enforcement. The act modified DOT's authority to deal with State enforcement activities. It provided that if the Secretary of Transportation determined that a State is not adequately enforcing its weight

limits, the Secretary must reduce that State's share of Federal-aid highway funds by 10 percent. This legislation strengthened FHWA's authority in weight enforcement and provided a practical penalty for noncompliance.

The act also provided that Federal construction funds could be used to buy permanent and portable scales, scale pits, and other items which directly facilitate an effective vehicle weight enforcement program. As of June 1979, however, FHWA had not established any criteria to assure that scales purchased with Federal funds are effectively used or located.

Finally, DOT's 1979 appropriation provided funds for a Commercial Motor Carrier Safety Inspection and Weighing Demonstration Project. Under this research project, FHWA will provide funds to two or three States to expand their truck safety inspection and weighing activities over a 3-year period. Although this program is primarily intended to increase truck safety inspections, the increase in truck weighing may produce information that will be useful to weight enforcement agencies. FHWA hopes to have the project operating by fall 1979 and intends to issue a preliminary report 2 years later.

FHWA's Administrator testified in February 1978 that FHWA was developing revised certification requirements to clarify what was expected from State enforcement programs. He stated that the certification procedures would be prepared by July 1978. On March 14, 1979, FHWA published the proposed certification procedures in the Federal Register for public comment. FHWA plans to publish the final regulations by October 1979.

The new procedures will require each State to annually submit a proposed enforcement plan for the upcoming year. This plan, when approved by FHWA, will be used as criteria for evaluating State enforcement in that year. FHWA's proposed procedures list several areas that will be included in each State's plan and note that States will be provided guidelines for program preparation. FHWA intends to have these guidelines available to the States in time for 1980 certifications.

The proposed certification procedure states that:

"\* \* \* given the diversity of state laws, programs, and resources, the development of uniform national enforcement criteria is not a realistic possibility. Therefore, the FHWA has concluded that criteria must be set on a State-by-State basis."

## FEDERAL AGENCIES SET A POOR EXAMPLE

Federal agencies receive and ship commodities by contractors' trucks which often exceed State weight limits and accelerate highway damage. We found examples involving the Forest Service, the Tennessee Valley Authority (TVA), the Department of Energy, the General Services Administration, the Army Corps of Engineers, and FHWA. Truck weight and shipping records showed that high percentages of these trucks were overweight by amounts greatly exceeding State gross weight limits. Although none of the trucks were actually owned by Federal agencies, they were fulfilling contracts involving these agencies and used Federal-aid highways, including interstates.

While some of these agencies were taking action to control their contractors' truck weights, others were not. Since we found overweight trucks in each instance, we believe these examples indicate a widespread practice, not isolated instances.

### Department of Agriculture--U.S. Forest Service

In many cases, trucks hauling logs from national forests in Oregon use Forest Service roads and Federal-aid highways. Generally, the Forest Service sells logs by board feet, not weight. Forest Service officials computed the weight of a sample of 16 log trucks' shipments from two of their timber sales areas during the summer of 1978. Eleven trucks exceeded Oregon's gross weight limit as discussed in chapter 2. Although the Forest Service issues overweight permits for log trucks using Forest Service roads, none of the 11 trucks had secured such permits.

The Forest Service issued overweight permits for about 76,000 trips on their roads in Oregon during fiscal year 1978. However, Forest Service officials do not require that these trucks unload the excess weight before leaving the forest. In addition, these officials do not insure that the trucks have similar State-issued overweight permits when using the connecting Federal-aid highways. Oregon issues overweight permits for log trucks up to 89,300 pounds, while in some cases the Forest Service issues overweight permits for more than 100,000 pounds, provided that the Forest Service roads, bridges, and traffic conditions can adequately accommodate the weight.

Forest Service officials estimated that loaded log trucks made over 610,000 trips on their 38,842-mile road system in Oregon during fiscal year 1978. During a 12-month period ending in October 1978, the Forest Service weighed

816 trucks on two of its four permanent scales and issued 20 overweight citations. Forest Service officials said the State used the remaining two permanent scales, but did not know how many trucks were weighed. The Forest Service's six portable scales were not used in Oregon during the same 12-month period.

Forest Service officials told us that to reduce overweight trucking the Service was:

- Starting a law enforcement training session dealing with overweight truck violations.
- Preparing public service commercials and literature explaining the impact of overweight trucks and stating that violators will be prosecuted.
- Preparing a supplement to its Land Management Planning manual which will identify forest roads and truck weight restrictions and rules. The supplement will be distributed to local logging and trucking firms.
- Planning to review Forest Service overweight permit policy in Oregon.

#### TVA

TVA's Kingston, Tennessee, electricity generating plant relies on truck deliveries for about 65 percent of its coal supply. In November 1977, TVA officials acknowledged during hearings before the Subcommittee on Oversight, House Committee on Ways and Means, that TVA routinely purchased coal delivered in contractors' trucks that exceeded Tennessee weight laws. Our review of selected shipments showed as recently as October 1978 that overweight truck coal deliveries continued at the Kingston plant. A sample of 6,433 deliveries, from 1975 through 1978, showed that more than 60 percent of the deliveries exceeded Tennessee's 73,280-pound gross weight limit and more than 10 percent exceeded 80,000 pounds.

TVA has allowed Tennessee weight enforcement personnel to use TVA's scales for citing overweight violators, but intensive use of these scales by Tennessee authorities resulted in coal haulers going on strike. The resulting halt in deliveries and subsequent negotiations led TVA to reduce the maximum gross acceptable to TVA from 100,000 pounds to 81,000 pounds in October 1977. This is still 7,720 pounds above Tennessee's gross weight limit.

A 4-day sample of deliveries during 1978 showed that about 38 percent of the trucks exceeded State weight limits. While State weight officials were present on three of those days, 24 percent of the trucks exceeded State weight limits. When they were not present, 58 percent exceeded the limits. Our analysis of actual weights showed that 23 percent of the trucks weighed 77,000 pounds or more when enforcement officials were not present. Only 2.5 percent weighed this much when officials were present. We visited this facility 1 day during October 1978; of the 99 loads delivered by the time of our visit, 69 exceeded Tennessee's weight limit.

In July 1978, following congressional testimony and a request from Tennessee officials, TVA began inserting a clause in coal purchase contracts that would require coal truck deliveries to conform to applicable highway weight limits.

On April 30, 1979, the Chairman of TVA's Board of Directors acknowledged that TVA purchases coal delivered in overweight trucks but said TVA has intensified its efforts to reduce overweight hauling. The Board of Directors has directed that by mid-June, all contracts to truck coal will contain a provision requiring contractors to comply with State and Federal laws. The Chairman said that failure to do so can result in contract suspension or termination. The Chairman further explained that enforcing TVA's contract rights when the weight provision is included in all contracts will help alleviate the problem caused by overweight coal trucks hauling to TVA steam plants.

Until this provision is in all TVA contracts and is enforced, hauling in excess of State weight limits will almost certainly continue.

#### Department of Energy

The Department of Energy's Oak Ridge Operations, also in Tennessee, purchased over 167,000 tons of coal, delivered primarily by contractor trucks, during the first 9-1/2 months of 1978.

Our analysis of 197 shipments made during 5 days in September 1978 showed that 96 percent exceeded Tennessee's 73,280-pound gross weight limit. Further analysis of individual deliveries showed the following distribution by truck weight:

	Percent of <u>sample</u>
Less than Tennessee's 73,280-pound limit	4
73,281 to 80,000 pounds	20
80,001 to 90,000 pounds	52
Over 90,000 pounds	<u>24</u>
Total	<u>100</u>

Department of Energy officials told us that in February 1979 they asked their field installations to attempt to curtail the weight of truck shipments to and from their facilities. A Department official told us the Department would consider limiting future truck weight problems through contractual provisions.

#### General Services Administration

The General Services Administration, through its Federal Property Resources Service, sells bulk ores from its 94 stockpile depots in 32 States. We reviewed weight shipment records for four depots in Maryland, Ohio, Rhode Island, and Massachusetts. We found that trucks' weights exceeded State weight limits at all four locations; however, in Massachusetts, the trucker had State-issued permits to exceed the limits.

Weight records at the other three depots showed extensive abuse of State gross weight laws. For example, 74 percent of the 31 manganese ore trucks loaded at the Baltimore Depot in April 1978 were overweight as shown below.

	Percent of <u>trucks</u>
Up to Maryland's 73,280-pound limit	26
73,281 to 80,000 pounds	46
80,001 to 90,000 pounds	19
90,001 to 100,000 pounds	6
Over 100,000 pounds	<u>3</u>
Total	<u>100</u>

In August and September 1978, 91 percent of 312 truckloads of manganese ore leaving the Ravenna Arsenal in Ohio were extremely overweight. The State's gross weight limit is 80,000 pounds.

	<u>Percent of trucks</u>
Up to Ohio's 80,000 pound limit	9
80,001 to 90,000 pounds	17
90,001 to 100,000 pounds	31
100,001 to 110,000 pounds	17
Over 110,000 pounds	<u>26</u>
 Total	 <u>100</u>

At the Davisville, Rhode Island, depot, 14 of 19 truckloads of crude aluminum oxide shipped in April and May 1977 exceeded the State's 73,280-pound gross weight limit. The 14 trucks averaged 5,000 pounds over the gross weight limit.

General Services Administration officials have taken initial actions to alleviate overweight loads. Where Federal contractors load outgoing ore, the agency has instructed them that truck weights shall comply with Federal, State, and local requirements. Officials told us that they will develop a formal policy on this issue. Our review of 365 subsequent shipments from the Ravenna Arsenal showed that the percent exceeding Ohio's gross weight limit had been reduced to 26 percent. The heaviest truck weighed 87,000 pounds--7,000 pounds over Ohio's weight limit.

#### U.S. Army Corps of Engineers

The Corps of Engineers is using large rocks to stabilize the banks of the Red River in Arkansas and Louisiana. Our review of selected truck weight records for two project segments showed that 80 percent of 112 shipments confined to Arkansas highways exceeded its 73,280-pound gross limit and 27 percent of 203 shipments confined to Louisiana's highways exceeded that State's 80,000-pound gross weight limit. During the same month, for a third project segment requiring trips from Arkansas to Louisiana, 74 percent of 141 trucks exceeded Arkansas gross weight limit, while 18 percent of the same trucks exceeded Louisiana's gross weight limit.

Corps officials believe that the States are primarily responsible for enforcing weight laws and, if warranted, the States should be more vigorous in their enforcement efforts. Corps officials noted that although they desired Corps projects to be built with minimum adverse effects, the Corps could not, as requested by the Arkansas Highway Commissioner, reject overweight deliveries since materials were delivered to contractors, not Corps field personnel. In addition, the Corps said it had no authority to reject loads on the basis that truckers may have violated State or local load limits

while enroute to the job site.

For several years, Arkansas officials have asked for Corps assistance in reducing truck weights. The Corps has consistently replied that any extraordinary damage to public highways was the responsibility of contractors and that any State actions should be directed against those contractors.

Corps officials told us that the responsibility for enforcing weight limits rests properly with State and local officials since their citizens pay for operating and maintaining these roads. We believe the Corps should cooperate with States to help protect Federal-aid highways from damage caused by overweight trucks involved in Corps projects.

#### FHWA

State highway agencies, which receive Federal-aid highway funds, use contractor trucks to haul material to Federal-aid project sites. Federal regulations provide that States using Federal-aid highway funds require their contractors to comply with State laws.

We found contractors for the Virginia Highway Department hauling crushed stone to Federal-aid projects in overweight trucks. In a 3-hour period, all 37 three-axle dump trucks weighed at a quarry exceeded the State's gross weight limit for three-axle trucks. The average excess weight was 15,650 pounds.

Similarly, truck weight records for a Federal-aid highway construction project in Texas showed overweight trucks. Twenty-eight trucks delivering crushed stone averaged 110,000 pounds, which is 30,000 pounds over Texas 80,000-pound gross weight limit. The lowest gross weight was 99,520 pounds.

Independent of FHWA, Virginia recently instituted a statewide policy not to accept overweight loads, while Texas is including a clause in its contracts authorizing its highway department to reject overweight shipments. FHWA has made no attempt to encourage States that may be experiencing the same problem to take similar corrective actions.

The Department of Transportation did not address this issue in its response to our draft report.

## FHWA influence on other Federal agencies

FHWA officials told us that they have no authority to compel other Federal agencies to control their contractors' truck weights. In fact, until we discussed this problem with FHWA officials, they did not know how much Federal agencies were involved in receiving or shipping merchandise in overweight trucks. In September 1978, FHWA officials told us that States were responsible for enforcing truck weight laws even though the shipments were made by Federal contractors or grantees. Although FHWA is not required to monitor other Federal agencies truck weight policies, in November 1978 the Secretary of Transportation wrote to 12 Federal agencies. He pointed out that it had come to his attention from congressional and GAO questions that Federal agencies have been accepting goods delivered in overweight trucks. The Secretary requested their assistance in stopping this practice and in helping the Federal Government set an example for the States.

By early March 1979, seven agencies had written to the Secretary with a wide variety of responses. For example, the Department of the Treasury is taking steps to require trucks associated with Government contracts and grants to comply with State weight laws. On the other hand, the Department of Agriculture merely pledged to bring the matter to the attention of its affiliated agencies. The remaining five agencies expressed concern for the problem and pledged their support. Only TVA, however, provided much detail on how it planned to curtail overweight trucking.

The five agencies that did not write were the Environmental Protection Agency; the General Services Administration; and the Departments of Health, Education, and Welfare; Labor; and Interior.

## CONCLUSIONS

Federal highway legislation requires a State, as a prerequisite for receiving its full share of Federal-aid highway funds, to adequately enforce its weight limits. However, FHWA has not established guidelines for evaluating State enforcement programs nor has it provided guidance to the States so they will know what is expected of them.

FHWA's recently proposed certification procedures will not assure adequate enforcement on a national basis because the procedures are based on the assumption that uniform national enforcement criteria are not possible. Although obstacles exist to uniform national criteria, FHWA efforts to improve States weight enforcement do not sufficiently

justify its conclusion that uniform standards cannot be established. While individual State plans will provide criteria for evaluating State enforcement programs, more effort is needed to assure that these plans are directed toward achieving as much uniformity as practical. Focusing exclusively on 50 individual State criteria will do little to accomplish this objective.

Federal agency contractors receive and ship commodities in trucks that exceed State weight laws. As a result of recent inquiries by us and the Congress, some Federal agencies have taken initial steps to reduce this practice. Because some Federal agencies have not strongly discouraged their contractors from using overweight trucks, a formal Government-wide policy is needed. The national equity in highways must be protected. The public depends on combined State and Federal action to protect the \$96 billion investment in the Nation's highways.

#### RECOMMENDATION TO THE DIRECTOR, OFFICE OF MANAGEMENT AND BUDGET

Although weight law enforcement is a State responsibility, when practical, Federal agencies should assist in State enforcement efforts. We recommend that the Director, Office of Management and Budget, in cooperation with the Secretary of Transportation, formulate a Government-wide policy, including any needed implementing legislation, to prevent to the extent practical, trucks from exceeding applicable State weight limits when shipping cargo for Federal agencies.

Our recommendations to the Secretary of Transportation are included in chapter 7.

#### AGENCY COMMENTS AND OUR EVALUATION

The Office of Management and Budget and DOT agreed that Federal agencies should be setting a better example in complying with State weight laws. Although the Office of Management and Budget made no commitment to institute a Government-wide policy, officials intend to discuss this issue with DOT to determine how to improve compliance with State laws. Office of Management and Budget officials said that before implementing such a policy, they wanted to make sure they could enforce it.

While Federal agencies can control truck weights through contractual provisions, there currently is no Federal agency designated with oversight. We do not believe Federal agencies should continue to be associated with

hauling operations that are contrary to State laws. The need for better truck weight compliance mandates developing a unified Federal policy to control truck weights by Federal agencies and their contractors and grantees. If such a policy cannot be developed under current law, the Office of Management and Budget should propose new legislation.

## CHAPTER 6

### A FOUNDATION FOR

#### EFFECTIVE WEIGHT ENFORCEMENT

State weight enforcement efforts are often insufficient to prevent overweight trucking. The basic objective of weight enforcement is keeping overweight trucks off the road, thus preventing premature highway deterioration. To do this it is necessary that those responsible for overweight trucks should run a high risk of being caught and should pay a substantial penalty if caught. Effective weight enforcement requires stringent penalties, effective enforcement provisions, adequate resources, and innovative enforcement techniques.

The elements of an effective weight enforcement program exist today, but are scattered among 50 separate State programs. Many States do not realize that some problems they are facing have been effectively dealt with in other States. FHWA and the States need to establish a focal point for accumulating viable solutions and distributing information. We believe that many States can improve their current enforcement efforts by incorporating effective penalties, methods, and organizations currently used in other States. We have identified certain elements from various State programs that we believe are effective enforcement tools.

#### HIGH FINES DETER OVERWEIGHT OPERATIONS

The effectiveness of States weight enforcement programs depends largely on the severity of fines. Federal and State officials told us that when overweight fines are less than the profits from routine overweight operations and the chances of getting caught are slim, fines become an acceptable cost of doing business. Information on State weight laws compiled by the American Association of State Highway and Transportation Officials and updated by our questionnaire showed that most State fine structures are too low to deter overweight operations. Other factors, such as minimal assessment of fines, also tend to limit the effectiveness of fines.

States fine structures generally can be classified as fixed or graduated. While some States have separate fines for single axle or tandem axle violations, we limited our comparison to maximum fines for gross weight violations.

### Fixed fines

Nineteen States have fines which are not based on the amount of excess weight. Some charge a set fee for all violations. Others establish a maximum fine which allows fines to be set anywhere below the maximum amount. Maximum fixed fines range from \$20 to \$500 as shown below.

<u>Range of maximum fines</u>	<u>Number of States</u>
(Dollars)	
0-99	2
100-199	4
200-299	6
300-399	1
400-499	0
500	5
Not specified	<u>1</u>
Total	<u>19</u>

### Graduated fines

Thirty-one States have graduated fine structures based on the amount of excess weight. Generally, the fines are based on the number of pounds overweight or the percentage the truck is overweight. Although graduated fines are usually higher than fixed fines, the rates are still generally low in relation to the small risk of getting caught. Therefore, trucks must be extremely overweight and run a high risk of getting caught before the fine becomes an effective deterrent.

For comparison, we calculated the maximum fine each State could assess for apprehending a truck weighing 10,000 pounds more than the State's gross weight limit.

Range of Graduated Fines for  
a 10,000-Pound Overweight Violation

<u>Range of fines</u>	<u>Number of States</u>
(Dollars)	
0-99	2
100-199	3
200-299	5
300-399	5
400-499	4
500-599	4
600-699	2
700-799	4
800-899	0
900-999	1
over 1,000	<u>1</u>
Total	<u>31</u>

We found two types of graduated fines that had additional merit--mandatory fines and administrative assessments.

Mandatory fines

Mandatory fines for overweight violations are not discretionary and generally must be imposed by the courts. Perhaps the best example of a mandatory penalty structure is Virginia's "liquidated damages" assessment which is designed to deter violations and compensate the State for road damage. The fine, computed on a graduated scale, is based on the amount of excess weight. The importance of this approach is that graduated fines can become a strong deterrent to overweight shipping since they remove profit from hauling overweight shipments.

A fine that relates to actual pavement damage and is consistently applied is an equitable method of penalizing weight law violators.

On-the-spot administrative assessments

Florida processes overweight citations administratively, thus largely eliminating the need for judicial disposition. Those apprehended receive an on-the-spot mandatory assessment based on the amount of excess weight. The State

does not allow the truck or tractor to be moved until the assessment is paid. Further, State law provides that the State is not responsible for protecting the cargo from loss or spoilage.

Florida officials believe administrative processing is effective because it eliminates the economic and political pressures on the courts and ensures consistent application of the law. Florida officials said their civil process for initially appealing fines within the State's Department of Transportation has been upheld in State courts.

#### Higher fines are needed

The wide range of fines for the same violation shows that it is much less risky to operate overweight in some States than in others. Several States we visited cited the need for higher fines or changes in their fine structure. Replies to our questionnaire from 14 States indicated that they needed to raise their fine structures.

States assess widely varying fines for the same amount of excess weight. Texas officials told us that their State needed higher fines, higher fines for repeat offenses, and a graduated fine structure. Texas has minimum and maximum limits ranging between \$25 and \$200 for a first offense regardless of amount overweight. As a result, one offender was fined only \$28.00 even though the gross weight limit for his grain truck was exceeded by 37,900 pounds. Florida uses an effective graduated fine structure based on the amount overweight. Florida collected a \$27.00 fine for a truck that was only 540 pounds overweight. Had Florida officials apprehended a truck 37,900 pounds overweight, they would have collected \$1,895 before the truck would be allowed to move. In Pennsylvania, the same truck would be subject to a \$5,325 fine.

In Washington, D.C., the maximum overweight fine is \$100. City officials told us that \$100 was not an effective deterrent because trucks from the same companies were routinely cited for violations, received minimal fines, and continued their overweight operations.

#### Other reasons for low fines

Statutory limits are not the sole reason for low fines. State officials told us that other factors, such as crowded court dockets, high court costs, attitudes toward weight enforcement citations, and local economic considerations, also tend to lower the actual fines imposed.

Texas law provides for a higher penalty for repeat overweight offenses. While first offenses are administered by a justice of the peace, repeat offenses must be prosecuted in county court. High trial costs and crowded court dockets make county prosecutors reluctant to take second offense cases to court. As a result, Texas officials told us they treat all citations as first offenses.

One respondent to our questionnaire felt the courts had little knowledge of the impact overweight trucks have on highways. He said:

"The court systems have little knowledge of the effects that loaded trucks have upon our roads and streets. This includes the physical damage as well as the economical impact upon the community. Over the past years, more than one judge has referred to [overweight truck] cases filed in his court as a nuisance-type ticket that he feels are wasting his time and the court's time."

The respondent further suggested that "\* \* \* an educational program be instituted for the benefit of court systems."

Local economic considerations also affect fine assessment and local enforcement. In certain areas of Kentucky, the coal industry dominates the local economy. State enforcement officials issued 977 overweight citations in 13 Kentucky coal counties in 1977. All 977 were dismissed. Over 80 percent of these had been issued to coal truck drivers. In January 1978, Kentucky changed its judicial system from county to district judges. Kentucky officials believe this change will largely eliminate overweight citation dismissals.

Local influence can also reduce the effectiveness of mandatory penalties. State officials determined that judges in three southwest Virginia counties were not completely assessing a mandatory fee for overweight trucks--most of which were coal trucks. The State determined that for a 12-month period in 1976 and 1977, the courts should have assessed \$201,609 in liquidated damages; however, the judges assessed only \$86,247.17. In June 1978, the Virginia Deputy Attorney General informed us that he had discussed this problem with the judges and that he believed the problem had been corrected.

## Conclusion

Substantial fines are a major deterrent to overweight operations and are needed to prevent continued highway deterioration. During our review we identified the following principles which, if followed, would in our opinion deter overweight operations.

--Fines must be sufficiently high to at least offset the profits from routine overweight operations.

--Fines should be set on a graduated scale based on excess weight.

--Higher fines should be assessed for repeat violations.

In addition, several States had effective procedures for assessing and collecting fines.

--The amount of the fine was mandatory and not at the discretion of a local governmental official or entity.

--Fines had to be paid before the overweight truck could proceed.

## OTHER PENALTIES CAN BE EFFECTIVE

Fining the driver is not the only available penalty for overweight trucking. Unloading excess weight, fining the shipper, issuing injunctions to cease overweight trucking practices, and assessing points against the driver's license are alternate ways to penalize those who haul overweight. When these enforcement methods are available, they enable enforcement personnel to effectively deter overweight trucking.

## Offloading

In addition to monetary fines, some States require offloading--unloading excess weight before the truck proceeds. The value of offloading is clear. If the overweight truck is allowed to proceed, it continues to damage the roadway as much as before the citation. Questionnaire results show that 30 States have offloading provisions, while 18 States do not. Two States did not respond to the question. Most States we visited had this enforcement tool, but few use it because of traffic problems and potential State liability for the cargo.

Two problems associated with offloading are (1) finding a suitable place to unload and (2) finding a secure cargo storage area. These problems are especially applicable for explosives or other dangerous substances requiring special handling. Some States have solved this problem by exempting specific commodities such as livestock, explosives, and hazardous materials from offloading. Unless a State (as in Florida) assumes no responsibility or liability for offloaded cargo, additional personnel costs may be incurred because an enforcement officer may have to remain with the offloaded cargo to assure it is not stolen or damaged.

State officials we contacted felt offloading was the best deterrent because it required weight offenders to spend time and money to unload the excess cargo and get another truck to haul it away. Offloading also stops the overweight truck from causing continued highway deterioration. Houston, Texas, officials said offloading was sometimes difficult to manage, but it discouraged repeat offenses. Trucking officials also confirmed offloading was the most bothersome penalty because it takes time and money and can be very difficult.

#### Co-responsibility

The driver of an overweight truck is not always solely responsible for the violation. Responsibility in some States is shared by the person or entity causing the overload--usually the shipper. Only 16 States said they could penalize the shipper for an overweight shipment. Three States we visited cited shippers only if the shipper was also the truck owner. In practice, we found that States were generally citing only drivers. Some State officials said that law enforcement would be served best if the individual causing the overweight shipment was also penalized.

As long as the shipper can operate with impunity, the profit provides incentive to ship overweight loads. In some instances the truck driver or owner may not be able to refuse to haul overweight loads because of the risk of suspension, firing for not following orders, or loss of business. In some cases, by not citing the shipper, only half the partnership is being penalized. Many judges have shown their sympathy for the driver's plight by dismissing cases or imposing lenient fines. According to enforcement officials, these actions tend to undermine enforcement efforts and foster a "so what" attitude towards citations.

## Injunctions

Texas State prosecuting officials requested and obtained an injunction to stop a repeated truck weight offender whose trucks had literally destroyed a section of road. They also sought \$600,000 in a civil suit for damage to the road. The injunction ordered overweight operations to stop. The suit for damages had not been settled as of June 1979. While we understand Texas has used this process only once, State officials said that if the injunction process was used more often, it would greatly benefit weight enforcement effectiveness.

## Point system

Some State officials said truck drivers do not take weight law violations seriously since they receive only monetary penalties for repeated violations. These officials said if points were assessed for weight law infractions, drivers and their companies would have to pay more attention to the risks of repeat offenses because excessive points lead to suspended driving privileges.

Thirty-seven States have a point system. While no State has actually awarded points for weight law infractions, State officials believe that the point system would be a good method to quickly impress drivers with the seriousness of transporting overweight loads.

## Conclusions

In addition to fines and monetary penalties, a number of other measures are available that can discourage overweight operations. Such actions not only supplement existing fines, but shift the responsibility for overweight violations to the shipper, where it often belongs.

We identified certain elements that some States use to effectively deter overweight truck operations. These are:

- Requiring excess weight to be unloaded before the truck proceeds. Some States explicitly exempt the State from responsibility for offloaded goods.
- Issuing injunctions against repeat offenders to stop overweight shipments.
- Assessing points against drivers for truck weight violations. This could lead to suspended driving privileges.

The penalty for overweight operations and the incentive for avoiding detection generally fall only on the driver. Consequently, firms that ship overweight loads have little incentive to keep their shipments within legal limits. By also penalizing companies responsible for overweight shipments, enforcement authorities can more effectively deal with the source of many overweight problems.

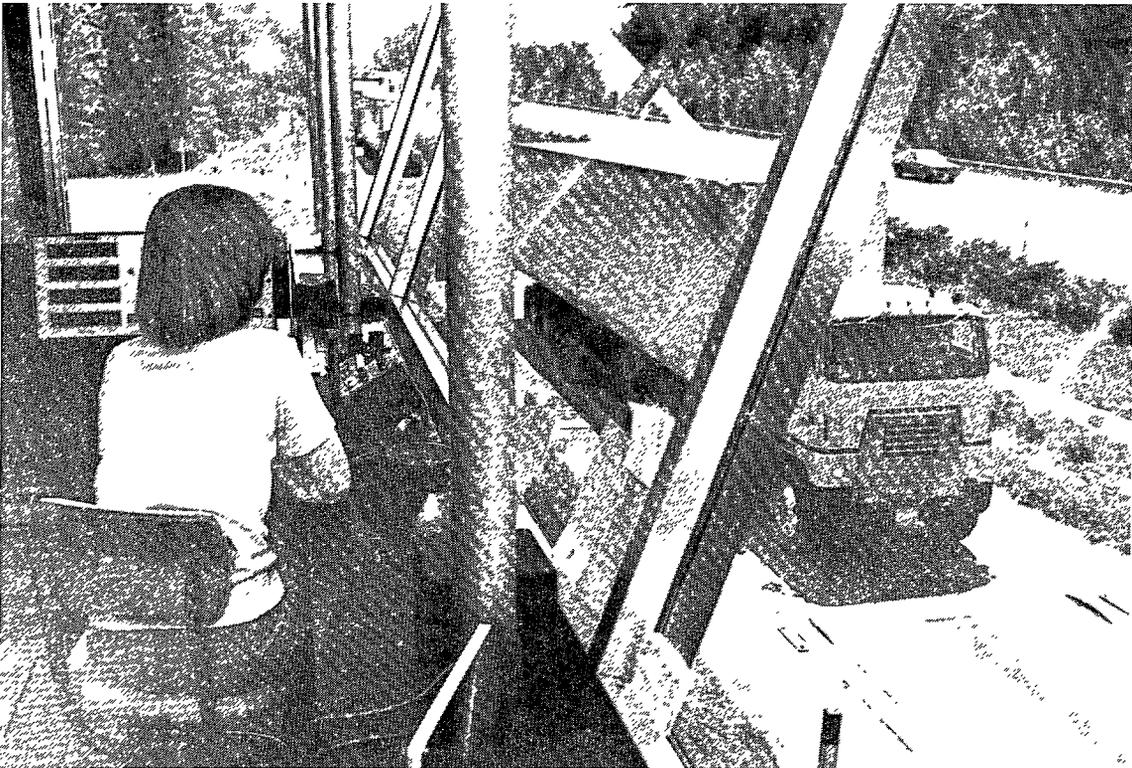
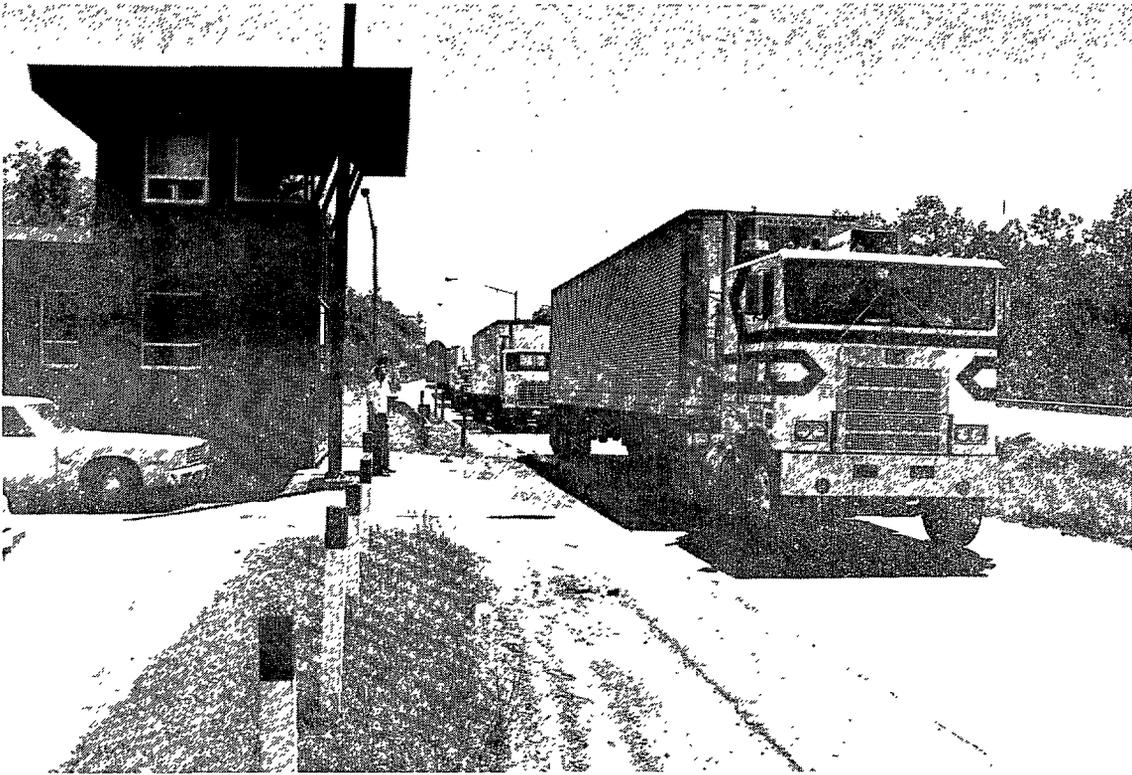
#### OVERWEIGHT TRUCKS CAN BE CAUGHT

Before citations can be issued, enforcement officials generally weigh the trucks at permanent or portable scales. Both types of scales have limitations. Many permanent scales are easily avoided and most portable scales require much time to weigh just one vehicle; however, there are ways to improve their effectiveness.

#### Permanent scales

Most permanent scales are ineffective because trucks easily avoid being weighed--either by waiting for the scale to close or by bypassing it entirely. Permanent scales, costing about \$1 million per location, are constructed alongside highways and require extensive facilities and land. A permanent scale is not a deterrent to overweight trucks if the trucker can, with little inconvenience, choose to avoid being weighed. Nevertheless, FHWA and several State officials continue to consider high-volume weighing at permanent scales to be indicative of a good weight enforcement program.

Many trucks can be weighed quickly at permanent scales because drivers simply enter the site, cross the scale, and--if not in violation--immediately proceed back to the highway. A study by the Florida Highway Patrol showed that this process is generally completed in about 2.5 minutes. Virginia officials told us that Virginia's two permanent scales on Interstate 95 at Dumfries weighed 1,629,718 trucks during 1977--three every minute. The following photographs show the Dumfries scale in operation.



Several States plan to build new permanent scales using electronic platforms that weigh trucks as they drive over them at 30 miles per hour. Since these weigh-in-motion scales are not precise, States use them only as screening devices. Potentially overweight trucks are then weighed on a static scale for citation purposes. Although this equipment will allow permanent scales to handle more truck traffic, it will not improve their effectiveness in apprehending overweight trucks.

Permanent scales do not catch many overweight trucks. For the 30 States that provided data on our questionnaire, overweight citations at permanent scales ranged from 58 per 1,000 trucks weighed to less than one per 1,000. The average was four violations for every 1,000 trucks weighed. As discussed in chapter 2, about one out of every four loaded tractor-trailers is overweight.

Since a truck can wait for a scale to close, hours of operation are important. Responding to our questionnaire State officials told us that

- 21 percent are open 24 hours a day, 7 days a week (168 hours);
- 13 percent are open between 120 and 167 hours a week;
- 21 percent are open between 72 and 119 hours a week;
- 27 percent are open between 25 and 71 hours a week; and
- 18 percent are open 24 hours a week or less.

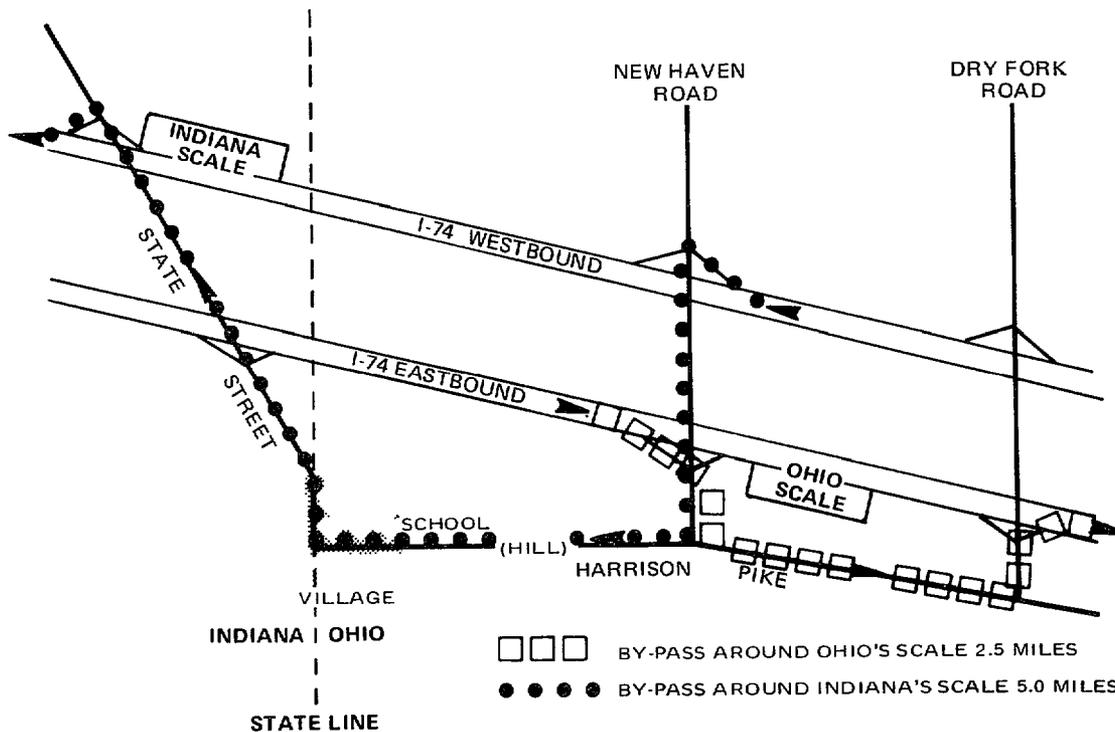
States justified less than 168 hours a week operation by citing low truck traffic volume and lack of funds and personnel. Those scales that are open 24 hours a day act as an effective deterrent if they cannot be easily bypassed.

### Bypassing

State enforcement officials believe that 65 percent of all permanent scales are easily or very easily bypassed and only 11 percent were rated as very difficult or impossible to bypass. In the case of interstate scales, some of the bypass roads are the very highways the interstate replaced.

We visited a newly opened weigh-in-motion permanent scale facility near Chicago, Illinois, and found that it can be easily bypassed--a major flaw of most permanent scales. In 4 hours, only 3 of the 600 trucks passing through the facility were overweight. Officials said that when the scale is open--approximately 90 hours a week--heavy truck traffic on the parallel Indiana Turnpike increases about 33 percent.

Another example of bypassing is on Interstate 74 near Harrison, Ohio, as illustrated on the following map.



Trucks can easily bypass both the Ohio and Indiana scales. In fact, trucks bypassing the Ohio scale were clearly visible from the scale house. The trucks leave the interstate, avoid the open permanent scale by using the bypass road, and reenter the interstate without stopping. We visited this location and found that 8 of the 14 heavy trucks we followed on these bypass roads used these routes to avoid being weighed. Officials in the 10 States we visited said that truckers, using citizen's band radios, can find out in advance whether a scale is open and take steps to avoid it. Texas, for example, has only three permanent scales and refuses to build more because of the bypassing problem.

#### Road destruction and safety hazards

Trucks bypassing a scale accelerate highway destruction and increase safety hazards. Many roads and bridges on permanent scale bypass routes are old or worn out and cannot

support heavy trucks at the current weight limits, let alone trucks over the weight limits. Consequently, roads and bridges suffer.

Trucks avoiding scales by using highways not designed for heavy truck traffic pose a safety problem as illustrated by the Harrison, Ohio, example. A truck headed west on the narrow bypass route descends a steep hill, passes an elementary school near the bottom of the hill, and then enters the village business district. Partial or complete brake failure or loss of control at this point could result in a tragic accident, especially if the truck carried flammable or hazardous cargo.

Safety problems also have been encountered at a similar site near Interstate 95 in Dumfries, Virginia. Our observation showed that this permanent scale is also easily bypassed simply by using parallel U.S. Route 1. Local residents reported accidents and near accidents in hearings before the Subcommittee on Oversight, House Committee on Ways and Means. In one case, a tractor-trailer using parallel Route 1 ran a red light and collided with a school bus, injuring 35 middle school students. In a second occurrence, a tractor-trailer descending a steep hill hit a school bus when the truck could not stop at a traffic light due to weight and grade conditions. Local citizens claimed these trucks were bypassing the permanent scales on Interstate 95.

#### Bypassing can be stopped

Permanent scales represent a substantial portion of the Nation's total weight enforcement investment and can be effectively used under the proper conditions. For example, California has several border scales in desert and mountain areas that never close and cannot practically be avoided.

Another method is to periodically station police officers at entrances to bypass routes and direct apparent overweight trucks to drive to the permanent scale for weighing. The advantages of this strategy are that specially trained officers and equipment are not required. We saw this method used effectively in Ohio.

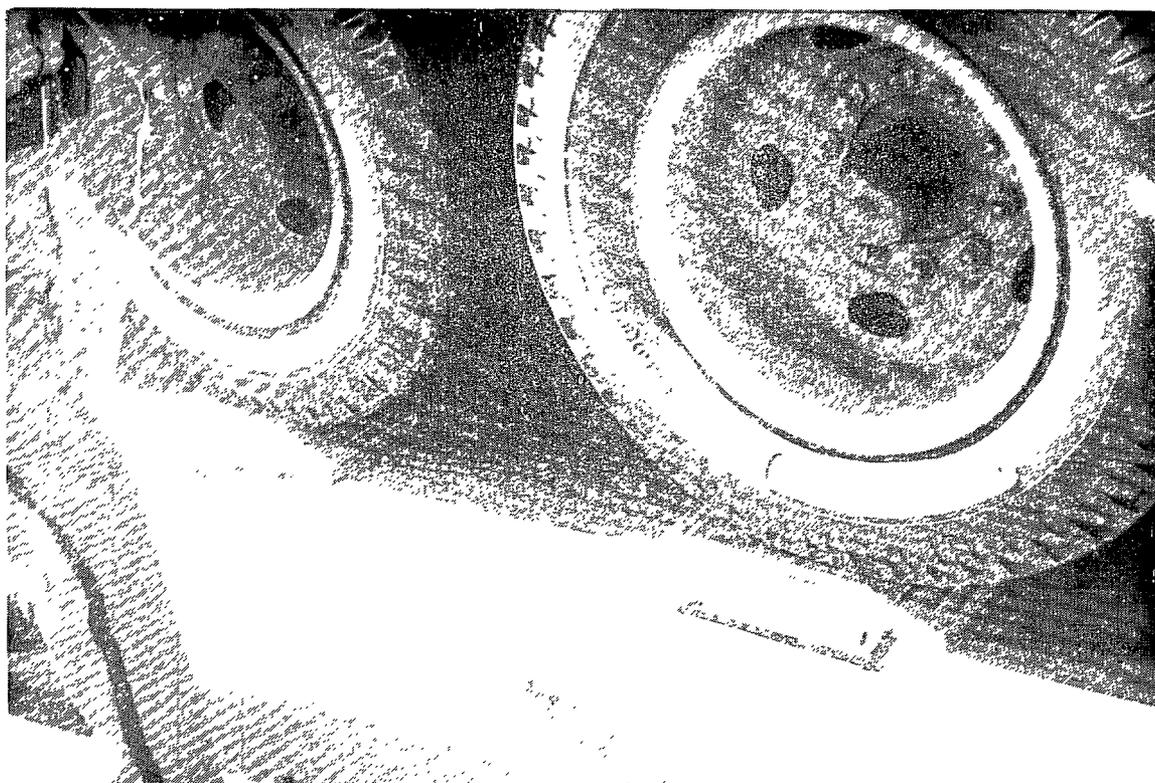
#### Portable scales

Though bulky and time consuming, portable scales are often considered much more effective than permanent scales because they can be transported to where the trucks are, rather than waiting for the trucks to come to them.

Portable scales weighing 50 to 80 pounds each are usually carried in a van or trunk of a car. Their mobility allows use:

- where overweight truck traffic is suspected,
- at prepared portable scale sites, and
- in conjunction with permanent scale operations to catch bypassing trucks.

Enforcement personnel need two portable scales to weigh a single axle--one for each side. They need four scales to weigh a tandem axle. The photograph below shows two portable scales weighing one side of a tandem axle.



Weighing trucks with portable scales requires a level, open area so the driver can drive onto the scales as they are placed under the wheels. Because this procedure must be followed for every axle, using portable scales is much slower than using permanent scales. The time required to weigh a truck also depends on whether State law requires all axles to be weighed simultaneously. If all axles must be weighed concurrently, the number of scales required increases. For example, in Ohio, enforcement officials need 10 portable scales to weigh a typical five-axle tractor-trailer and

18 scales for a nine-axle Michigan tractor-trailer. However, since enforcement personnel usually cannot carry more than four scales in a patrol car, they lose time waiting for additional scales or require a van to transport the scales.

To reduce weighing time and roadway hazards, some States have constructed pull-off areas with pits for portable scales. This enables weighing in about the same time as at a permanent scale. This approach is also safer because the pits are away from the traffic flow. Prepared sites, however, have a permanent scale's major disadvantage--a fixed location which is generally easily bypassed.

Portable scale operators do not weigh all trucks, but only weigh trucks that appear overweight. Experienced operators can look at the trailer, the tire bulge, the springs, and listen to engine sounds to get an indication whether the truck is over the weight limit and worth weighing. Officials in two States we visited felt that with selective weighing they could issue citations to 60 percent of the trucks weighed.

Portable scales are particularly effective, however, when used at truck concentration points, such as port facilities or construction sites, where large numbers of overweight trucks may operate. We found one city police department conducting weight enforcement operations against firms or facilities shipping or receiving overweight goods. Portable scale teams that remain outside a company's gates effectively deter a company from overweight shipping operations. When sufficient information about shippers and receivers of overweight shipments exists, targeting portable scale teams against them is more effective than trying to find overweight trucks on the open road.

#### Alternate methods

Scales have limitations which are sometimes compounded by the traditional emphasis on apprehending overweight trucks on the open road. These limitations require enforcement officials to petition for added flexibility and pursue overweight trucks through less traditional weighing methods. During our review, we found ways States can improve their enforcement programs' effectiveness.

#### Haul-in distance

Haul-in distance refers to how far an enforcement official can require a truck driver to drive to a permanent or portable scale. If States would liberalize their haul-in

distance provisions, enforcement officials could more efficiently use permanent scales. Some law enforcement officials told us their enforcement efforts were thwarted by the short distances they can require a truck to be driven to be weighed. As a result, some trucks cannot be weighed solely because they are beyond the legal haul-in distance to permanent or portable scales. This is especially frustrating to enforcement efforts on highways that are bypass routes for permanent scales.

Our questionnaire results show that 28 States have short haul-in distance provisions or have no provisions, as shown below.

<u>Haul-in distance provision</u>	<u>Number of States</u>
Not allowed	4
1-5 miles	24
6-10 miles	3
Nearest scale	9
No limit or not specified	9
No response	1

State officials told us that permitting officers to require a suspected overweight truck to drive to the nearest scale would close a gap in weight enforcement.

#### Commercial scales

Based on questionnaire responses, 28 States use commercial scales to supplement their enforcement program. Commercial scales are privately owned and usually located at truck terminals, truck stops, or an industry relying on cargo weight for everyday business dealings. Since commercial scales are usually located in high truck traffic areas, they would be a highly valuable but inexpensive resource for enforcement operations.

#### Citations without weighing

State enforcement officials told us that they often encounter potentially overweight trucks at locations where scales are not available. Without weighing or some other legal basis for issuing a citation, the suspected overweight vehicle may continue. Four States avoid this problem by authorizing use of bills of lading in lieu of weighing as evidence of a truck's actual cargo weight. Even in these States, only up to about 5 percent of the citations are based on certified weigh bills.

### Enforcement files can identify chronic offenders

Eighteen States told us that they summarize overweight truck citations to identify chronic violators. During our visits to four of these States, we found that they do not use this information for further action against the driver or trucking firm.

Texas has a listing of all overweight offenders with supporting data. Texas officials, however, do not use the information to (1) identify repeat offenders, type of industries with recurring violations, or highways subject to repeated abuse or (2) plan enforcement actions against repeat offenders. Several States had central files but often lacked data on case dispositions.

Waiting for overweight trucks to come to the scales for weighing is not nearly as effective as knowing where overweight trucks are and organizing the most efficient enforcement possible with available resources. Using a centralized citation file to identify those chronic offenders could greatly enhance States enforcement efforts.

### Conclusion

High fines and other effective penalties can deter overweight trucking only if the chances of being caught are high. Catching an overweight truck as generally attempted today is a difficult and expensive proposition. Equipment limitations seriously inhibit the effectiveness of weight enforcement.

Operating a permanent scale that can be readily bypassed, or that operates only a limited number of hours, results in large numbers of legally loaded and empty trucks being weighed, while overweight loads avoid being weighed. High volume truck weighing does not prevent overweight operations when the driver of an overweight truck has the option of not being weighed. Nonetheless, FHWA and several States continue to consider high volume weighing at permanent scales as indicative of a good weight enforcement program.

A permanent scale is effective only if it is open for prolonged times, for example, 3 to 4 consecutive 24-hour periods, and cannot be easily bypassed. If the scale is located where bypass routes are available, the scale will be effective only when police prevent trucks from avoiding being weighed. Operating a permanent scale that can be easily bypassed is not effective for weight enforcement purposes.

Nationally, weight enforcement organizations have a substantial investment in permanent scales. The effectiveness of these facilities can be improved by using police patrols to stop trucks on bypass routes and either directing them to drive to the scale or weighing them with portable scales. These measures should be used whenever the permanent scale is operating.

Most States employ portable scale teams to some extent; however, these teams are often used to patrol roads looking for overweight trucks. We found that portable scales are most effective when placed on bypass roads or adjacent to firms which often ship or receive overweight loads. Efforts at shipping points can effectively eliminate overweight travel before it begins by concentrating enforcement on those who are often responsible for the overweight loads.

There are additional methods that could be used to apprehend overweight trucks. States that allow enforcement officials to order suspected overweight trucks to the nearest scale find this method effective. Commercial scales in lieu of State or local government highway scales could be used for the weighing. Some States allow enforcement action based on weigh bills or bills of lading that list the actual cargo weight. This method means that overweight trucks could be apprehended without actually being weighed by enforcement officials.

#### HOW STATES ARE ADMINISTERING THEIR WEIGHT ENFORCEMENT PROGRAM

States organize their weight enforcement units in many ways and commit varying amounts of resources. Despite these differences, weight enforcement authorities face similar logistic, legal, equipment, and methodology problems; however, there is little exchange of information on effective weight enforcement methods, law, and equipment.

#### Organization

We found several organizational problems in the States we contacted. Principal among these were that enforcement personnel (1) had too many other duties, (2) did not have adequate authority, or (3) were assigned to too many different agencies.

A Highway Patrol official indicated that weight law enforcement is not a high priority duty in his State. Weight enforcement officers are routinely shifted to higher priority duties, such as traffic control, leaving voids in weight enforcement coverage. Some of these voids occur during peak truck traffic hours.

In two States we visited, lack of citation authority and arrest power was a problem. In one State, 19.00, department personnel generally operate the permanent scales and a Highway Patrol officer issues the citations. When an officer is not present, the scale operator must request the trucker to wait until the officer arrives. Since some truckers do not wait, apprehension is more difficult. Nine other States had a similar organizational structure where all or some scale operators do not issue citations. In another State, employees issue citations but do not have other police powers. Officials said some truckers do not promptly comply with scale operators because the operators lack such powers. The extra time involved sometimes temporarily closes the scale.

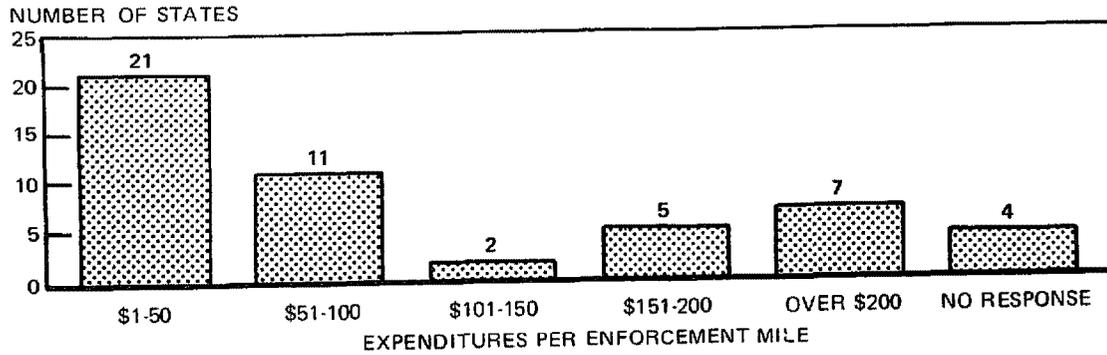
The States have various organizations and combinations of organizations enforcing their weight laws. In 31 States, only one agency enforces weight laws, while in 19 States the function is split between two or more agencies. State police are the sole weight enforcement agency in 18 States and a non-State police agency is the sole weight enforcement agency in 13 states. State police share the weight enforcement responsibility with other agencies in 17 States. The remaining two States have two or more nonpolice agencies enforcing weight laws. Non-State police agencies weighing trucks for enforcement purposes include the highway department, motor vehicle division, revenue department, motor carrier inspection, port of entry divisions, corporation commission, and permit section. FHWA reported that when two or more agencies enforce weight laws, coordination is often poor--resulting in weakened efforts.

#### Commitment of resources

In many States we visited, officials said they did not have enough money to hire the personnel needed to conduct effective weight enforcement operations. One indication of a State's interest in enforcing weight laws is its resource commitments for manpower and equipment. We compared States resource commitments to the mileage on which States said they enforced weight laws. This comparison showed major differences in States efforts to enforce weight limits. However, these comparisons are not adequate to judge the effectiveness of States weight enforcement programs because other important factors, such as fines, are not considered. It is difficult, however, to see how minimal efforts could produce effective enforcement.

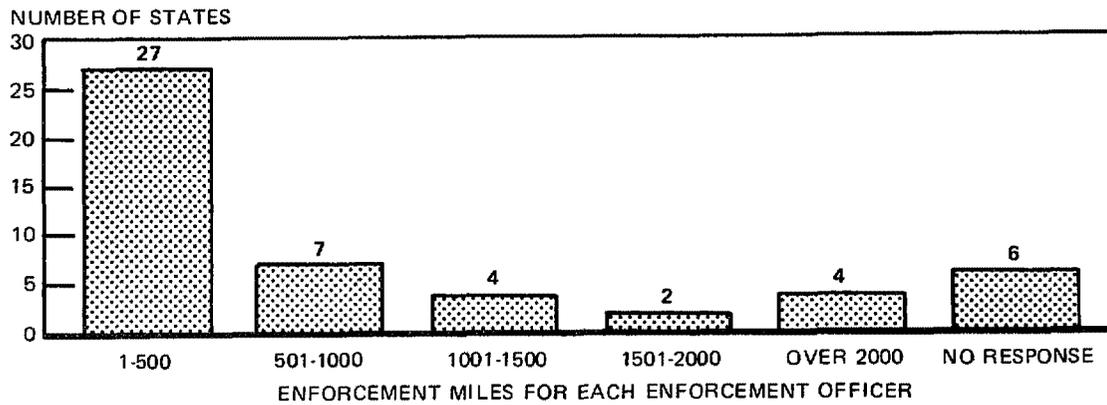
## Expenditures

Expenditures per enforcement mile ranged from \$4 to \$406. The range of responses appears below.



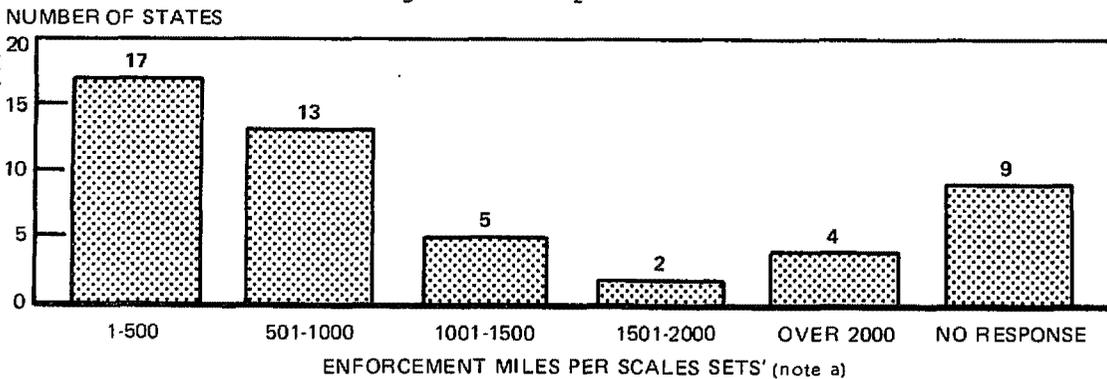
## Personnel

The ratio of full-time or equivalent personnel to mileage on which the State enforced weight laws ranged from 1 officer for every 59 miles to 1 for every 5,220 miles. The range of responses appears below.



## Scales

The highest ratio of scales to miles was 1 set per 93 enforcement miles; the lowest was 1 set per 4,000 enforcement miles. The range of responses is shown below.

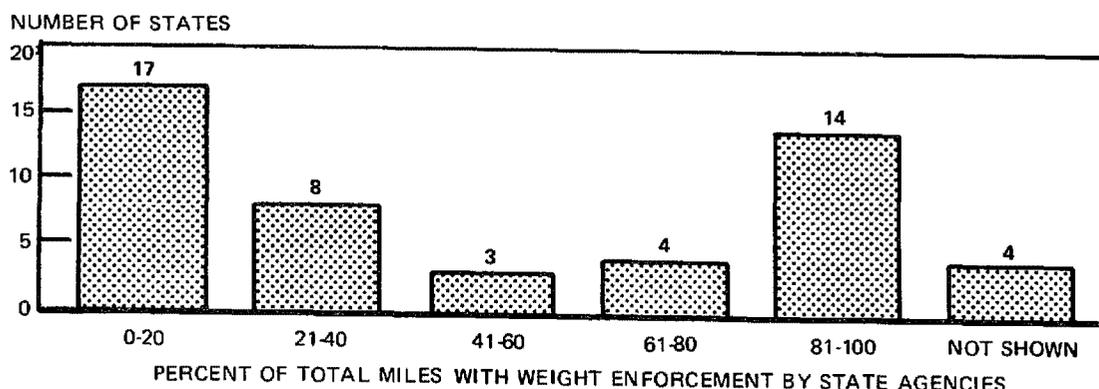


a/ A scale set is one permanent scale or 4 portable scales.

## Jurisdiction for weight enforcement

States have certified to the Secretary of Transportation that weight laws are being enforced on all Federal-aid highways in their States. This should mean that either State agencies or local governments are enforcing State weight laws on all Federal-aid highways including those in cities. However, we found gaps in enforcement coverage.

On the basis of responses to our questionnaire, we found that State agencies do not enforce weight limits on all highways. Nationally, States told us that they enforce weight laws on only 40 percent of the highway mileage. A summary for the 50 States appears below.



There are two basic reasons why State agencies do not enforce weight limits on all highways in the State: lack of authority and insufficient funds. At least 36 States do not enforce weight laws on all highways in their States. These States must provide for weight enforcement through local governments for the remaining highways. Although counties and cities generally are responsible for weight enforcement within their boundaries, no State has provided information to FHWA on county and city enforcement programs with their certifications.

We found that State agencies had little information on the enforcement activities of local governments. We asked State officials if any local governments in their States enforced weight laws. Nationwide they identified only 39 counties or cities that had enforcement programs. Local efforts are very important since urban areas are usually not patrolled by State weight enforcement agencies and have more overweight trucks than rural areas.

## Weight enforcement in cities

Although FHWA believed the States were enforcing weight laws on all Federal-aid highways, we found that State weight laws generally are not enforced on Federal-aid highways within city limits. Our contacts with State officials and officials from 30 major cities indicated that the States generally do not enforce the State weight laws within city limits. The law requires States to certify that Federal weight limits are not exceeded on their interstates and that State weight laws are being enforced on all Federal-aid highways in the State.

Only 9 of the 30 major cities contacted have weight enforcement activities and only three--Chicago, Houston, and Washington, D.C.--have an active program staffed by full-time officers.

City and local police officials gave us the following reasons for not enforcing State or local truck weight laws:

- Enforcement of weight laws was a low priority item and was dropped because of manpower or fund shortages.
- Local officials were influenced by economic and political factors to either permanently or temporarily drop weight enforcement efforts.

Cities are experiencing problems with street and road deterioration caused by overweight trucks. Overweight construction trucks servicing new residential areas are destroying older residential streets; garbage trucks with large compactors are sometimes overweight; and grain and steel trucks serving ocean, lake, and river ports cause accelerated road and bridge damage. Several cities have truck routes or weight-limited posted street laws, but these are control measures--not weight enforcement provisions.

Gaps in State coverage, combined with weak or non-existent enforcement operations in cities, indicate that over half of the Nation's highways, including a significant share of the interstates and other Federal-aid roads, are essentially not protected by weight enforcement activities.

## State efforts are not coordinated

State enforcement programs tend to operate in a vacuum, obtaining little benefit from the experience of other States. While individual States have effective solutions to many of the basic enforcement problems, we found little transfer of

information. Most States continued to seek answers to their weight enforcement problems from within their own organization or from neighboring States. FHWA does not have a program that promotes or expedites information exchange.

Similarly, each State created its own criteria for judging the success of its efforts. One State may feel it has a good program because it weighs a large number of trucks at permanent scales even though very few are cited as being overweight. Another State may feel successful because it apprehended a large number of violators with portable scales, even though the fine structure in the State encourages overloading vehicles.

State organizations are duplicating effort and expense for weight enforcement research. Our questionnaire results showed that more than 20 States had conducted studies of local weight enforcement problems. At least 10 States had studied (1) site selection for permanent scales, (2) impacts of Federal weight limit increases, (3) user tax or tax allocation structures, (4) economic benefits of heavy trucks compared with their effects on highways, and (5) the impact of overweight trucks on pavement and bridges, maintenance costs, and highway serviceable life.

### Conclusion

Various organizational approaches exist to weight enforcement. Many State programs could be made more effective by centralizing control, reducing duplication of responsibility, and setting a higher priority for weight enforcement efforts.

Similarly, the commitment of resources to weight enforcement varies greatly. Although effectiveness cannot be equated with level of effort, it is difficult to see how effective weight enforcement could result from the minimal efforts expended in many States.

Although it is a precondition of full Federal aid that States enforce weight laws on all Federal-aid highways, we found large gaps in enforcement coverage. State agencies enforce weight laws on only 40 percent of the Nation's highways and generally do not know if the laws are being enforced on the remaining 60 percent. This situation is most critical in urban areas because of the large volume of heavy and overweight truck traffic.

A national focal point for weight enforcement information is obviously needed. Such a group could insure that States can draw on existing data and research to meet their

needs. This would improve the effectiveness of existing programs and reduce duplication of effort. In addition, such a group could provide the information needed to convince and enable States with marginal programs to improve their weight enforcement efforts.

Recommendations to the Secretary of Transportation are in chapter 7.

## CHAPTER 7

### AN IMPROVED FEDERAL ROLE

The number of overweight trucks using the Nation's highways and the amounts by which they are overweight is substantial. Although heavy and overweight trucks are just one of several major factors contributing to the serious problem of increased deterioration of the Federal-aid highway system, we believe something can and should be done about it. Federal funds were used not only to construct and improve these roads--about \$96 billion since 1956--but are also available to reconstruct them once they deteriorate to a point where they can no longer be kept usable by routine maintenance work alone. While eliminating overweight trucks will not stop highway deterioration, it will reduce it.

To protect the Nation's highways from damage caused by overweight trucks, weight enforcement efforts must be improved. Even with the current variations in States weight limits, increased levels of enforcement and more effective enforcement methods would reduce deterioration of the highway system. Changes in Federal weight legislation as recommended in chapter 4 would facilitate State enforcement efforts and reduce highway deterioration even further. These recommended changes would (1) require that State weight limits not exceed Federal maximum limits on all Federal-aid highways and (2) eliminate unnecessary overweight permits and exemptions. These modifications would alleviate many of the problems State enforcement officials must cope with because of higher limits or more lenient permit and exemption policies in adjoining States. Regardless of State weight limits and permit policies, improving State enforcement efforts will decrease much unnecessary highway deterioration.

Because of the national scope of trucking operations, only a national effort can effectively discourage overweight shipping operations. Impetus for such action therefore must come from DOT. DOT needs to take a more active role to improve State weight enforcement programs. It can actively foster improvements to State programs through the certification process and by providing States with technical assistance and guidance.

### NEED FOR IMPROVED CERTIFICATION PROCEDURES

State weight enforcement programs vary widely and need improvement. Because of this diversity, some States will require more time and effort to upgrade their programs than

other States. As discussed in chapter 5, States must annually certify to the Secretary of Transportation that they are enforcing their weight limits and supply supporting data. FHWA evaluates the certification data to determine the adequacy of State weight enforcement efforts. FHWA is currently drafting new guidelines for preparing annual enforcement plans for State certifications. These guidelines recognize existing diversity and also call for short (1 year), medium (2-4 years), and long term (5 years and beyond) goals for each State enforcement program.

Although DOT officials indicated that they may develop uniform enforcement criteria, we believe their current efforts will not achieve the needed uniformity. FHWA's proposed certification procedures will encourage current variations and shortfalls in State weight enforcement efforts to continue indefinitely because they will direct each State to develop individual performance criteria in the form of State annual plans and multiyear goals. If this approach is implemented without regard to a national objective, it will almost certainly result in 50 different sets of criteria and 50 different levels of enforcement.

Substantial variances in enforcement levels from State to State will continue to reduce the effectiveness of weight enforcement just as different State weight limits do under present law. A State with a low enforcement level will encourage overweight operations within that State and result in overweight trucks continuing into neighboring States and increasing the burden on those States enforcement efforts. In addition, continued unnecessary damage to Federal-aid highways in that State and neighboring States will result. FHWA, therefore, needs to develop enforcement criteria as part of its certification procedures that will result in the highest degree of uniformity practical.

Because of differences in State law and programs, the evaluation criteria must be broad enough to allow States to meet these criteria in the manner best suited to their particular situations. Equally important, the evaluation criteria needs to ensure that all State programs are directed toward a national enforcement objective. Factors that need to be considered in developing the evaluation criteria would include penalty structures, use of equipment and enforcement methods, level of activity, enforcement on highways outside direct State jurisdiction (e.g., cities in the State), and other related areas. For example, States should have a penalty structure that effectively deters overweight operations. If improvement is needed in a State's penalty structure, the State should be able to select any penalty structure that will provide adequate weight enforcement.

National enforcement criteria would promote an optimum level of enforcement on a national basis within the target dates established in FHWA's draft certification guidelines. It would also provide the Secretary of Transportation a basis for determining when a State is not adequately enforcing its law.

#### NEED FOR A MODEL WEIGHT ENFORCEMENT PROGRAM

Besides improving State weight enforcement programs through the certification process, FHWA needs to provide specific alternative methods of making the improvements needed to meet certification requirements.

Good weight enforcement requires effective laws, organizations, and enforcement methods. Although proven measures exist in each of these areas in various States, they have never been combined to provide a model for State and local weight enforcement agencies. Consequently, States had to develop their own methods, resulting in a wide diversity in weight enforcement programs.

FHWA needs to develop and publish a model weight enforcement program incorporating laws, organizations, and methods proven effective by State programs. The model should specifically address each FHWA certification criteria and offer acceptable alternate approaches in each area. States could select the most effective techniques for their particular situations. For example, sample legislative provisions for an effective fine structure might include Virginia's liquidated damages law and Florida's administrative fine procedures among the acceptable alternatives.

Major problem areas to be addressed and some potentially effective solutions encountered during our review, are shown below.

#### Penalties

Effective penalties include both fines and nonmonetary deterrents to overweight operations.

- Mandatory fines, graduated on a rate based on the amount of excess weight and high enough to offset the profits from routine overweight operations.
- Mandatory offloading of excess cargo.
- Making shipper equally responsible for overweight violations.

- Assess points against drivers for truck weight violations.

### Enforcement methods

Some States have developed techniques to improve their enforcement efforts by effective use of equipment and identification of chronic overweight operators. These techniques include:

- Allowing enforcement officials to direct suspected overweight trucks to the nearest scale.
- Improving use of permanent scales by
  - making trucks on bypass routes drive to the nearest scale for weighing,
  - using portable scales on bypass routes,
  - making sure new permanent scales will be located at sites that are not easily bypassed, and
  - operating existing scales an optimum number of hours.
- Using portable scales at shippers' and receivers' facilities which frequently use overweight trucks.
- Using enforcement files to identify chronic violators.
- Using commercial scales to supplement existing equipment.
- Using bills of lading to identify overweight trucks.

### Other areas

Weight enforcement activities can often be improved by using a single independent organization with adequate powers and dedicated solely to enforcing weight laws. Several States provide models for such organizations.

In addition, we believe FHWA, in conjunction with the States, can provide alternative methods of coping with other problems we encountered, such as insuring that weight laws are enforced in urban areas and on all other highways, and insuring an adequate level of enforcement effort in all States.

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A model weight enforcement program would provide States and local enforcement agencies a means to evaluate their current programs in light of FHWA's certification criteria. It would also offer reliable technical assistance in meeting the criteria. This program should be made available to the States as soon as possible to meet FHWA's target dates.

#### NEED FOR A WEIGHT ENFORCEMENT OPERATING GROUP

As described in chapter 5, recent legislated increases in weight enforcement responsibilities will require an expanded effort by FHWA. Developing effective criteria for evaluating State programs, reviewing States certifications and long-range enforcement plans, and providing ongoing technical assistance to States and local agencies will require FHWA to establish a small full-time, permanent staff to coordinate its weight enforcement activities. This group would supply the practical knowledge DOT officials need to address the policy and technical questions that will arise from certification procedures. It could also coordinate weight enforcement actions among FHWA operating groups and assure that other resources such as new permanent scales and truck characteristic data available to FHWA are effectively used to improve weight enforcement.

FHWA will also need a focal point in each FHWA division to coordinate its evaluation of State certifications and to facilitate FHWA technical assistance to each State. This individual must be sufficiently familiar with State enforcement activities so that he can provide effective liaison between the States and DOT. During our review of State certification data, we found a number of discrepancies in State submittals. By verifying the certification data, FHWA focal points in each State could correct these problems and rapidly familiarize themselves with State enforcement efforts.

#### NEED TO IMPROVE OTHER ENFORCEMENT EFFORTS

FHWA can improve other weight enforcement efforts by developing criteria for locating and using new federally funded permanent scales and by providing States with a special analysis of existing information on overweight trucking.

The 1978 Federal-Aid Highway Act authorizes States to use Federal construction funds for weight enforcement equipment. FHWA's draft guidelines for State weight enforcement certifications emphasize high-volume weighing capability and will encourage many States to construct additional federally funded, permanent scales. As discussed in chapter 6,

permanent scales are effective only if trucks cannot avoid being weighed. However, FHWA has not established specific criteria that will assure that federally funded permanent scales are effectively located and operated.

Every year, FHWA accumulates a large amount of data on truck types, weight, and cargoes. This data is used to prepare a biannual truck characteristics report containing data for highway planning purposes. The information collected for this report, when compared with State weight limits, can also provide information on types of trucks that are frequently overweight, their cargoes, and the roads they use. By analyzing this data to compile reports on overweight operations in each State and sharing this information with local enforcement agencies, FHWA could greatly assist State enforcement efforts.

#### RECOMMENDATIONS TO THE SECRETARY OF TRANSPORTATION

To enhance FHWA's ability to assist State weight enforcement programs and to provide guidance to the States on effective weight enforcement programs, we recommend that the Secretary direct the FHWA Administrator to:

- Establish criteria for evaluating weight enforcement certifications and weight enforcement programs that will assure as much uniformity as practical and adequate levels of State enforcement on a national basis. These criteria must provide for enforcement of weight limits on all Federal-aid highways in the State including areas outside the jurisdiction of State enforcement agencies, such as urban areas.
- Develop, in cooperation with each State, a long-range plan for improving enforcement programs, taking into consideration the certification criteria developed by FHWA.
- Develop, in cooperation with the States, a model State weight enforcement program containing effective weight enforcement organization structures, methods, equipment, penalties, and laws.
- Include in the model State program those State enforcement elements that constitute an effective legal framework to provide viable alternatives to apprehend violators and deter overweight operations. Those elements which appear to be effective tools such as administrative assessments and processing of

monetary fines, offloading, and co-responsibility should be specifically considered.

- Establish a permanent national weight enforcement operating group within FHWA to administer the certification requirement and act as a focal point for gathering and disseminating information on weight enforcement organization structures, methods, equipment, laws, and research and to provide ongoing assistance to States.
- Designate an individual within each FHWA State office to act as a truck weight enforcement focal point between the State and FHWA headquarters personnel. This individual should facilitate technical assistance to State programs and verify State certification data.
- Analyze available information, including the biannual truck characteristics study data to provide assistance to State enforcement agencies in identifying overweight truck traffic patterns in their States.
- Develop criteria for using Federal funds to construct permanent scales to insure effective placement and operation of these facilities. The criteria should require locations that are difficult to bypass, establish minimum hours of operations, and require patrolling of bypass routes while the scales are in operation.

#### AGENCY COMMENTS AND OUR EVALUATION

The Department of Transportation agreed in principle with our findings. It also generally agreed with the recommendations, but it did not make any commitments to implement them. Failure to take actions such as we have recommended will further reduce highway serviceability and weaken the protection given to the large public investment.

Our recommendations for uniform evaluation criteria, the model weight enforcement program, and technical assistance to States are a realistic, coordinated approach to overcome the negative aspects of diversities in State programs. This approach will improve State weight enforcement and prevent continued excessive deterioration of the Nation's highways by overweight trucks. We believe FHWA must make a definite commitment to implement these recommendations as soon as possible. Specific comments are addressed below.

## Certification procedures

DOT agreed that it needs to establish certification guidelines to assure that State activities will result in adequate levels of enforcement. It continues to believe, however, that the wide range of effort devoted to weight enforcement by the States is the best reason for separate improvement plans for each State and that effective enforcement programs will result from their current approach. DOT feels it will not be in a position to develop uniform enforcement criteria until it gain more experience.

DOT was given responsibility for monitoring State enforcement programs in 1975. In prior years there was a wide diversity in State enforcement programs. This situation continues today principally because of FHWA's reluctance to establish and use uniform criteria for evaluating State programs. Uniform criteria should be broad enough to allow States to meet certification requirements in the manner best suited to their particular situation.

We do not believe that adequate levels of enforcement will result from continuing the wide range of personnel, weighing facilities, and budgets devoted to weight enforcement programs in 50 States. FHWA should provide the impetus needed to improve State programs by establishing uniform criteria to the extent practical for evaluating State weight enforcement efforts as part of the certification procedures. DOT must make sure that FHWA establishes such criteria as soon as possible so that it can identify and act against States which have not adequately protected Federal-aid highways from overweight trucks.

## Model weight enforcement program

While generally endorsing our recommendation that FHWA adopt a model weight program, DOT apparently is not going to develop one. DOT officials said they have a solid basis for establishing a model program but that current differences in State practices would cause problems and differences of opinion in developing one. We do not believe this is a convincing argument against providing needed assistance to the States.

DOT's concerns over drafting a model weight program can be readily overcome by providing effective alternatives to each enforcement problem. States that want to improve enforcement could choose the solution that is best suited to their needs. Our extensive contacts with State enforcement officials demonstrate that given adequate levels of enforcement and effective deterrents, legitimate differences

in State programs do not preclude effective enforcement from being developed from a model weight enforcement program.

#### Weight enforcement operating group

DOT said that the foundation for a permanent weight enforcement operating group currently exists within FHWA. FHWA has designated an individual to cover weight enforcement matters in each of its nine regional offices which are responsible for State programs and said it would assign a person in each division (State) as appropriate, in the near future.

As of June 1979, FHWA had only one full-time employee assigned to weight enforcement activities. In addition, FHWA had not made any plans to designate a person in each division office to cover these activities. Staffing for weight enforcement will have to be permanently increased to meet FHWA's expanded certification role and to provide ongoing technical assistance to State and local enforcement groups. FHWA must designate an individual in every State to assure that the liaison is familiar with State personnel, enforcement programs, and conditions, and will be readily available when needed. One of this person's first duties should be to verify the 1978 enforcement certification data submitted by that State.

#### Overweight truck data analysis

DOT pointed out in its comments that truck characteristics reports are now being provided to the States. It did not mention that any other related information would be provided. The reports by themselves are of little assistance to State enforcement agencies because the report is not designed for enforcement purposes. Our review showed that the data used to compile the characteristics report can be analyzed to identify the type of trucks, cargoes, and roads involved in overweight operations. This information would be very useful for enforcement planning and should be provided to States in a useful format.

#### Permanent scales

DOT disagreed with our recommendation that FHWA should develop criteria to insure effective placement and operation of permanent scale facilities. DOT officials said that highway safety, traffic operations, and environmental concerns also are important factors in evaluating proposed locations. They told us that FHWA must evaluate proposed weight enforcement improvements as part of the States total

enforcement program, not as an individual project. A checklist of items to be considered during the evaluation was believed to be more beneficial than prescribing hours of operation or methods of operating permanent scales. Imposing conditions on the construction and operation of permanent scales was considered counterproductive. They pointed out that a network of strategically located weigh stations shows a State's commitment to weight enforcement and that permanent scales by nature have an inherent deterrent effect. In contrast, they said portable scales alone provide so little total weighing capability that there is little or no deterrent to deliberate overloading.

We disagree with DOT's rationale for not establishing firm criteria for building and operating new permanent scales. Our review of State enforcement operations clearly demonstrated that permanent scales are effective weight enforcement devices only under certain specific conditions relating to location and use.

Questionnaire responses show that only 11 percent of the existing 752 permanent scales are very difficult to bypass, and only 21 percent are operated 24 hours a day, 7 days a week. This does not represent a network of strategically located weigh stations or an effective deterrent to overweight operations. This situation also clearly shows the need for location and operational criteria if new scales are to be built. Unless DOT establishes criteria for this purpose, future investments for permanent weigh stations may result only in building more scales which are easily avoided and thus not effective deterrents. High-volume weighing capability is not a deterrent to deliberate overloading when drivers have the option of choosing not to be weighed.

DOT officials said that in this era of the citizens band radio, an effective weight enforcement program must be flexible enough to allow personnel to move or to use new strategies. We agree that flexibility is a critical element in weight enforcement and that new strategies and technology are needed. Permanent scales, however, do not represent new technology and are not flexible. Ongoing technical advances in portable scales and other devices will greatly magnify States weight enforcement capabilities. Therefore, if a proposed permanent facility cannot satisfy highway safety, traffic flow, or environmental concerns and still be effectively located, portable devices may be a more effective use of Federal funds. We believe that newly developed portable scales and sites to use them would provide an effective deterrent to overweight trucks and provide the needed enforcement flexibility. These portable

scales could also be used to patrol bypass routes around existing permanent facilities, thereby making them effective.

Other comments

DOT officials noted that our recommendations did not address several other important areas such as whether existing fines or penalties were deterrents to deliberate overloading, autonomy of State court systems, and States administrative practices for issuing permits. We clearly concluded that low fines are not deterrents and that other penalties such as offloading can be effective. We also discussed problems in assessing penalties in the State court systems. Our recommendation that the Congress prohibit all overweight permits and exemptions on Federal-aid highways except in very specific instances (see app. I) addresses the DOT's concern.

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The Secretary of Transportation has the existing authority to improve State weight enforcement programs. DOT's actions to date have not been sufficient and must be greatly improved to protect the large investment in the Nation's highways. Since more effective penalties is the key to improving State weight enforcement programs, DOT must work closely with the States to develop strong deterrents to overweight trucking.

PROPOSED LEGISLATIONFEDERAL-AID HIGHWAY ACT OF 1979

## A BILL

To improve the administration and enforcement of weight limits on Federal-Aid Highways, for highway safety, and for other purposes.

1       Be it enacted by the Senate and House of Represen-  
2       tatives of the United States of America in Congress  
3       assembled, that this Act may be cited as the "Federal-  
4       Aid Highway Act of 1979."

5       Sec. 102.(a) The first sentence of section 127  
6       of title 23, United States Code, is amended immediately  
7       following "No funds authorized to be appropriated for  
8       any fiscal year under section 108(b) of the Federal-  
9       Aid Highway Act of 1956 shall be apportioned to any  
10      State within the boundaries of which", by striking  
11      "the Interstate System" and inserting, in lieu thereof,  
12      "Federal-Aid highways, including the Interstate System,".

13      (b) Section 127 of title 23, United States Code,  
14      is further amended by striking "ninety-six inches" and  
15      all that follows in the same sentence down through and  
16      including the period and inserting, in lieu thereof,  
17      "ninety-six inches, or the corresponding maximum

1 widths permitted for vehicles using the public highways  
2 of such State under laws or regulations established by  
3 appropriate State authority in effect on July 1, 1956."

4 (c) The third and fourth sentences of section 127  
5 of title 23, United States Code, are repealed.

6 Sec. 103. Section 127 of title 23, United States  
7 Code, is redesignated section "127. (a)", and further  
8 amended by adding at the end thereof the following new  
9 subsections:

10 "(b) Under such regulations as the Secretary shall  
11 prescribe, a State may issue special permits authoriz-  
12 ing the carriage of nondivisible loads such as mobile  
13 homes, generators, building equipment, and the like,  
14 where such loads would exceed the weight limitations  
15 set forth in subsection (a).

16 "(c) Under such regulations as the Secretary  
17 shall prescribe, a State may exempt from the weight  
18 limitations adopted by such State pursuant to subsec-  
19 tion (a)--

20 (1) specialized hauling vehicles in existence  
21 as of the effective date of this subsection; and

22 (2) specialized hauling vehicles manufactured  
23 and assembled after the effective date of this subsec-  
24 tion: Provided, That any such exemption shall be non-  
25 renewable and shall not apply to vehicles manufactured

## APPENDIX I

1 and assembled more than two years following the date on  
2 which the exemption shall have first become effective.  
3 In promulgating regulations implementing subsection (c)  
4 (2), the Secretary shall consider whether the operation  
5 of the specialized hauling vehicle is essential to the  
6 performance of a public service such as fire protection  
7 or trash removal, and in the case of specialized haul-  
8 ing vehicles not performing essential public services,  
9 whether alternative means of transport or carriage  
10 within the otherwise applicable weight limits is  
11 reasonable and practicable.

12 (3) For purposes of this subsection, the term  
13 "specialized hauling vehicle" means--

14 (A) a vehicle that with respect to its unloaded  
15 weight exceeds the weight limits adopted by the State  
16 pursuant to subsection (a); or

17 (B) a vehicle such as a trash compactor, crane-  
18 equipped truck, concrete mixer, or the like that,  
19 as manufactured and assembled, so closely approximates  
20 the weight limits set forth in subsection (a) when  
21 unloaded as to render the normal loaded operation of  
22 the vehicle within otherwise applicable weight limits  
23 impracticable."

24 Sec. 104. (a) Except as provided in subsection  
25 (b), the provisions of this Act shall take effect  
26 on January 1, 1982.

1           (b) The Secretary is authorized to initiate formal  
2 proceedings for proposing and promulgating rules and  
3 regulations implementing this Act on January 1, 1981,  
4 and thereafter as he deems necessary. Initial rules and  
5 regulations implementing this Act shall become effective  
6 no earlier than January 1, 1982.

7           Sec. 105. If any provision of this Act or the  
8 application thereof is held invalid, the remainder of  
9 the Act and its application shall not be affected  
10 thereby.

SECTION-BY-SECTION ANALYSISMajor Provisions

The short title identifies the legislation as the "Federal-Aid Highway Act of 1979."

Purpose of Bill

The purpose of the bill is to improve the administration and enforcement of weight limits on Federal-Aid highways, to protect the Federal investment therein, and to promote highway safety.

Section 102(a)--Application of weight limits to Federal-Aid Highways

As a condition to receiving their full Federal-Aid Highway Act apportionment, existing law (23 U.S.C. §127) generally requires States to adopt and apply Federal weight limits to all Interstate highways within their respective boundaries. Existing law does not apply this requirement to Federal-Aid highways that are not on the Interstate system.

At least 27 States have applied weight limits to Federal-Aid noninterstate highways that are higher than the Federal limits that apply to the Interstate system. These higher limits now apply to over 47 percent, or 360,000 miles, of noninterstate Federal-Aid highways. Because these roads generally are less capable than the Interstates of handling heavy trucks, they are considerably more susceptible to weight related damage. Federal funds are used to build, reconstruct, and replace these roads.

Section 102(a) would correct this situation by requiring States, as a condition to receiving their full apportionment, to adopt and apply the Federal weight limits (or such lower limits as a State may consider necessary) to all Federal-Aid highways within their respective boundaries, including the Interstate system.

Section 102(b) and (c)--Repeal of "Grandfather Clause"

Under present law, States must adopt Federal weight limits only if they had not adopted or authorized limits higher than the current Federal ceilings as of July 1, 1956. Put differently, States that authorized trucks to operate at higher than current Federal limits on July 1, 1956, may under present law retain their higher limits and disregard Federal weight ceilings indefinitely. Higher than Federal limits are now in force in at least 20 States, representing 32 percent of all Interstate miles.

The provision of law that authorizes these higher limits is commonly referred to as the "grandfather clause," a provision which would be repealed by sections 102(b) and (c) of the bill. The need for this amendatory action is clear. First, there are serious interpretive and legal problems, including questions of constitutional dimensions, that render impracticable an independent Federal determination whether a particular State authorized trucks to operate at higher than Federal limits as of July 1, 1956. Second, the higher than Federal limits authorized by the grandfather clause results in additional weight related damage. Third, it creates enforcement problems by encouraging overweight operations in States with lower limits, and causes routing and loading difficulties for interstate trucking operations. And finally, the grandfather clause is inequitable. States that as of July 1, 1956, had weight limits equal to or less than prevailing Federal limits cannot exceed Federal weight ceilings and continue to receive their full apportionment. But States that allowed trucks regardless of weight to operate on their highways as of July 1, 1956, need not adopt Federal weight limits and suffer no loss of funding as a result of their failure to do so. Under present law, these States may adopt any weight limit, regardless of the amount by which it exceeds the otherwise applicable Federal weight ceilings.

Sections 102(b) and (c) of the bill would correct this situation by repealing the grandfather clause, thus requiring States to adopt, as a condition to full funding, the Federal weight ceilings or such lower weight limits as the individual states may consider necessary. This requirement would apply without regard to State laws, regulations, and policies in force prior to the effective date of the bill.

Section 103--Permits and Exemptions

Existing Federal law does not specifically address State issuance of permits or approval of categorical exemptions, of which both authorize trucks or classes of trucks to operate in excess of otherwise applicable weight limits. Under the grandfather clause, however, a State may authorize permits and exemptions under the same circumstances and conditions as were authorized by appropriate State authority as of July 1, 1956. Retention of this authorization would unnecessarily perpetuate the inequities, dissimilar policies, enforcement hardships, and accelerated highway deterioration that have attended the application of higher than Federal limits to the Interstates. Section 103 of the bill, operating in tandem with sections 102(b) and (c), would repeal this authorization and require the establishment of uniform criteria for issuance of permits and approval of exemptions.

Under regulations prescribed by the Secretary, section 103 would authorize States to issue permits for the carriage of nondivisible loads in excess of the otherwise applicable Federal-Aid highway weight limits. The trade term "nondivisible" refers to loads or cargoes that as a practical matter cannot be broken down or separated for carriage by trucks within normal weight limits and which cannot be transported by economically efficient, readily available, alternative modes of transportation. Permits for overweight divisible loads are not authorized by this legislation.

Section 103 also establishes criteria for State approval of categorical exemptions from Federal weight limits. Some vehicles, as manufactured and assembled, exceed the Federal weight limits when unloaded. Some others so closely approximate the Federal limits when unloaded as to render their normal loaded operation within the weight limits impracticable. Section 103 refers to vehicles in either category as "specialized hauling vehicles," a term that will be applied by the Secretary through the regulatory and annual certification process.

Subject to several statutory conditions, a State may exempt specialized hauling vehicles from otherwise applicable weight limits.

First, a State may exempt any "specialized hauling vehicle," as that term is defined by section 103 and the Secretary's regulations, that is in existence as of January 1, 1982--the effective date of the bill's exempting provisions.

Second, a State may exempt specialized hauling vehicles manufactured and assembled after January 1, 1982, only if the Secretary determines that operation of the class or category of the specialized hauling vehicles proposed to be exempted is essential to the performance of a public service or, in the case of specialized hauling vehicles not performing an essential public service, only if the Secretary determines that alternative means of transportation within the weight limits is not reasonable and practicable.

Finally, once a specialized hauling vehicle manufactured and assembled after January 1, 1982, is properly exempted by a State, that particular vehicle may be exempted indefinitely, as may other vehicles that qualify for the same exemption. But to qualify for an exemption, a vehicle must have been manufactured and assembled within 2 years from the date on which the applicable exemption first became effective. Without specific congressional authorization, the Secretary may not thereafter authorize an exemption's renewal or extension. The purpose of this restriction is to ensure that exemptions eventually receive congressional scrutiny, and that exemptions be codified if a compelling need for their retention is demonstrated.

#### Section 104--Effective Dates

The substantive provisions of sections 102 and 103 of the bill shall take effect on January 1, 1982. Provisions of current law proposed to be repealed by sections 102 and 103 shall expire on the same date. To allow the Secretary sufficient time to develop implementing regulations, section 104(b) authorizes the Secretary to initiate formal proceedings for proposing and promulgating implementing regulations on January 1, 1981. Such regulations shall become effective, however, no earlier than January 1, 1982.

#### Section 105--Severability

This section provides the standard severability clause governing validity of the various provisions of the legislation.

## CHANGES IN EXISTING LAW

In compliance with subsection 4 of rule XXIX of the Standing Rules of the Senate and with clause 3 of rule XIII of the Rules of the House of Representatives, as amended, changes in existing law made by the bill are shown as follows (existing law proposed to be omitted is enclosed in double brackets; new matter is underlined; existing law in which no change is proposed is shown in roman):

Chapter 1, section 127 of title 23, United States Code

§127. Vehicle weight and width limitations--  
 [[Interstate System]] Federal-Aid Highways

(a) No funds authorized to be appropriated for any fiscal year under section 108(b) of the Federal-Aid Highway Act of 1956 shall be apportioned to any State within the boundaries of which Federal-Aid highways, including the Interstate System, may lawfully be used by vehicles with weight in excess of twenty thousand pounds carried on any one axle, including all enforcement tolerances; or with a tandem axle weight in excess of thirty-four thousand pounds, including all enforcement tolerances; or with an overall gross weight on a group of two or more consecutive axles produced by application of the following formula:

$$W=500[(LN/N-1)+12N+36]$$

where W=overall gross weight on any group of two or more consecutive axles tw the nearest 500 pounds, L=distance in feet between the extreme of any group of two or more consecutive axles, and N=number of axles in group under consideration, except that 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 thirty-six feet or more: Provided, That such overall gross weight may not exceed eighty thousand pounds, including all enforcement tolerances, or with a width in excess of ninety-six inches, or the corresponding [[maximum weights or]] maximum widths permitted for vehicles using the public highways of such State under laws or regulations established by appropriate State authority in effect on July 1, 1956[[,]].

[[except in the case of the overall gross weight of any group of two or more consecutive axles, on the date of enactment of the Federal-Aid Highway Amendments of 1974, whichever is greater.]] Any amount which is withheld from apportionment to any State pursuant to the foregoing provisions shall lapse. [[This section shall not be construed to deny apportionment to any State allowing the operation within such State of any vehicles or combinations thereof that could be lawfully operated within such State on July 1, 1956, except in the case of the overall gross weight of any group of two or more consecutive axles, on the date of enactment of the Federal-Aid Highway Amendments of 1974. With respect to the State of Hawaii, laws or regulations in effect on February 1, 1960, shall be applicable for the purposes of this section in lieu of those in effect on July 1, 1956.]] Notwithstanding any limitation relating to vehicle widths contained in this [[section]] subsection, a State may permit any bus having a width of 102 inches or less to operate on any lane of 12 feet or more in width on the Interstate System.

(b) Under such regulations as the Secretary shall prescribe, a State may issue special permits authorizing the carriage of nondivisible loads such as mobile homes, generators, building equipment, and the like, where such loads would exceed the weight limitations set forth in subsection (a).

(c) Under such regulations as the Secretary shall prescribe, a State may exempt from the weight limitations adopted by such State pursuant to subsection (a)--

(1) specialized hauling vehicles in existence as of the effective date of this subsection; and

(2) specialized hauling vehicles manufactured and assembled after the effective date of this subsection: Provided, That any such exemption shall be nonrenewable and shall not apply to vehicles manufactured and assembled more than two years following the date on which the exemption shall have first become effective. In promulgating regulations implementing subsection (c)(2), the Secretary shall consider whether the operation of the specialized hauling vehicle is essential to the performance of a public service such as fire protection or trash removal, and in the case of specialized hauling

vehicles not performing essential public services, whether alternative means of transport or carriage within the otherwise applicable weight limits is reasonable and practicable.

(3) For purposes of this subsection, the term "specialized hauling vehicle" means--

(A) a vehicle that with respect to its unloaded weight exceeds the weight limits adopted by the State pursuant to subsection (a); or

(B) a vehicle such as a trash compactor, crane-equipped truck, concrete mixer, or the like that, as manufactured and assembled, so closely approximates the weight limits set forth in subsection (a) when unloaded as to render the normal loaded operation of the vehicle within otherwise applicable weight limits impracticable.



ASSISTANT SECRETARY  
FOR ADMINISTRATION

OFFICE OF THE SECRETARY OF TRANSPORTATION  
WASHINGTON, D.C. 20590

May 16, 1979

Mr. Henry Eschwege  
Director, Community and Economic  
Development Division  
U.S. General Accounting Office  
Washington, D.C. 20548

Dear Mr. Eschwege:

We have enclosed two copies of the Department of Transportation's (DOT) reply to the General Accounting Office (GAO) draft report, "EXCESSIVE TRUCK WEIGHT: An Expensive Burden We Can No Longer Support."

We agree in principle with the report findings which highlight several items contributing to the dilution of the effectiveness of size and weight laws at the Federal and State levels. The report will be helpful to the Department in its stewardship of vehicle, size and weight enforcement program. However, we do not believe the GAO recommendations will eliminate all the problems the Department is faced with in this program. These issues are discussed in detail in the enclosed statement.

If we can further assist you, please let us know.

Sincerely,

A handwritten signature in black ink, appearing to read "Edward W. Scott, Jr.", is written over the typed name.

Edward W. Scott, Jr.

Enclosures

DEPARTMENT OF TRANSPORTATION REPLYTOGAO DRAFT REPORT OF APRIL 1979ON"EXCESSIVE TRUCK WEIGHT: AN EXPENSIVE  
BURDEN WE CAN NO LONGER SUPPORT"SUMMARY OF GAO FINDINGS AND RECOMMENDATIONS

The report demonstrates that the number of overweight trucks using our highways is substantial. Although heavy and overweight trucks are cited as only one of several major factors contributing to the deterioration of the Federal-aid highway system, a case is made for increased activity aimed at controlling heavy trucks.

The report discusses the existing situation and presents recommendations in the following areas:

- Non-Interstate System roads are not protected by Federal weight limits.
- Federal limits do not apply to all Interstate System highways in States which had higher limits in effect in 1956 (21 States are involved for at least one of the weight limits).
- Permits and exemptions lead to weights over the basic limits.
- Problems with variations in State weight laws.
- Federal agencies set a poor example by accepting deliveries and permitting contractor activities on Federal jobs using overweight trucks.

The report then discusses a number of deterrents to overweight operations and makes suggestions for effective weight enforcement. The report concludes by making recommendations to the Congress, the Director of the Office of Management and Budget, and the Secretary of Transportation.

SUMMARY OF DEPARTMENT OF TRANSPORTATION POSITION

The Department of Transportation agrees in principle with the findings of the report. It highlights a number of items which, singly or in combination, contribute to the dilution of effectiveness of existing size and weight laws, both Federal and State. The report, therefore, will be helpful to the Department in its stewardship of the vehicle, size and weight enforcement program.

If, as recommended, Federal law is applied to all Federal-aid highways and the "grandfather clause" is eliminated, many problem areas will be eliminated or mitigated. There would remain, however, the problem associated with systems of fines or penalties that are not deterrents to deliberate overloading. These systems involve the respective court systems which are autonomous entities operating pursuant to State laws. Likewise, untouched by the recommendations of the report are the administrative practices in the States relative to permit issuance which is provided for in the State statutes.

We do not agree completely with the GAO contentions as to the extent of the responsibility for paramount damage attributed to illegally loaded trucks, as well as several of the other findings presented in support of the recommendations, particularly the statement that FHWA has developed no program to counteract the implied adverse effects of the increased weight limits which were authorized by the Federal-aid amendments of 1974.

Finally, we believe a strong possibility exists for a reader erroneously to conclude that elimination of illegally loaded trucks will also solve problems concerning pavement deterioration. Pavement wear is an expected phenomenon which is brought about by many factors some of which are seasonal weather cycles, quality of aggregates used during construction, quality of construction and repeated application of vehicle axle loadings. While it is agreed that illegally loaded trucks accelerate the rate of pavement deterioration we believe a more critical factor on many sections of Interstate highway is the sheer volume of commercial traffic carrying legal loads which has greatly exceeded traffic projections that were made prior to highway design.

30

POSITION STATEMENT

The Federal Highway Administration (FHWA) believes that the draft GAO report, "Excessive Truck Weight: An Expensive Burden We Can No Longer Support," is very well done and will be helpful in our stewardship of the size and weight enforcement program.

The Federal Highway Administrator gave testimony in March of 1974 to the Senate Public Works Committee when energy saving measures including the increase of weight limits to 80,000 pounds gross and axle weights of 20,000 pounds single, and 34,000 pounds tandem on the Interstate System were being considered. He stated, "The evidence available shows that axle load increases in this range will result in increased pavement maintenance costs of about 20 percent on the affected routes," and "The increased

pavement damage would probably not appear during the first year of increased axle loads. Thereafter greater patching and a shorter period of service before complete overlay would result. A rough estimate of these costs is in the range of \$50 to \$100 million annually."

The above quotations are cited to make the point that both the Administration and the Congress were aware that increased damage would result from such a change.

The point is made in the report that no special programs have been proposed to counteract the effects of the increased weights. Practically all of the Federal highway program is eligible for constructing and reconstructing the Federal-aid system. Moreover, program levels have increased since the new weights went into effect in 1974. We do not believe that any particular categorical program aimed at weight damage would be practical.

In our view the report probably overstates the overweight problem and, in the first three chapters, implies that if overweight trucks were brought under control, there would no longer be a deterioration problem. Deterioration is inherent in highway design. The current standard is a design life of 20 years specified in law. In the early years of the Interstate System, the design life specified was much less. It is possible to design pavements that will last much longer and carry many more repetitive loads. Deterioration is normal and most of it results from completely legal loads. It may be that research will show that the most effective design life may be more than 20 years.

[See GAO note, p. 116.]

The report implies that bridges are more sensitive to damage by heavy gross loads than pavements. This is not true for bridges of modern design. As in pavements, the stress is a matter of axle spacing and the interval between loaded trucks on the bridge. Modern bridges are designed to accommodate the heaviest legal loads on a train of trucks all crossing the bridge at one time in both directions. This situation is never replicated in real life. It would be very difficult for a single truck to overload a modern bridge. All overloads are damaging to older under-designed facilities.

There are three recommendations to the Congress contained in the report that taken together would have dramatic and far-reaching impacts if implemented. They are: (1) extension of the Federal weight limits on the Interstate System to all Federal-aid systems, (2) elimination or modification of the so-called "grandfather clause," and (3) revision and standardization of the permit systems operated by the States. We believe all three of these recommendations have merit and deserve detailed investigation, and we believe taken together would solve the lack of standardization problem between States, but we want to reemphasize that the impacts on the States would be far reaching.

We support the recommendations and general thrust of the report. However, we think that three studies, mandated by the Surface Transportation Assistance Act of 1978, should be completed before any legislation is advanced. They are Section 123 "Enforcement of Vehicle Weight Limitations," Section 161 "Vehicle Weights--Interstate," and Section 506 "Requirement for a Cost Allocation Study."

The specific recommendations made by GAO to the Secretary of Transportation along with the response follow:

- (1) "Develop in cooperation with the States a model State weight enforcement program containing effective weight enforcement organization structures, methods, equipment, and laws. The model program should contain an effective legal framework that provides viable alternative measures to apprehend violators and deter overweight operations."

We generally endorse the recommendation that FHWA cooperate with the States and develop a model State weight enforcement program which would address the organization structure, operational methods, enforcement equipment and statutes necessary for the implementation of an effective weight enforcement system. Activities within FHWA that have been performed in conjunction with the annual size and weight certification procedure have provided us a solid basis for agreement on the essential ingredients of any such effective enforcement program. The Motor Carrier Safety Demonstration Program being initiated this year (44 FR1232) involves simultaneous truck weighing and safety inspections at State scale facilities using State personnel under an agreement with the Federal Government who will provide financial assistance for the endeavor. These experiences, along with the more recent knowledge being gained as a result of conducting the several studies called for by the Surface Transportation Assistance Act of 1978, have led us to the conclusions that the development of such a model program will not proceed without problems nor without differences of opinion. More specifically, the overweight penalty and overweight permit surveys called for by Section 123 of the 1978 Act have indicated a wide range among the States in their laws, policies, and procedures for administering these operations.

Notwithstanding our general agreement with the recommended model State enforcement program, FHWA believes the revised State certification of enforcement of vehicle size and weight laws mentioned in the Notice of Proposed Rulemaking (NPRM) (Federal Register of March 14, 1979), when implemented, will result in

effective enforcement programs, particularly if Federal weight laws are made uniform and applicable to all Federal-aid systems. We continue to believe that the wide range of personnel, weighing facilities and budgets devoted to weight enforcement programs throughout the 50 States is the most cogent argument favoring the State programs as outlined in the Notice of Proposed Rulemaking.

- (2) "In developing a model State program, consider those State enforcement elements that appear to be effective tools, such as administrative assessments and processing, offloading, and coresponsibility."

(Response included in the response to Recommendation No. 1).

- (3) "Establish a permanent national weight enforcement information operating group within FHWA to act as a focal point for gathering and disseminating information on weight enforcement organization structures, methods, equipment, laws, and research and to provide ongoing assistance to States."

The foundation for such a group is in place under the Associate Administrator for Engineering and Traffic Operations. The annual certifications of vehicle size and weight enforcement are analyzed in the Office of Traffic Operations pursuant to Federal Highway Program Manual 6-8-5. The Traffic Regulations Branch has accumulated considerable information concerning State weighing programs and weighing equipment as well as being the lead office in the Section 123 study mandated by the Surface Transportation Assistance Act of 1978.

- (4) "Establish weight enforcement certification guidelines based on the model program that will assure adequate levels of State enforcement on a national basis. These guidelines must provide for enforcement of weight limits on all Federal-aid highways in the State including areas outside the jurisdiction of State enforcement agencies, such as urban areas."

We agree that guidelines should be established to assure that State activities will result in adequate levels of enforcement. Such guidelines are referred to in our Notice of Proposed Rulemaking, and are being prepared by FHWA to assist the States in developing their size and weight enforcement program. As part of that program, the referenced Notice of Proposed Rulemaking would have each State develop a forward-looking plan which describes the procedures, resources and facilities that the State intends to devote to the enforcement of its size and weight laws. It appears, therefore, that FHWA has already taken steps to implement this recommendation.

We believe that the significant and substantial problems discussed throughout the report which have been caused by the grandfather clause and the resultant diversity of State size and weight laws and

special permit provisions clearly negate the feasibility of developing uniform enforcement criteria at this time. FHWA will not be in a position to develop uniform enforcement criteria until we have gained experience under state plans of action.

These plans will be in addition to information that each Governor is required to submit with the annual certification. All this will allow the FHWA to make judgements on both past performance and on manpower and resource commitments for the coming year. Both the certification and the prospective plan must be approved in order to assure continuing Federal aid. Failure to live up to the agreed-upon plan will also be grounds for rejecting certification the following year. FHWA also proposes to increase its involvement in the State enforcement programs. Rather than being informed yearly of the extent of the States' operations, FHWA, by the use of their field office staff, will evaluate the size and weight activities of each State at least semi-annually by comparing them to the promises made in the previous plan that was accepted.

- (5) "In conjunction with each State, develop a long-range plan to improve State weight enforcement programs."

(Response included in the response to Recommendation No. 4).

- (6) "Designate an individual within each FHWA Division to act as a truck weight enforcement focal point between the State and FHWA headquarters personnel. This individual should facilitate Federal Assistance to State programs and verify State certification data."

FHWA has designated an individual in each of our regional offices to perform this function. Division Administrators will assign an individual, as appropriate, in the near future.

- (7) "Analyze available information, including the biannual truck characteristics report to provide assistance to State enforcement agencies in identifying overweight truck traffic patterns in their States."

The truck characteristics reports are now being provided to the States.

- (8) "Annually report to Congress the significant findings on its current heavy truck safety study."

This study is being conducted under the Federally Coordinated Program of Research and Development in Highway Transportation. As such an annual report is produced, we would be glad to provide this report to the Congress.

- (9) "To assure that needed resurfacing, reconstruction, and rehabilitation work is completed in time to prevent further deterioration of the Interstate highway system and offset the

damage caused by the 1975 weight increase, we recommend that the Secretary direct FHWA to develop a program to provide the States funding under this program adequate to meet identified Interstate needs."

This is largely a matter of funding level as the Resurfacing, Reconstruction, and Rehabilitation Program is specifically designed to provide funding in this area. In addition, the entire Federal-aid program is available for rebuilding or replacing roads that are structurally or functionally obsolete. The Department regularly communicates with the Congress with respect to highway needs and program levels.

(10) "To assure that Congress is providing the information to establish the most economical and fuel-efficient weight limits for the Federal-aid highway system and insure the preservation of the system, we recommend that the Secretary see to it that the current weight limit study assess all related areas. In addition to areas currently being considered, the study should:

- Determine the fuel consumption impact on all vehicles of the additional deterioration caused by heavier truck weights.
- Specifically define the economic effect of changes in weight laws, the cost and benefits, who will pay the costs, and who will receive the benefits.
- Determine the impact of any weight limit change on the current highway user tax structure, and what changes may be needed to assure equitable allocation of costs."

We assume that "the current weight limit study" in the above recommendation refers to the studies called for in Sections 161 and 506 of the Surface Transportation Assistance Act of 1978. The study designs for both of these are in progress. We will give full consideration to those recommendations as we pursue our congressional mandate.

(11) "Develop criteria for using Federal funds to construct permanent weight scales to insure effective placement and operations of these facilities. The criteria should require locations that are difficult to bypass, establish minimum hours of operations and require patrolling of bypass routes while the scales are in operation."

Prior to approving a project for construction of permanent weighing facilities the FHWA Division Administrator must consider several interrelated criteria. Each proposed location must be evaluated not only in light of truck weight enforcement concerns but also for highway safety, traffic operations and environmental concerns. The project must be considered as a part of the total weight enforcement program in the State rather than as an individual enforcement

improvement. A checklist of items to be considered by the Division Administrator during his evaluation would be more beneficial to the State's weight enforcement effort than prescriptions which set criteria in terms of specific hours of operation or the manner in which portable scales shall be used, for example.

An effective vehicle weight enforcement program in a State is a dynamic operation involving constant action and reaction. In this era of the CB radio when the location of enforcement activities is broadcast over a wide area, the commander of the weight enforcement units must have the authority and flexibility to redeploy his personnel as the situation dictates, or to implement new strategies if the enforcement effort is to be effective. The necessary equipment, i.e., weigh stations and portable scales must be available, but the imposition of fixed conditions on their construction and operation can be counterproductive to the effectiveness of the total weight enforcement program. Furthermore, a project agreement should not be so prescriptive as to inhibit a State from incorporating new technological developments into their weighing program.

There is an inherent deterrent aspect of permanent scales that should not be overlooked. A network of strategically located weigh stations in a State are overt evidence of a State's continuing commitment to enforcement of the weight laws. Conversely, if only portable scales are used in a State it is the judgement of the FHWA that the total weighing capability with these units is so low that there is little or no deterrent to deliberate overloading.

A meaningful evaluation of a State's total weight enforcement efforts as called for in the aforementioned NPRM on Certification of Size and Weight Enforcement will be more beneficial in assuring an effective weight enforcement program than prescribing conditions relative to the operation of individual weigh stations or scales that have been purchased with Federal-aid funds.

Additional detailed comments have been provided to the staff of the U.S. General Accounting Office.

The report also contains a recommendation to the Director, Office of Management and Budget, as follows:

"Although enforcement of weight laws is a State responsibility we believe that, when practical, Federal agencies should assist State enforcement efforts. We recommend the Director, in cooperation with the Secretary of

Transportation, should establish a Government-wide policy to prevent Federal agencies from directly or indirectly promoting overweight truck traffic."

The Department of Transportation continues to give strong support to the principle that all Federal agencies should accept deliveries only from vehicles that have complied with State weight laws. This was the thrust of the Secretary of Transportation's letter of November 1978 to 12 Federal agencies.

GAO note: DOT is referring to the possibility of bridge collapse. Our report, based on Highway Administration information, instead points out that each overweight or excessively heavy truck overstresses the bridge and cumulatively reduces the number of years that the bridge will be able to support the weight it was originally designed to carry.



EXECUTIVE OFFICE OF THE PRESIDENT  
OFFICE OF MANAGEMENT AND BUDGET  
WASHINGTON, D.C. 20503

MAY 5 1979

Allen R. Voss  
Director, Community and Economic Development Division  
General Accounting Office  
Washington, D.C. 20548

Dear Mr. Voss:

This is in response to your April 6 letter to OMB requesting comments on your proposed report to the Congress entitled "Excessive Truck Weight: An Expensive Burden We Can No Longer Support". We have several comments on the draft report.

The report indicates that Federal agencies receive and ship commodities that often exceed State weight limits and cause highway damage. GAO found examples of overweight trucking involving six Federal agencies. In November 1978 the Secretary of Transportation wrote to twelve Federal agencies requesting their assistance in the effort to stop overweight shipments. Seven agencies have responded favorably but five have not responded. GAO concludes that OMB, in cooperation with DOT, "should establish a Government-wide policy to prevent Federal agencies from directly or indirectly promoting overweight truck traffic".

We agree that Federal agencies should be setting a better example in complying with State truck weight laws. OMB will be discussing this issue with DOT to determine the means by which Federal compliance can be improved. If, as recommended by GAO, a Government-wide policy is to be put into effect, we would want to make sure that there is a pre-existing means for policing the policy. We would not want to promulgate a policy which can not or will not be enforced.

Second, we believe that the following statement on page 4 should be revised:

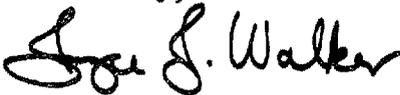
"In early 1977, GAO reported that FHWA officials believed Federal-aid highways were deteriorating faster than they had anticipated and were wearing out 50 percent faster than they were being repaired. Late that year, DOT reported to Congress that the Nation's highway pavement condition shifted from good to fair from 1970 to 1975."

The first sentence appears to refer to an outdated statement made by a former FHWA official which was unsubstantiated by analysis but which has been often repeated in the trade press in the past three to four years. The second sentence, we believe, overstates the results of the report in question. The summary section of the report indicates the following (page 8): "Over the 6-year period there was a definite shift of urban mileage with pavement in good condition toward the fair range, although the total percentage of mileage in need of resurfacing remained fairly constant. In rural areas, there was little corresponding change." [See GAO note below.]

The statement made on page 4 of your draft report is repeated on other pages (e.g., page 2).

I hope these comments are useful in the preparation of your final report.

Sincerely,

  
for Franklin D. Raines  
Associate Director for  
Economics and Government

cc: Tom Downes, FHWA

GAO note: Our study does not overstate the results of the report. Page 7 of this summary contains the following: "A summary of the changes in system conditions may be illustrated as follows:

1. Wear and Tear  
Pavement Condition -- Movement of pavement conditions from good to fair. No increase in poor pavement condition."

Similarly, on page 14 under Findings:

While there was no apparent increase in the amount of pavement in poor or deficient condition, "\* \* \* there was evidence of a shift of mileage from good condition to fair condition. Nationally, it is evident that in general the quality of highway pavement declined from 1970 to 1975."



4. At any given time, highway maintenance organizations may have a certain amount of maintenance work that must be temporarily deferred. In your opinion how much of a problem, if any, is deferred maintenance on your State System? (Check one)

- 1.  A very serious problem
- 2.  A serious problem
- 3.  A moderate problem
- 4.  A minor problem
- 5.  Little or no problem (Skip to question 6)

5. To what extent, if any, do the following factors contribute to the need to defer maintenance on your state system? (Check one box per line.)

	1	2	3	4	5
	Very large extent	Substantial large extent	Moderate extent	Some extent	Little or no extent
Inflation					
Decreased tax revenues					
Increased maintenance due to:					
Recent severe weather					
Age of highways					
Other (Please specify.) _____					

6. In your opinion are the following components of your State Highway System currently maintained better, worse, or the same compared to five years ago? (Check one box per line.)

	1	2	3	4	5
	Significantly better	Generally better	About the same	Generally worse	Significantly worse
Pavement					
Shoulders					
Drainage					
Guardrails					
Others (Please specify.) _____					

Heavy Trucks

7. In your opinion, approximately what percentage of the average daily traffic on the following highways of your State System is heavy truck traffic (over 26,000 pounds)? (Enter percent.)

- On the Interstate system \_\_\_\_\_ %
- On the non-Interstate primary \_\_\_\_\_ %
- On the secondary system \_\_\_\_\_ %
- Other roads (Please specify.) \_\_\_\_\_ %
- \_\_\_\_\_ %
- \_\_\_\_\_ %

8. In your opinion, how much, if at all, have the following characteristics of heavy truck traffic, (over 26,000 pounds) on your State System, changed over the past 10 years? (Check one box for each row.)

	1	2	3	4	5
	Increased greatly	Increased moderately	Remained the same	Decreased moderately	Decreased greatly
Total number of trucks					
% of trucks in overall traffic					
Volume of through truck traffic					
Volume of local truck traffic					
Average truck weight					

9. Consider the fact that some roads currently in service may not have been designed or engineered to handle specific truck traffic loads for a specific design life. Other roads may have been designed to handle lower loadings than they are currently experiencing. In your opinion what percentage of the following types of highway mileage on your State System is adequately engineered to accommodate the current volume of heavy truck traffic (over 26,000 pounds) without a reduction in serviceable life? (Enter percents.)

Type Highway on State System	Percent Adequately Designed for heavy truck traffic
Interstate	_____ %
Primary	_____ %
Secondary	_____ %
Other (Please specify.) _____	_____ %
_____	_____ %

Highway Deterioration

10. In your opinion, to what extent, if any, are the following factors contributing to highway deterioration on your State System? (Check one box per line.)

	1 Very great extent	2 Substantial extent	3 Moderate extent	4 Some extent	5 Little or no extent
Lack of Funds					
Deferred Maintenance					
Age of Roads					
Inadequate Design					
Traffic:					
Automobiles					
Legal Heavy Trucks					
Trucks under special permits					
Illegal overweight trucks					
Other (Please specify.)					

Attempts To Raise Weight Limit

11. Since January 1, 1974, how many times have bills been introduced in your legislature to raise the Interstate weight limit? (Enter number.)

\_\_\_\_\_ Number of times bills introduced.

12. If your Interstate weight limits have been raised since January 1, 1974, what was your Highway Department's position on the weight increase? (Check one.)

- 1.  Supported the weight increase
- 2.  Did not support the weight increase
- 3.  No opinion
- 4.  Weight limits have not been raised

13. If your Interstate weight limits have not been raised since January 1, 1974, what is the current opinion of your State Highway Department on raising the Interstate weight to the new Federal limit? (Check one.)

- 1.  Support increased weight limit
- 2.  Do not support increased weight limit
- 3.  No opinion
- 4.  Weight limits have been raised

Research & Studies

14. In the last 3 years, has your State completed any studies in the following areas? (Check one box per line.)

	1 Yes	2 No
Weight enforcement problems nationwide		
Weight enforcement problems in your state		
Site selection of permanent scales		
Actual or potential impact of Federal weight limit increase		
User tax structure or tax allocation		
Economic benefits of heavy trucking versus their effect on highways		
Economic benefit of overweight truck operation		
Impact of overweight trucks on:		
Payment and bridge conditions		
Maintenance costs		
Highway serviceable life		
Truck safety		
Accidents or fatalities		

Comments

15. What are the safety hazards, if any, caused by heavy trucks in your State?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

16. What is the safety impact of overloading a heavy truck?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

17. If you have additional comments on any of the items in the questionnaire, or any related topics, please express your views in the space below. Use back or additional sheet if you need more space. Your comments are greatly appreciated.

II. WEIGHT LAWS

The purpose of this section is to obtain data on the weight limits, permit laws, and other provisions of weight laws in your State. We realize that legal provisions differ greatly across the nation and we have attempted to provide a format that will be readily adaptable to all states. In the event that the format of a particular question does not fit the situation in your State, however, we would appreciate any additional information or comment you feel is necessary.

After completing this section please return it with sections I and III in the postage paid self addressed postage paid envelope provided.

Respondent Information

1. Please provide the name, title, and telephone number of person completing Section II.

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Telephone: \_\_\_\_\_  
area code                      number

Weight Limits

2. What Interstate weight limits were in effect in your State on July 1, 1956, January 1, 1974, and what are the current (as of September 30, 1978) Interstate weight limits? (Enter weights.)

	<u>July 1, 1956</u>	<u>Jan. 1, 1974</u>	<u>Current</u>
Single axle weight	_____	_____	_____
Tandem axle weight	_____	_____	_____
Gross vehicle weight	_____	_____	_____
Other (please specify)	_____	_____	_____
	_____	_____	_____
	_____	_____	_____

3. Does your State currently have different weight limits for non-Interstate highways? (Check one.)

- 1.  YES (If yes, continue.)
- 2.  NO (If no, go to question 6.)

4. To what highways do these different weight limits apply? (Check one.)

- 1.  All non-Interstate
- 2.  Non-Interstate primaries only
- 3.  Other highways (Please specify.)  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

5. What non-Interstate weight limits were in effect in your State on July 1, 1956, January 1, 1974, and what are the current (as of September 30, 1978 non-Interstate weight limits? (Enter weights.)

	<u>July 1, 1956</u>	<u>Jan. 1, 1974</u>	<u>Current</u>
Single axle weight	_____	_____	_____
Tandem axle weight	_____	_____	_____
Gross vehicle weight	_____	_____	_____
Other (Please specify.)	_____	_____	_____
	_____	_____	_____

6. Does your State have any general restrictions (i.e. seasonal, type of road etc.) on its basic maximum weight limit? (Check one.)

- 1.  Yes
- 2.  Yes (Please specify.) \_\_\_\_\_  
 \_\_\_\_\_

Overweight Permits

Question 7 through 20 deal with overweight permits. In answer of these questions please consider only permits issued for general travel on state highways (i.e. permits not limited to specific sections of road etc.).

7. Does your State issue overweight permits for single trips of non-divisible loads? (Check one.)

- 1.  Yes
- 2.  No (Skip to question 9)

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8. How many overweight permits were issued for single trips of non-divisible loads in 1977 (Jan. 1 - Dec. 31)? (Enter number.)

\_\_\_\_\_ Number issued

9. Does your State issue overweight permits for single trips of divisible loads? (Check one.)

1.  Yes

2.  No (Skip to question 11.)

10. How many overweight permits were issued for single trips of divisible loads in 1977 (Jan. 1 - Dec. 31)? (Enter number.)

\_\_\_\_\_ Number issued

11. Does your State issue overweight permits for multiple trips of non-divisible loads? (Check one.)

1.  Yes

2.  No (Skip to question 15.)

12. How many overweight permits were issued for multiple trips of non-divisible loads in 1977 (Jan. 1 - Dec. 31)? (Enter number.)

\_\_\_\_\_ Number issued

13. Are overweight permits for multiple trips of non-divisible loads limited to a specific number of days? (Check one.)

1.  No

2.  Yes (Please specify maximum number of days.)

\_\_\_\_\_ Maximum Days

14. Are overweight permits for multiple trips of non-divisible loads limited to a specific number of trips? (Check one.)

1.  No

2.  Yes (Please specify maximum number of trips.)

\_\_\_\_\_ Maximum Trips

15. Does your state issue overweight permits for multiple trips of divisible loads? (Check one.)

1.  Yes

2.  No (Skip to question 21.)

16. How many overweight permits were issued for multiple trips of divisible loads in 1977 (Jan. 1 - Dec. 31)? (Enter number.)

\_\_\_\_\_ Number Issued

17. Are overweight permits for multiple trips of divisible loads limited to a specific number of days? (Check one.)

1.  No

2.  Yes (Please specify maximum number of days.)

\_\_\_\_\_ Maximum Days

18. Are overweight permits for multiple trips of divisible loads limited to a specific number of trips? (Check one.)

1.  No

2.  Yes (Please specify maximum number of trips.)

\_\_\_\_\_ Maximum Trips

19. Under which of the following conditions do you issue permits for multiple trips of divisible loads in your State? (Check all that apply.)

1.  One permit for each vehicle

2.  One permit for a specified number of vehicles (Specify maximum number \_\_\_\_\_.)

3.  One permit for a fleet or unspecified number of vehicles

4.  Other (Please specify.) \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

20. Under permits for multiple trips of divisible loads, what were the maximum weight limits allowed in your State on July 1, 1956, January 1, 1974, and what are the current (as of September 30, 1978) limits? (Enter weights.)

	<u>July 1, 1956</u>	<u>Jan. 1, 1974</u>	<u>Current</u>
Single axle weight	_____	_____	_____
Tandem axle weight	_____	_____	_____
Gross vehicle weight	_____	_____	_____
Other limits (Please specify.)	_____	_____	_____
	_____	_____	_____

Special Permits and Exemptions

21. Does your State issue any overweight permits that are limited to specific highways, sections of highways or areas? (Check one.)

1.  No
2.  Yes (Please explain.)
- \_\_\_\_\_
- \_\_\_\_\_

22. Are trucks carrying the following commodities granted special permits and/or exemptions or are they subject to general weight provisions of your State's laws? (Check all that apply.)

<u>Commodity</u>	<u>Special Permits</u>			<u>Subject to general provisions</u>
	<u>1</u>	<u>2</u>	<u>3</u>	
1. Coal				
2. Petroleum products				
3. Cement or Concrete				
4. Excavation Materials				
5. Farm Products				
6. Timber				
7. Other (Please specify.)				
_____				
_____				
_____				

23. Please attach a list of the fees and costs associated with obtaining all overweight permits in your State (regular and special). Label this attachment #23.

Other Provisions

24. Has your penalty structure for overweight violations changed in the last 12 months? (Check one.)

1.  Yes If yes, please explain \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

2.  No

25. Does your State weight law contain the following provisions? Check one box for each row.)

	<u>Contains the provision</u>	
	<u>1</u>	<u>2</u>
1. If cargo cannot be made legal by shifting load or other means, require mandatory off loading of the overweight portion of the cargo before allowing the truck to proceed.		
2. Make bill of lading or certified weight slip, legal bases for overweight citation.		
3. Make it illegal for a person or firm to ship an overweight load		
4. Hold both the shipper and the driver responsible for overweight violations		
5. Require simultaneous weighing of all axles		
6. Allow the same people who run the scales to issue overweight citations		
7. Retain and use overweight truck citation records to identify chronic violators		
8. Make driving an overweight truck a moving violation		

26. How many miles, if any, does your State law permit an enforcement officer to require a truck to go to a scale for weighing? (Enter miles or check.)

- \_\_\_\_\_ Miles
- Not allowed

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27. At least one state has a provision assessing overweight trucks for damages based on a per pound charge for the amount of overweight. This charge is automatically assessed against anyone found guilty of an overweight violation, and is in addition to any discretionary fine or court cost assessment. Does your State law contain this or a similar non-discretionary damage assessment? (Check one.)

- 1.  No
- 2.  Yes it contains this provision
- 3.  It contains a similar provision (Please explain.)

---



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28. In addition to the provisions mentioned in questions 25-27, do you have any other provisions of your State law that you feel are particularly effective? (Check one.)

- 1.  No
- 2.  Yes (Please explain.)

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29. If you have any additional comments on any of the items in the questionnaire or any related topics, please express your views in the space below. Use additional sheets if you need more space. Your comments are greatly appreciated.

APPENDIX IV

APPENDIX IV

III. Enforcement Program

The purpose of this section is to obtain data on the enforcement programs and methods in your State, and to solicit comments from your weight enforcement experts on related issues. We realize that enforcement efforts, methods and problems vary significantly from state to state and we have attempted to provide a format that can be readily adapted to all states. In the event that the format of a question does not fit the situation in your State, we would appreciate any additional information or comment you feel is necessary.

After completing this section, please return it with Sections I and II in the self addressed postage paid envelope provided.

Respondent Information

1. Please provide the name, title and telephone number of the person completing Section III.

Name: \_\_\_\_\_
Title: \_\_\_\_\_
Telephone: \_\_\_\_\_
area code number

Agencies Involved in Enforcement

2. In your State how many state agencies are involved in weighing trucks for weight enforcement purposes? (Enter number.)

\_\_\_\_\_ Number of agencies

3. Which of the following State agencies weigh trucks for weight enforcement purposes? (Check all that apply.)

- 1. [ ] State Highway Patrol
2. [ ] State Police
3. [ ] Highway Department
4. [ ] Motor Vehicle Registration Division
5. [ ] Other (Please specify.) \_\_\_\_\_

4. Approximately what is the current fiscal year operating budget (non-capital) for weight enforcement activities in your State? (Enter amount.)

\$ \_\_\_\_\_ Budget Amount

5. To your knowledge, do any local governments in your State currently have independent weight enforcement programs? (Check one.)

- 1. [ ] Yes
2. [ ] No (Skip to Question 7.)
3. [ ] Uncertain (Skip to Question 7.)

6. If any local governments do have independent weight enforcement program, please identify the localities below. (Use additional sheets if necessary label #5.)

\_\_\_\_\_
\_\_\_\_\_
\_\_\_\_\_

7. Did your 1977 Weight Enforcement Certification to FHWA include only data and statistics regarding your State level enforcement efforts or did it also include data and statistics regarding any independent local weight enforcement efforts (non state)? (Check one.)

- 1. [ ] Only data and statistics regarding State level enforcement efforts included
2. [ ] Data and statistics regarding independent local weight enforcement efforts included

NOTE: IN ANSWERING QUESTION 8 - 27 CONSIDER ONLY YOUR STATE LEVEL WEIGHT ENFORCEMENT EFFORTS.

8. Approximately on how many miles of highway (all types) are your State level enforcement efforts carried out? (Enter miles.)

\_\_\_\_\_ Miles

Permanent Scales

9. How many State owned permanent scale sites are currently in use in your State's weight enforcement program? (Enter number.)

\_\_\_\_\_ Number Permanent Scale Sites

NOTE: IF NO PERMANENT SCALES SKIP TO 14.

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10. Consider how easily overweight trucks can bypass your existing permanent scales. How many of the permanent scales in your State fall into each of the categories below. (Enter number of scales, if any, for each category.)

<u>Number</u>	
_____	Very easily bypassed
_____	Easily bypassed
_____	Borderline
_____	Difficult to bypass
_____	Very difficult or impossible

11. How many of the total number of permanent scale sites currently in use in your State are open for the following lengths of time? (Enter number of scales, if any, for each category.)

<u>Number of Scales</u>	<u>Length of Time Open</u>
_____	168 hours a week
_____	120-167 hours a week
_____	72-119 hours a week
_____	24-71 hours a week
_____	less than 24 hours a week

12. If you do not operate all permanent scales sites 168 hours a week, briefly explain why.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

13. Overall, to what extent, if any, are permanent scales effective in apprehending overweight trucks on the entire Interstate system in your State? (Check one.)

1.  Very great extent
2.  Substantial or great extent
3.  Moderate extent
4.  Some extent
5.  Little or no extent

Portable Scales

14. How many State owned portable scales are currently in use in your State's enforcement program? (Enter number.)

\_\_\_\_\_ Number Portable Scales

NOTE: IF NO PORTABLE SCALES SKIP TO 17.

15. How often, if at all, do you use your portable scales for each of the following reasons? (Check one box for each row.)

	1	2	3	4	5
	Regularly	Frequently or not regularly	Occasionally	Seldom	Very seldom or never
1. Preventing bypassing of permanent scales					
2. Patrolling industrial or construction areas					
3. Patrolling geographic areas of responsibility					
4. Responding to complaints					
5. Other (Please specify.)					
_____					
_____					
_____					

16. We are interested in how the states use their portable scales; how personnel are assigned; if special weight teams are used; etc. Please give a brief description of how portable scales are used in your state. (Attach additional sheets if necessary.)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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17. Other than State owned permanent or portable scales, do you use any other scales as part of your State's weight enforcement program? (Check one.)

- 1.  No
- 2.  Yes (Please specify what kind and how many.)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

18. How many positions (full time or equivalent) are currently filled by people who have as their primary responsibility the weighing of trucks as part of your State weight enforcement program? (Enter number.)

\_\_\_\_\_ Number of Positions

19. Do all, some, or none of your weight enforcement scale operations have the authority to issue overweight citations to the trucks they weigh? (Check one.)

- 1.  All (Please skip to 22.)
- 2.  Some (Please explain.)

\_\_\_\_\_

\_\_\_\_\_

3.  None

20. If scale operators cannot issue overweight citations to the trucks they weigh, how are citations usually issued to the violators they detect? (Check one.)

- 1.  By police officers accompanying the weight team
- 2.  By police officers on call
- 3.  Other (Please specify.) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

21. To what extent, if at all, does the need for police assistance to issue citations hamper weight enforcement in your State? (Check one.)

- 1.  Very great extent
- 2.  Substantial or great extent
- 3.  Moderate extent
- 4.  Some extent
- 5.  Little or no extent

22. In your State, do individuals other than those hired primarily to weigh trucks currently weigh trucks for enforcement purposes? (Check one.)

- 1.  No
- 2.  Yes (Please explain.) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Weight Enforcement Efforts

23. How often, if ever, do state enforcement personnel weigh trucks for enforcement purposes on the following types of highways in your state? (Please check one box for each line.)

Type Highway	Frequency				
	1	2	3	4	5
	Very often	Often	Occasionally	Rarely	Never
Urban Interstate					
Urban non-Interstate					
a. On State Highway System					
b. Not on State Highway System					
Roads under other local jurisdiction					
a. On State Highway System					
b. Not on State Highway System					

24. If in question 23 above you indicated that you a) rarely or b) never enforce weight limits on any roads listed, briefly explain why.

a) Rarely  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

b) Never  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

25. From October 1, 1976 to September 30, 1977, approximately how many trucks were weighed, as part of your weight enforcement efforts, on permanent scales and how many were weighed on portable scales? (Enter number of trucks weighed.)

\_\_\_\_\_ Number weighed on Permanent scales  
 \_\_\_\_\_ Number weighed on Portable scales

26. From October 1, 1976 to September 30, 1977 approximately how many citations were issued to overweight trucks as a result of permanent scale weighings and how many were issued as a result of portable scale weighings? (Enter numbers.)

\_\_\_\_\_ Citations issued at Permanent scales  
 \_\_\_\_\_ Citations issued at Portable scales

27. Of the total number of citations issued from October 1, 1976 to September 30, 1977 to overweight trucks, approximately how many were disposed of in the following ways? (Enter number for each disposition.)

<u>Number</u>	<u>Disposition</u>
_____	Convicted
_____	Acquitted
_____	Dismissed
_____	Other
_____	Unknown

Federal Agencies

28. Do you know of Federal agencies in your State that accept deliveries from illegally overweight trucks? (Check one.)

1.  Yes. (Please give examples.)

\_\_\_\_\_  
 \_\_\_\_\_

2.  No

29. Do you know of Federal agencies in your State that ship illegally overweight loads? (Check one.)

1.  Yes. (Please give examples.)

\_\_\_\_\_  
 \_\_\_\_\_

2.  No

30. Do you know of Federal agencies in your State that prevent their contractors on Federally funded projects, from shipping or accepting deliveries from illegally overweight trucks? (Check one.)

1.  Yes. (If yes, please explain.)

\_\_\_\_\_  
 \_\_\_\_\_

2.  No

Miscellaneous Questions

31. If you had \$1 million to use for the purchase of additional weight enforcement equipment, in your opinion, what would be the most effective way to spend the money? (Check one.)

1.  Build one well-located permanent scale

2.  Build several sites for use of portable scales

3.  Other equipment (Please specify.)

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

32. If trucks hauling specific commodities in your State are often illegally overweight, please list the commodities and briefly describe the areas of your State and the kinds of roads these overweight trucks travel.

<u>Type of Commodity</u>	<u>Area of State/Kind of Roads</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

In order to obtain more specific information about the situation in your State, we would appreciate narrative responses to the following questions.

33. What additional legal provisions or enforcement tools could improve the effectiveness of your weight enforcement program?

34. If you wanted technical assistance or advice on ways to improve your weight enforcement program, who would ask for assistance?

35. Other than financial assistance, what could FHWA do to help you improve your weight enforcement program?

36. If you have any additional comments on any of the items in the questionnaire, or any related topics, please express your views in the space below. Use additional sheets if you need more space. Your comments are greatly appreciated.

(342650)

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