

continue to communicate and cooperate and work through the roadblocks of the future. Thank you.

## **HIGHWAY DESIGN—A RISKY BUSINESS**

*by Daniel S. Turner*

It is my pleasure to participate in this Forum.

My topic is "Highway Design—A Risky Business." The other speakers on this panel are going to be delivering similar presentations, all involved with the role of safety as it relates to highway design, construction, and maintenance. I'm going to deviate slightly from that topic by taking a different viewpoint. This is a viewpoint that you might not have expected. I'm going to illustrate the rapid growth of litigation as a driving force in highway safety.

### **Legal Issues Emerge**

Highway engineers design and install warning signs along modern roadways. These signs have a specific purpose. They alert a motorist to a possible hazard so that the motorist has the opportunity to adjust his or her driving path and avoid an accident. I use a lot of slides in my presentations and one of my favorite slides shows a warning sign that highway agencies should have heeded 20 years ago. The message on the sign is simple, "Warning—Litigation Ahead." When I use this slide it never fails to draw a good laugh from the audience. I usually pause as the laughs slowly continue around the room. I can almost read the thoughts of people in the room as they contemplate the sobering menace of suits. I can see the smiles fade as they wish that they had been warned of the amount of money they were about to lose in court.

### **The Problem**

I recently read that there are now 800,000 attorneys in the United States. In an audience of highway managers and safety coordinators, this fact is enough to cause scowls and long faces. When I ask members of the audience for their definitions of attorneys, I usually receive comments as severe as, "A bunch of blood-sucking leeches." This is certainly a severe reaction, apparently highway people are not enamored with lawyers.

Even though it is easy to blame the increase in highway suits on the large number of attorneys, that is not a fair analogy. The number of suits has skyrocketed because Americans have become the most litigious society on the face of the earth. We love to sue anyone, anytime, for anything. Twenty thousand civil suits are filed in the United States each day. This incredibly high number of suits is not a sudden occurrence. The private sector has become accustomed to the legal system and to being sued. Now that suits have spread to the public sector, government managers are having trouble accepting the concept of being held liable for their actions.

## Data On Legal Issues

Everyone is talking about highway suits and the amount of money being lost in court, but there are very few good sources of information upon which to assess the national picture. If accurate data were available on the national picture, it might help states and local governments organize programs to minimize their losses in court. To provide national trends, I used surveys performed by the American Association of State Highway and Transportation Officials (AASHTO) to investigate the year-by-year change in highway liability. The AASHTO Administrative Subcommittee on Legal Affairs conducted six nationwide surveys on sovereign immunity. The 1978, 1979, 1981, 1983, 1987, and 1988 reports of this subcommittee provide particularly good data.

The remainder of my presentation will cover several aspects of the highway tort liability issue. The decline of sovereign immunity, the annual levels of claims, the amount of pending claims, the settlements and judgments per year, and types of claims will be covered.

### Sovereign Immunity

The King of England created a court system so that the common people could sue each other. However, he specifically prohibited suits against himself. The English courts later held that the government was an extension of the King and could not be sued, giving rise to the concept of the government as immune to suits (sovereign immunity) simply because it was the government. The sovereign immunity concept was adopted in the United States in an 1812 court ruling.

For 150 years, government in the United States practiced being sovereign, not allowing itself to be sued. During the 1960s the courts began a wholesale reversal of sovereign immunity, allowing individual states to be sued. One state after another was shocked by court decisions. This sweeping trend in the loss of sovereign immunity led to the initiation of the AASHTO surveys. By 1978, when the first survey was conducted, only 31 percent of the states still possessed immunity. By 1988 this had eroded to 18 percent.

Today, almost all states that lost complete sovereign immunity have passed legislation to institute a limited form of immunity through some form of tort claims act. Usually, these acts allow the state to be sued upon certain grounds, using certain prescribed legal procedures, within a prescribed time frame.

### Tort Claims

The number of tort claims filed against state transportation agencies between 1972 and 1987 is shown in Table 1 (*Tables and Figures are listed at the end of this speech*), a substantial number of claims and a significant increase in claims is reflected in this table. After 1981 not all states participated in the survey and the responses were incomplete. I wasn't able to study the trends of individual states and to extrapolate the data to

represent full reporting. Minimum and maximum estimates of the probable number of nationwide claims were prepared for the 1981-88 period.

The data from Table 1 have been plotted on Figure 1. Between 1972 and 1980 the reported number of cases increased in a manner that resembled a compound interest curve. Between 1980 and 1987, the effects of under reporting by the states may be seen on the graph. Conservative and liberal estimates were prepared (using the procedures described previously) and were added to Figure 1. They generally conform to the shape of the curve prior to 1980. Estimates indicate that as of 1987, the range of cases lay between 25,000 and 29,500. If the actual number of suits could be determined, it would probably fall somewhere near the top of this bracket.

My best estimate is that there were between 27,000 and 29,000 claims and suits filed against state departments of transportation in 1987. This represents a 1,300 percent increase in 15 years, which corresponds to a compound growth rate of slightly less than 19 percent per year over the reporting period.

No wonder highway agency managers were confounded by the problem. If these suits were against some specific type of industry, a growth rate of 19 percent per year for an extended period would have attracted continuous headlines. Industry would have devoted the concentrated efforts of top management experts to attacking and solving this problem.

### Pending Claims

Data on the number and dollar amount of pending claims also was evaluated. The number of pending claims is included in Table 1. As expected, there was a substantial backlog of suits. By 1983, at least five states each faced more than 1,000 pending claims. Other states were seeing suits and claims accumulate rapidly.

The dollar value of pending claims is shown on Figure 2. It reflects the same type of curve seen previously, constantly increasing. By 1988, there were at least \$15.3 billion in pending claims against state transportation agencies. Keep in mind that not all of the states that participated in the AASHTO survey responded to the question about pending claims. The \$15.3 billion figure represents responses from slightly more than half the states.

Even when the most conservative of estimates is used, the pending claims represent overwhelming values. There were more than 20,000 pending suits representing at least \$15.3 billion in 1987. This value exceeded the total Federal Highway Administration funds available to state governments in the most recent year. Fortunately, the amount that states actually pay in judgments and settlements is usually far less than the face value of these suits.

### Settlements And Judgments

The amounts paid by state transportation agencies in settlements or judgments for tort issues are shown in Table 1 and on Figure 3. The data and figure represent the actual values reported by the states. The general shape of the curve is familiar by now. It started slowly but seems to be accelerating

rapidly at the present time. Losses zoomed from a low of \$6,297 in FY '75 to a high of \$104,243,000 in FY '85. The losses were thus 17 times larger than they have been in just 11 years previously.

Settlements and judgments typically occur several years after the initial suit is filed, especially for those cases involving the largest sums of money. Thus, the most difficult cases filed in the early 1980s might not have been resolved in time to be included in Figure 3. If the eventual losses could be plotted in the year in which the claims were filed, the slope of Figure 3 would be even steeper. Highway agencies would be feeling the fiscal impact of today's claims many years into the future.

The financial losses reported by the states vary from year to year. To estimate the true trend, a statistical regression analysis was performed. A very strong predictor model was found using an exponential curve, as shown on Figure 4. The regression coefficient (R) was 0.94, indicating an exceptionally good fit between the formula and the data. The slope of the regression curve on Figure 4 is currently becoming very steep, indicating rapidly increasing losses.

This data represents only state departments of transportation. When local government highway departments are included in this analysis, the total losses double. Current losses by state governments are between \$150 and \$200 million for 1987. Doubling this to represent all governmental units leads to a \$300-\$400 million payout to claims and judgments. In 1985, 11 states reported direct expenses of \$17 million in defending suits. A logical estimate is that the states now spend \$30 to \$50 million in defending these suits and local governments probably spend that much also. Thus, the total cost for these suits can be placed conservatively at \$400-\$500 million per year.

### Types Of Claims

There does not appear to be any consistent pattern in the types of claims from state to state. There are several good reasons for this. For example, the states use different methods for classifying claims, there are geographical and topographical differences from state to state, and there are basic differences in the types of state highway systems.

The two techniques used for measuring the impact of the various types of claims are (1) the number of claims filed and (2) the cost of these claims. The author investigated these two techniques for a number of states and found that they were not compatible. Data from the Florida DOT for 1983-86 showed that flying objects represented about one-third of all claims; however, it represented less than one percent of the financial losses. On the other hand, suits alleging defective design represented less than five percent of the claims and more than 25 percent of the total costs. It is apparent that when classifying claims, care must be used to identify whether the number of claims or the costs of claims is used as the basis for the analysis.

The author performed the same type of analysis using data from seven states. There was absolutely no consistency from state to state. A part of the lack of uniformity may be due to terminology. One state may classify a claim as "insufficient warning" while another state might classify the same claim as "missing sign." There are other reasons why there is not close agreement

among the states. The state road systems are likely to be a function of local geography, availability of state funds, and management decisions made by highway agencies many years ago. One state may have thousands of exposed bridge abutments while another state may have a million potholes, while a third state may have countless miles of narrow roads with narrow shoulders. It would be natural for the types of claims to differ in these three states.

The prevalent type of suit in any state also may be a function of the preferences of plaintiff's attorneys. Once an attorney wins a large judgment for a case involving a construction zone accident, he may decide to specialize in similar accidents. Hearing of this large judgment, other attorneys also may look for similar types of accidents. These are just a few of the reasons why the types of claims may differ from state to state.

In general terms, the most common types of claims across the United States involve topics like known high-accident locations; work zone traffic control devices; improper, missing, or malfunctioning traffic control devices; low shoulders; potholes; narrow bridges; fixed objects adjacent to the roadway; and insufficient sight distance.

### Liability Affects Safety

One of the obvious effects of the increase in liability has been a change in the way highway agencies are doing their business. Employees have become more aware that they may be sued, and seem to be using more care in making design decisions. Safety is receiving more consideration during the design process.

If all accidents could be prevented, there would be no suits because there would be no plaintiffs who suffered damage. This is not realistic. Rather than prevent all accidents, highway agencies are better off to concentrate upon safety treatments for those roadway locations that are the most hazardous to the motoring public. Removing the areas of greatest danger reduces the number of serious accidents, and drastically reduces the number of suits filed against the agency.

A paradox has occurred. The National Safety Council gave one of its highest awards to an attorney who first began suing highway departments on the East Coast. They indicated that he probably saved more lives and prevented more injuries than other officials in the highway industry, because he had succeeded in changing safety standards through his courtroom actions.

The paradox is this. Suits have caused changes in our practices and that caused safer roads and that saved lives. Unfortunately, at the same time, these suits have absorbed large sums of money that highway agencies could have had available. Thus, there is less money available for road safety and for road building.

The assistant secretary of the Pennsylvania Department of Transportation said, "Ten years ago our DOT possessed sovereign immunity. If we had known what would happen after the courts took sovereign immunity, we could have put a safety program into place that would have prevented many accidents and would have prevented all these suits. For just a fraction of the money we have paid in court losses, we could have had a good safety program and could have had our roads in very good shape."

The paradox continues. How much money can you afford to put into safety? A better question is, how much money can you afford to lose in court because your safety program was incomplete or was poorly designed?

### Redesign/rehabilitation

We are building practically no new roads in the United States. Our road building function for the next 10 years appears to be the rehabilitation and replacement of existing roadways. We must upgrade their ability to carry cars and their ability to do so safely.

We must make difficult decisions because our old roads are too crooked, too narrow, and heavily congested. It would be prohibitively expensive to bring them all up to current conditions. What we must do is arrive at a reasonable policy for rehabilitation, considering all factors including economics and safety.

Once roads have been constructed or renovated, it becomes important for highway agencies to perform operational reviews, to inspect the roads to make sure they are performing as they were intended and that they are carrying traffic as intended. Feedback to designers is an important part of the design process, especially for rehabilitation projects. If their designs are not working and can be changed to allow better future design, feedback serves its purpose.

At the same time, reviews are important to note changed conditions when roadway and traffic factors are no longer within the realm covered by the original design. In these instances, liability is imputed if the highway agency does not recognize the situation and provide remedies.

### Summary

Today in the United States suing and being sued is a way of life. Americans are the most litigious people on the face of the earth, and a consistently high volume of suits proves it. Any good corporation has the best staff of attorneys that it can obtain. Firms can make or lose more money in a single day in a courtroom than they can earn with their factory at full production. The public sector must learn to understand and use the legal system, just as the private sector has been doing for years.

Agencies interested in decreasing their susceptibility to suits might start by establishing a philosophy that reflects safety at all points in design. This should be a policy, a guideline, or a standard formally adopted by the agency. The guideline should include design, construction, maintenance, and operations. It should allow employees to recognize their mission and the obligations they have to the public. Finally, the agency managers should have the conviction to live by the guideline, in order to provide the greatest practical safety for the motoring public under the constraints of limited time, manpower, and funds.

My purpose in sharing with you the enormous magnitude of the trend in tort liability has been to make you aware of what might happen to you and to your agency's funds. My wish is that you will become aware of the

requirements of state and federal code, and of the potential for enormous losses in tort liability cases.

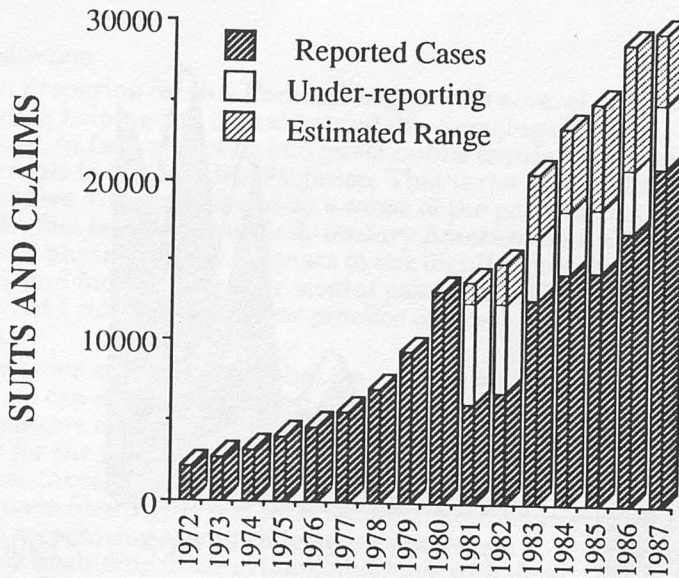
TABLE 1. Tort Liability Data From AASHTO Surveys of State Highway Departments

<u>Year</u>	<u>Number of States Responding</u>	<u>*Number of Claims</u>	<u>Pending Claims \$Millions</u>	<u>Settlements &amp; Judgements \$Thousands</u>
1972	51	2,168		
1973	51	2,740		
1974	51	3,230		\$ 9,047
1975	51	4,053		\$ 6,297
1976	51	4,700		\$ 12,416
1977	51	5,607		\$ 11,123
1978	51	7,104	\$ 2,414	\$ 15,852
1979	47	9,362	\$ 2,951	\$ 15,996
1980	47	13,276		\$ 36,026
1981	45	12,500-13,800	\$ 4,044	\$ 22,581
1982	45	12,500-15,100		\$ 24,572
1983	25	16,700-20,600	\$ 6,825	\$ 82,927
1984	25	18,400-23,500		\$ 47,246
1985	25	18,600-25,000		\$104,243
1986	25	21,100-28,800		\$ 65,364
1987	45	25,000-29,500	\$ 5,822	\$ 94,217
1988	45		\$15,341	

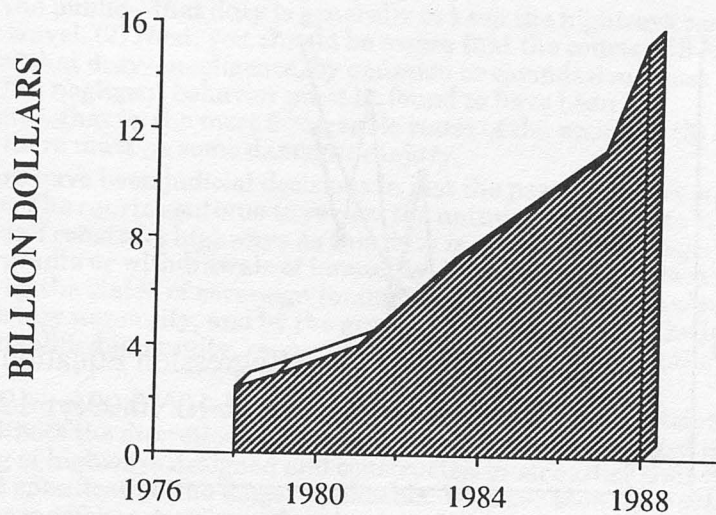
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\*1981-1987 values were estimated from partial reporting.

**Figure 1: Suits Against State Highway Departments.**

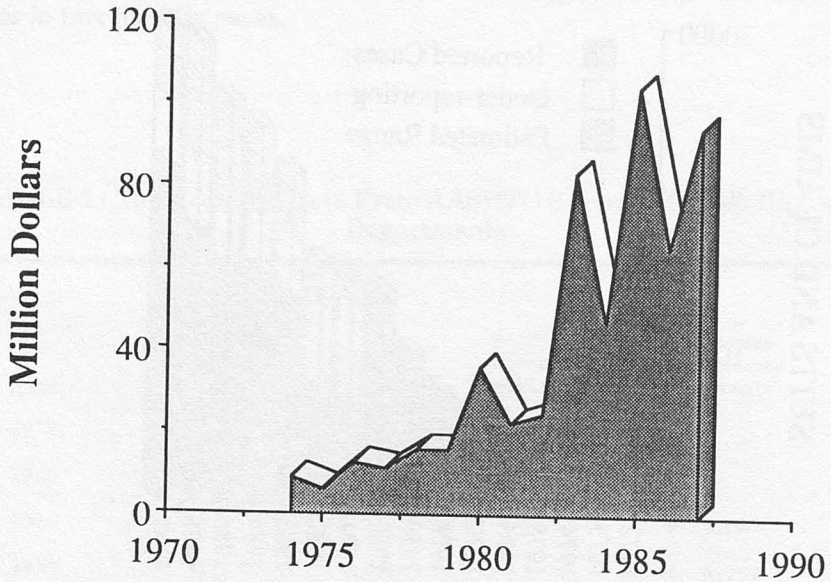


**Figure 2: Amount of Pending Claims**





**Figure 3: Settlements and Judgements**



**Figure 4: Regression of Judgements**

