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Defectively Designed Highways

Steven J. Erlsten*

There are two basic design requirements in automobile safety: design to prevent traffic accidents and design to prevent injuries when a crash occurs. The collision of automobiles is foreseeable . . .¹

THE ABOVE STATEMENT refers specifically to automobile design, but the design principles that form the basis for this statement are equally applicable to highway design. Although often ignored, the highway is a member of a *three component system* that includes vehicle² and driver.³ These individual and completely separate components must function together as a team each time a vehicle is put in motion, and a failure of any one component is enough to cause an accident. However, it is a combination or chain of failures that often results in the increased severity of an accident.⁴

There are many design standards, attitudes, and procedures which result in public highways with built-in design hazards and, when drivers are confronted with these hazards, the highways involved become latent killers. A defect of a highway by reason of its design will not be apparent to those unfamiliar with the problems of highway engineering. Thus, in the majority of accidents, the failing component is presumed to be the driver and little further investigation or thought is given to other factors.⁵ Highway fatality statistics prove that the driver cannot sustain the burden of correcting design shortcomings with driving skills, and an all-out effort must be undertaken to place on all facets of highway travel and design the same responsibility and safety standards now imposed on drivers alone.⁶

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¹ Annot., 16 Am. Jur. Proof of Facts 4 (1965).

² See generally, Nader, *Unsafe at Any Speed* (New York, 1965).

³ *Supra* note 1.

⁴ For example see, *Commonwealth, Department of Highways v. Compton*, 387 S. W. 2d 314 (Ky. Ct. App. 1964); *County of Pima v. Southern Pacific Company*, 95 Ariz. 41, 386 P. 2d 400 (1963); *Commonwealth, Department of Highways v. Begley*, 376 S. W. 2d 295 (Ky. Ct. App. 1964).

⁵ See generally, *Commonwealth, Department of Highways v. Compton*, *supra* n. 4; *Morales v. New York State Thruway Authority*, 47 Misc. 2d 153, 262 N. Y. S. 2d 173 (Ct. Cl. 1965).

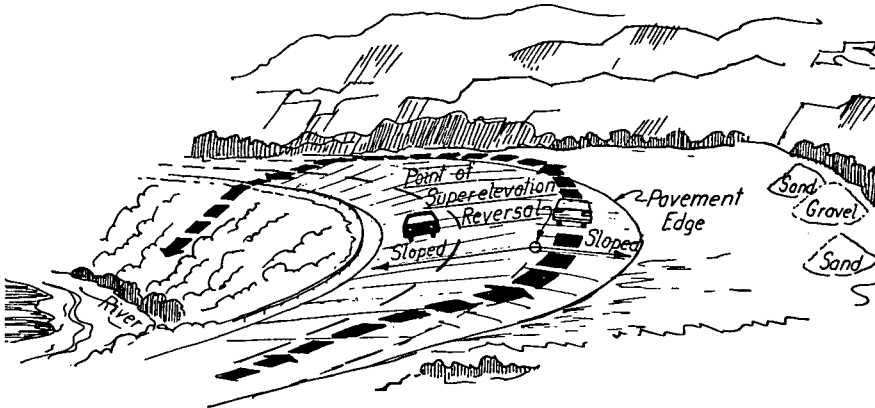
⁶ See, *New York World-Telegraph and Sun*, *The World Almanac and Book of Facts for 1966* at 305 (81st Yr. of Issue); *Automobile Manufacturers Association, Traffic Deaths and Death Rates, 1935-1963, Automobile Facts & Figures 70* (1964 Edition).

Personal Experiences

While working as an engineer for the California Division of Highways, the writer investigated a high accident area of a mountainous, northern, coastal section of state highway. What was found and reported was essentially the following:⁷

1. A sharp downhill curve to the left;
2. A 90 foot drop to a river on the left;
3. A nearly vertical mountainside on the right with a maintenance pullout area dug out of the mountain on the right and extending about half way through the curve;
4. A superelevation⁸ on the curve that reversed sharply at the shoulder adjacent to the pullout.

It was observed that on a clear day about 90% of the vehicles coming around this curve drifted to the right toward the pullout area. Then, upon crossing the superelevation reversal,⁹ (see sketch), they were lurched further to the right at which time the end of the pullout area was reached and the vehicle was headed straight for the mountain side. Faced with this situation, the startled driver would frantically "whip" his steering wheel to the left in an effort to avoid crashing into the mountainside. The superelevation reversal (on the outside shoulder) was now recrossed and it acted like a dynamic catapult, thrusting the vehicle toward the 90 foot drop into the river.



This curve appeared very similar to thousands of others in the vicinity, but it was different. It had an accident rate of about eight times

⁷ Calif. Div. of Highways, Div. I Traffic Dept., High Accident Area Report, filed by Erlsten and Hathaway (1963).

⁸ Superelevation: raising or "banking" of the outside edge of a roadway curve to compensate for the outward thrust of a vehicle as it travels around the curve.

⁹ Superelevation reversal: occurs when the roadway cross slope for the desired curve banking reverses its direction and the outside edge of the curve is sloped or "banked" toward the outside, rather than toward the inside, as is required for safety.

that of the other similar areas on this section of highway.¹⁰ A recommendation was filed that at the very least a white line should be painted along the right edge of the highway as a defining line to keep motorists from crossing the superelevation reversal. The length of white line required was about fifty feet.¹¹ Nothing was done except to let a non-professional technician read the report and file it. The investigation was made after a fatal plunge into the river on a foggy night by an unsuspecting motorist. With the rainy, foggy climate creating poor visibility most of the year, it would seem that motorists deserve a well-defined edge of highway rather than pigeon-hole filing of reports by non-professional people. Had this case come to trial, it can reasonably be said there would have been no recovery. It probably would have been found that any plans to correct the situation were matters of lawfully authorized planning by a governmental body.¹² This, coupled with the rule that the state is not the insurer of the safety of its highways, would surely have barred the deceased driver from any recovery even though he was the victim of a dangerous condition of which the state had actual knowledge by reason of its own accident reports.¹³

In another high accident area that was investigated and reported on after a fatal accident, there was found to be practically no visibility of approaching traffic due to trees and a massive bridge railing which tended to force motorists over a completely undefined center line where a 90° turn had to be negotiated. The center line was eventually marked as recommended but nothing else was done because a new highway was planned in about six years.¹⁴ This, however, was of small consolation to the woman who had just been killed and would obviously help no one else for at least six years. A simple stop sign at the 90° turn for traffic approaching the bridge would at least have slowed the traffic enough to give warning of the surprise situation and, in addition, the situation demanded a much-improved curve warning sign system.¹⁵

¹⁰ Calif. Div. of Highways, Div. I Traffic Dept., Calif. State Highway Patrol Accident Records (1963).

¹¹ See, Basile, *Effect of Pavement Edge Markings on Traffic Accidents in Kansas*, Highway Research Board Bulletin 308, National Academy of Sciences—National Research Council 80 (Pub'l. 938, 1961).

¹² *Natina v. Westchester County Park Commission*, 49 Misc. 2d 573, 268 N. Y. S. 2d 414 (Sup. Ct. 1966); *Zeppi v. State*, 174 Cal. App. 2d 484, 345 P. 2d 33 (1959) (Negligent highway shoulder condition caused accident, Gov't. immunity upheld); See also, Prosser, *Law of Torts* 996 (3rd. Ed. 1964).

¹³ *Morales v. New York State Thruway Authority*, *supra* n. 5; *Dupre v. Louisiana Department of Highways*, 154 So. 2d 579 (La. App. 1963); *Newman v. U. S.*, 248 F. Supp. 669 (D. D. C. 1965); *Lidell v. State*, 38 Misc. 2d 483, 236 N. Y. S. 2d 1005 (Ct. Cl. 1963); *Campbell v. South Carolina State Highway Dept.*, 244 S. C. 186, 135 S. E. 2d 838 (1964); *Kelly v. Gifford*, 63 Wash. 2d 221, 386 P. 2d 415 (1963); *Kenyon v. State*, 21 A. D. 2d 851, 250 N. Y. S. 2d 1007 (1964).

¹⁴ Erlsten and Hathaway, *op. cit. supra* n. 7.

¹⁵ See, McCammett, *New Kansas Curve Signs Reduce Deaths*, 29 *Traffic Engineering* 14 (No. 5, 1959).

The above situations are rather shocking, and the fact that the grossly irresponsible attitudes and conduct of highway officials are often supported by court decisions is tragic.¹⁶ The tragedy generally seems to be not of the courts' own making, but rather one of omission by adversaries in failing to effectively argue the design defects as being blameworthy. This is true even though there are numerous publications by authoritative sources which abound with realistic and *practical* safety design features. The findings presented in these publications¹⁷ are backed by most convincing statistics and can be found in abundance at any technical library. These sources should not be overlooked by attorneys even though they are being ignored by highway designers.

Some Cases on the Subject

In the case of *Natina v. Westchester County Park Commission*,¹⁸ there was a complete breakdown of two components. The driver of one auto was drunk, speeding and completely irresponsible. The highway design was in itself extremely hazardous. It had four ten-foot lanes (twelve-foot lanes are standard)¹⁹ and a 9° 650 foot curve (7½° maximum is standard)²⁰ with no median barrier and inadequate superelevation and no warning signs. The drunk driver was killed and his passenger injured when their car crossed the median and crashed head-on into another auto. It is this other auto and its five dead passengers with which this author is concerned. Highway designers cannot prevent drunk drivers or speeding drivers from using the highways. However, it is easily within their realm to prevent crossover accidents by the proper design and placement of median dividers and not doing so on such a highway as the one involved in the above accident should make them equally responsible for the deaths of innocent drivers and passengers.²¹

¹⁶ For example see, *Dupre v. Louisiana Dept. of Highways*, *supra* n. 13; *Lidell v. State*, *supra* n. 13; *Morales v. New York State Thruway Authority*, *supra* n. 5; *Natina v. Westchester County Park Commission*, *supra* n. 12.

¹⁷ *Supra*, nn. 2, 11 and 15; Beaton and Field, Jr., *Impact Tests*, 30 *Traffic Engineering* 21 (No. 3 1959); Billion and Parsons, *Median Accident Study—Long Island*, New York, Highway Research Board Bulletin 308, National Academy of Sciences—National Research Council 64 (Pub'l. 938, 1961); Ehrman, *Causes of Highway Accidents: United States Experience*, XII *Traffic Quarterly* 30 (No. 1, 1958); see generally, *Traffic & Transport Engineering*, *World Road News*. (These are only examples and by no means exhaustive of the sources available.)

¹⁸ *Supra* n. 12.

¹⁹ American Association of State Highway Officials, *A Policy of Design of Rural Highways—1965*, 225 (1966).

²⁰ *Id.* at 158.

²¹ Canons of Ethics for Engineers, Publication No. 1102, prepared by Engineers' Council for Professional Development and adopted by National Society of Professional Engineers Oct. 28, 1946 ("Foreword . . . the engineer will discharge his duties with fidelity to the public . . . It is his duty to interest himself in public welfare, and

(Continued on next page)

In the *Natina* case, five innocent victims, including a safe, completely law abiding driver would be alive if an engineer had used the foresight appropriate to his enterprise. Instead, the built-in design hazards materialized and the failure of the highway component increased the severity of the accident by five fatalities.

The decision states that "*the drunk drivers acts are so irresponsible that they preclude the poor highway design (no median barrier, no curve warning signs, poor alignment, and inadequate superelevation) as being proximate OR CONTRIBUTING causes of the accident.*" Most assuredly, when these built-in design hazards materialized, they were at least equally contributing if not proximately to blame for the death of one entire family of five.

Morales v. New York State Thruway Authority,²² a wrongful death action, was dismissed on the grounds that the claimant failed to sustain the burden of proof. The accident occurred on a high-speed thruway which had no dividers between lanes to prevent crossover. The pavement composition changed on a curve without warning and the victim's car skidded in a rain storm and crossed the median. Perhaps the claimant would have had an accident even with proper design and provision of a lane divider, but surely with this design the accident could have been limited to a "fender-bender," rather than the fatal accident that occurred. The failure of a design to provide for life-saving median barriers should be taken as evidence of negligent design in most accidents involving crossover. With all of the technical reports and statistical findings available, it should be *prima facie* evidence in a crossover accident that the highway authority was contributorily negligent in their failure to provide a properly designed guard rail.²³ In *Morales*, however, the court said that the plaintiff failed to prove that the state had maintained a dangerous highway through improper construction and maintenance. In the total absence of a median barrier, the basis for this decision seems questionable. The court cannot be greatly criticized, however, since the statistics and expert opinions presented in the case were somewhat minimal in regard to the plaintiff's claims, and to one non-technically oriented, highway design defects are for the most part unascertainable. Also, highway engineers who would qualify as experts in the field are ultimately employed by the State, which is responsible for final designs and

(Continued from preceding page)

to be ready to apply his special knowledge for the benefit of mankind. Canon 4. He will have due regard for the safety of life and health of public and employees who may be affected by the work for which he is responsible"). Incorporated Village of Flower Hill v. State, 8 Misc. 2d 679, 168 N. Y. S. 2d 89 (Ct. Cl. 1957) (Village damaged by wash-out due to inadequate design of highway drainage system. Court's opinion, p. 93 "State . . . has a duty in its maintenance of highways to guard against such dangers as could or ought to have been anticipated or *foreseen* in the exercise of reasonable prudence and care").

²² *Supra*, n. 5.

²³ Beaton and Field, Jr., *op. cit. supra* n. 17; Billion and Parsons, *op. cit. supra* n. 17.

safety standards. This creates an automatic censorship of criticism and a non-disclosure in the court room or elsewhere of design shortcomings.²⁴ There is also a hesitancy on the part of most engineers to accept the fatally-proven fact that the designs which neatly fit the formulas and standards are in reality unsafe.²⁵

In the case of *Dupre v. Louisiana Department of Highways*,²⁶ the problem technically presented is not one of highway design, but actually one of maintenance. However, the attitudes outlined and the results reached provide dramatic examples of highway deficiencies and the lack of pressure for corrective measures. There was a large hole in the roadway that was left unrepaired for a long period of time. It was necessary for the injured plaintiff to travel this road in his daily routine. The plaintiff struck the hole and the accident occurred which resulted in his serious injury. The court denied recovery because the plaintiff had known that the public highway was dangerous and was, therefore, contributorily negligent. This decision would make everyone except the most naive driver contributorily negligent, for we are all aware of the accidents and deaths occurring on our highways.

The well-developed rule the court supposedly followed in the *Dupre* case was essentially the following: The Department of Highways is liable for damages caused by highway defects which are sufficiently dangerous to cause accident and injury to persons using the highway in a reasonably prudent manner if the Department has actual or constructive notice of the defect.²⁷ The state, however, is deemed to know of its own acts.²⁸ Nevertheless, the court in the *Dupre* case cited the rule and then denied recovery, saying in effect that there had been contributory negligence for use of the public highway.²⁹ This decision seems most rigid. Especially in view of the fact that an abutting landowner probably would have been found liable for damages in a like situation.³⁰

Although the rationale of the decisions is often framed in terms of structural defects the pleadings reflect a lack of well developed argu-

²⁴ See also, National Society of Professional Engineers, Can Engineers in Industry Be Professional?, American Engineer 22 (Sept. 1966); See generally, Downen v. State, 11 Misc. 2d 555, 174 N. Y. S. 2d 849 (Ct. Cl. 1958), (Contradicting results of a "Ball Bank Test" were presented by claimant. Court's opinion, "All things being equal, the Court is bound to accept the test made by the State, since it was made by the very experts the State employs for just such tests").

²⁵ *Supra* n. 6.

²⁶ *Supra* n. 13.

²⁷ *Doremus v. Incorporated Village of Lynbrook*, 25 A. D. 2d 749, 269 N. Y. S. 2d 55 (1966); *Commonwealth, Department of Highways v. Higdon*, 383 S. W. 2d 331 (Ky. Ct. App. 1964); *Newman v. U. S.*, *supra* n. 13; *Kelly v. Gifford*, *supra* n. 13.

²⁸ *Coakley v. State*, 26 Misc. 2d 431, *aff'd*, 15 A. D. 2d 721, 222 N. Y. S. 2d 1023 (1962).

²⁹ *Lidell v. State*, *supra* n. 13; *Morales v. New York State Thruway Authority*, *supra* n. 5; *Natina v. Westchester County Park Commission*, *supra* n. 12; *Bernal v. Clifton*, 77 N. J. Super. 481, 187 A. 2d 22 (Super. Ct. A. D. 1962).

³⁰ *Prosser, op. cit. supra* n. 12, at 359; for example, *Greenberg v. F. W. Woolworth Co.*, 18 Misc. 2d 141, 186 N. Y. S. 2d 303 (Sup. Ct. 1959).

ments that would be necessary in order to sway the court from the presumption that the driver is always wrong and totally liable. This failure to present a strong case has created a great void in the decisions of highway accident cases. This void can and must be filled if the social frustration and destruction created by unsafe highways are ever to end.

The recent passage by Congress of the "Highway Safety Act of 1966"³¹ and the events leading up to its passage seem to indicate that the general public is becoming educated to the fact that our highway network is a tri-partite integrally related system. When this public awareness becomes a full realization, the greatest obstacle in the way of filling the void will have been overcome, and the existing and future technical and statistical findings will become acceptable evidence to the general public. Then, hopefully, pressures of public opinion will force changes in highway designs and court decisions.

Technical Findings and Comparisons

The Kansas Highway Commission reduced the fatality rate through "left-road-at-curve" accidents by 43%.³² They did this through color, size, and placement of signs as determined by thorough studies and the attitude of "make the sign find the driver" instead of the reverse. Would the six dead people from the *Natina* and *Morales* cases have been among the 43% saved? In those cases, there were no signs at all!

The California Division of Highways conducted tests on median guard rails and determined several designs which would not only prevent crossover but also minimize the deflection of the crashing vehicle back into the stream of traffic.³³ In *Natina* and *Morales* there were no guard rails at all!

A compilation of the "before and after" effect of pavement edge markings showed a 59% decrease in fatalities on Kansas highways.³⁴ This finding was reported in January, 1961. Perhaps the fatality in California that was investigated in August, 1963,³⁵ would have been among the 59% saved if the edge of roadway had been marked. It would at least seem feasible that in two and one half years desirable safety features would become known to all highway departments.

Economic necessity is usually the excuse given for poor and dangerous highway design. When guard rails, warning signs, and edge markings are decreased or eliminated, the money saved can be used to stretch out a few more miles of pavement. *Time* is another excuse given. The time saved by elimination of these items is used to meet tight completion

³¹ 80 Stat. 731 (Public Law 89-564).

³² McCammett, *op. cit. supra*, n. 15, at 14.

³³ Beaton and Field, Jr., *op. cit. supra*, n. 17, at 21.

³⁴ Basile, *op. cit. supra*, n. 11, at 84.

³⁵ Erlsten and Hathaway Report, *supra* n. 7.

dates. In 1955, which just preceded the years of the big national push for completion of the interstate system, the National Safety Council set the cost of highway accidents at \$4.5 billion.³⁶ How many miles of safety features would that have provided?

There are several points to be drawn from the graphic examples furnished by crossover accidents.

1. There is no guard rail in existence that will completely eliminate accidents.
2. The only function of a guard rail is to reduce the severity of an accident.
3. A guard rail incorporated as a median barrier must prevent crossover in order to reduce severity.
4. Severity is reduced because additional innocent vehicles are *eliminated* from involvement in potential crossover accidents.

The crossover accident in the *Natina* case happened in 1958 and the opinion issued by the court in 1966 stated that the poor highway design was precluded from being considered a PROXIMATE OR CONTRIBUTING CAUSE of the accident. Compare this 1966 statement with the 1961 finding presented in a study made on the very same Westchester County Parkways where the accident occurred.

"The installation of the double faced type of guide rail median on the Cross County Parkway reduced the reported total accident frequency by about one-third . . . *Fatal, head-on and sideswipe in the opposite direction WERE ELIMINATED.* . . ."³⁷

Compare the National Standards published in 1961 for shoulder delineation with the 1963 practice of unmarked shoulders followed in coastal Northern California where rain and fog created extremely poor visibility most of the year.

"The through traffic lanes and the shoulder area should be clearly defined at all times, particularly at night or in inclement weather when visibility is poor."³⁸

Compare the question of the two Ohio and California Highway practices. Why does California see fit to install elaborate ultra-modern com-

³⁶ Ehrman, *op. cit. supra*, n. 17, at 31.

³⁷ Billion, Taragin, and Cross, Effect of Parkway Median on Driver Behavior—Westchester County Parkways, Highway Research Board Bulletin 308, National Academy of Sciences—National Research Council 62 (Pub'l. 938, 1961).

³⁸ National Joint Committee on Uniform Traffic Control Devices, which is comprised of the following: American Association of State Highway Officials, Institute of Traffic Engineers, National Committee on Uniform Traffic Laws and Ordinances, National Association of County Officials, American Municipal Association, Manual on Uniform Traffic Control Devices for Streets and Highways, U. S. Dept. of Commerce (June, 1961) p. 128; Compare . . . with . . . , *E.g.*, The Ohio Dept. of Highways Div. of Operations Bureau of Traffic, Ohio Manual of Uniform Traffic Control Devices for Streets and Highways (1963), p. 176 ("Solid white lines are used for guide lines where the line may not ordinarily be crossed at the discretion of the driver or where crossing of the line is to be discouraged").

puterized traffic signal systems but still refuse to delineate the edge of the roadway? Why does Ohio delineate the pavement edge but refuse to install automatic traffic signal systems?

Generally, what grounds constitute negligence in other fields of law when the safety standards dictated are clearly transgressed? Also, in the interest of social preservation, how long can the inequities of governmental immunity be adhered to?³⁹

Patent v. Latent

A patent highway defect can "speak for itself" and be readily understood while a latent defect "speaks" as a subtle con-artist to unsuspecting victims. The problem is that a patent defect is nearly always a maintenance question even though the defect was the result of an inadequate or erroneous design. Thus, there are relatively few if any cases decided on the merits of the designs alone and most cases decided favorably for injured plaintiffs involve one and usually more of the following:

1. inadequate or missing highway signs,⁴⁰
2. collapsed or washed out areas of the highway (caused by poor design or lack of maintenance)⁴¹
3. poor or faulty initial construction (same effect as lack of maintenance).⁴²

Summary

The safety of travel on our highways is dependent upon the way that the three components of driver, vehicle, and highway interact with each other. Every structural plan should be designed to prevent traffic accidents and to minimize injury once an accident occurs. There are certain obvious safety standards such as the provision of median barriers, center stripes, and edge delineations, the violation of should be deemed negligence per se.

Highway accidents are foreseeable and once a built-in hazard mate-

³⁹ See generally, Lawyer, Birth and Death of Governmental Immunity, 15 Clev.-Mar. L. Rev. 529 (1966).

⁴⁰ Commonwealth, Department of Highways v. Begley, *supra* n. 4; Kenyon v. State, *supra* n. 13; Citron v. Nassau County, 49 Misc. 2d 928, 268 N. Y. S. 2d 909 (1966); Robinson v. State, 38 Misc. 2d 229, 237 N. Y. S. 2d 601 (Ct. Cl. 1962); Commonwealth, Department of Highways v. Higdon, *supra* n. 27; McCormick v. State, 5 Misc. 2d 582, 161 N. Y. S. 2d 666 (Ct. Cl. 1957); Schneider v. Yakima County, 65 Wash. 2d 352, 397 P. 2d 411 (1965).

⁴¹ Campbell v. South Carolina State Highway Department, *supra* n. 13; Buffington v. State, 2 Misc. 2d 496, 152 N. Y. S. 2d 716 (Ct. Cl. 1956); Incorporated Village of Flower Hill v. State, *supra* n. 21; Hogg v. Department of Highways of the State, 80 So. 2d 182 (La. App. 1955); Campbell v. State of New York, 18 Misc. 2d 947, 189 N. Y. S. 2d 753 (Ct. Cl. 1958).

⁴² Campbell v. South Carolina State Highway Dept., *supra* n. 13; Buffington v. State, *supra* n. 41; Incorporated Village of Flower Hill v. State, *supra* n. 21; Hogg v. Department of Highways, *supra* n. 41; Campbell v. State of New York, *supra* n. 41; Commonwealth, Department of Highways v. Begley, *supra* n. 4; Clokessy v. State, 11 Misc. 2d 952, 173 N. Y. S. 2d 835 (Ct. Cl. 1958).

rializes, the claim that the hazard was not foreseen should not be available to one who did not use foresight appropriate to his enterprise. Thus, the people chiefly responsible for designed-in highway safety, the highway designers themselves, should act first to upgrade their design standards and requirements to compensate more readily for the shortcomings of drivers and vehicles.⁴³ The defense of assumption of risk should not be available to one who has failed to warn an innocent victim of the risk. Likewise, the defense of contributory negligence should not be a shield to negligent highway departments through the claim that the plaintiff knew public highways were dangerous.⁴⁴ However, it should be noted that the liability of a governmental unit as regards highways is determined by statute and each state's code should be consulted to determine the extent and proof required.⁴⁵

There are cases involving unsafe highways where recoveries have been granted. However, these involved blatantly patent defects and the pure design aspect of highways has been relatively free from examination. With this in mind, a general analysis of existing cases can be made. Under the surface, there appears to be a split over social and economic principles rather than basic legal principles. One view seems to be result-oriented in denying even in the most extreme cases a recovery against the state.⁴⁶ The other view seems to apply a more humane attitude in granting recovery where there is culpable negligence by the state.⁴⁷ The first view seems to be based on the reasoning that it preserves the state's revenue, while the second apparently is based on an increasing public concern as to the safety of the highways. The second line of reasoning appears to be on the increase and will probably become predominant as the general public becomes more aware and more demanding of the social benefits created by safe highway design and maintenance.⁴⁸

This author would recommend at least a partial *res ipsa loquitur*⁴⁹ attitude by the courts when highway designs are of questionable safety. For example, in inadequate highway sign situations the courts should

⁴³ See, Pomeroy, *The Third Killer: The Highway Itself*, *The Plain Dealer*, Sept. 11, 1966, p. 1, col. 1.

⁴⁴ See, *Dupre v. Louisiana Department of Highways*, *supra* n. 13.

⁴⁵ Ohio Const. Art. I, Sec. 16 (Action against state); Ohio Rev. Code 5501.18 (Actions against Director of Highways); See also, *Lawyer, op. cit. supra*, n. 39.

⁴⁶ Nev. Const. Art. 4, Sec. 22; *Hardgrave v. State*, 80 Nev. 74, 389 P. 2d 249 (1964) (State immune from liability for negligence in regard to highways); But see, *Rice v. Clark County*, 79 Nev. 253, 382 P. 2d 605 (1963) (Immunity does not extend to county).

⁴⁷ *Supra* nn. 40, 41, 42 and 45.

⁴⁸ *Supra* n. 31; But see, 112 Cong. Rec. A4793 (daily ed. Sept. 13, 1966) (extension of remarks of Senator Rosenthal on Highway Safety Act of 1966) (Safety of the highway itself or its design was not once mentioned).

⁴⁹ See, *Black, Law Dictionary* 1470 (4th ed. 1951); *Prosser, op. cit. supra* n. 12, at 215; See generally, *Robinson v. State, supra* n. 40.

adopt a strict principle that, to adequately warn of a hazardous highway condition, a sign's message and location must relate to the danger in such a manner as to give adequate warning thereof.⁵⁰ Developments such as this will require a relaxing of the view that the frequent culpable negligence exhibited by designs must be shown to be the proximate cause of the accident before recovery is allowed.⁵¹ This, however, requires a changing of public opinion and a realization that the driver is not always wrong.

⁵⁰ *Commonwealth, Department of Highways v. Higdon*, *supra* n. 27; *McDevitt v. State*, 1 N. Y. 2d 540, 154 N. Y. S. 2d 874, 136 N. E. 2d 845 (1956).

⁵¹ For example, *Bertram v. State*, 282 App. Div. 415, 123 N. Y. S. 2d 175, *affd.* 306 N. Y. 913, 119 N. E. 2d 600 (1953); *Wesley v. State of New York*, 272 App. Div. 990, 72 N. Y. S. 2d 772 (1947).