

Operational and Maintenance Problems on the Interstate System

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It was by no accident that the Highway Act of 1956 was passed. A steady rise in vehicle registration and need for highways resulted in enthusiastic support from the motoring public who were willing to have their highway taxes increased if better roads were to be built. There are grave doubts that this program will be successful or receive additional support if engineers limit their attention to the scientific phase of highway construction and ignore desires of motorists.

The huge highway program is supported entirely out of Highway User funds—monies collected from gas, oil, tires, etc. being stored in the highway trust fund. When the taxpayer-motorist sees the completed product he expects to see his travel ticket stamped “First Class Imperial Service.” His reaction to poor service is analogous to the purchase of a first class reservation on an air line. Imagine the furor that would be created if a passenger of a first class ticket was told that there was no meal available on the plane—that this is something the passenger should take care of before or after boarding the plane; or that there are no rest rooms available; the upholstery on the seat is torn; aisles are dirty; and as a final blow—you’re directed to get off the plane at the wrong airport. The results would be obvious—no further use of this service. So it is with our highways—we must provide the necessary service motorists may expect to get.

What are some of the services that will be necessary to provide? We, in the AAA, have done much work in this direction. Through the hundreds of travel counters we maintain throughout the county, we questioned motorists regarding their desires on the freeway. Some of the thoughts in this presentation relate to that study. Other thoughts presented here today are based upon discussions presented at Regional Freeway Operational Seminars sponsored by the Institute of Traffic Engineers. Perhaps some of you attended the meeting held in Columbus, Ohio, last Fall. For simplicity purposes, I have divided my paper into two portions—Operations and Maintenance.

OPERATION

As one speaker at the Freeway Seminar puts it, "the strip of Interstate Highway is like a closed circuit." Let's review a typical closed circuit which amounts to an average of $3\frac{1}{2}$ miles, or the equivalent to the average distance between interchanges in the rural areas.

A fence along each edge of the strip will isolate it from the adjacent land. The roadway, or in many instances two separate roadways, will carry 14,000 cars a day, with 24,000 occupants. Each of these occupants will "live" on the section for about 4 minutes. In other words, the section of road will be a little hamlet with a permanent population of 65. These 65 residents will require about the same services that they would in a hamlet of this size.

About every two weeks someone will have an accident. In two-thirds of the cases, it will involve a single car, driven by a sleepy, hypnotized, or speeding driver, whose car leaves the roadway. About every seven weeks, someone will be hurt in this accident and need first aid. Every ten weeks, an injury serious enough to require an ambulance will result. And, about one a year, a fire will occur and a fire engine will be required. Twice a day, some motorist will experience mechanical difficulty, and every other one of these will have to be towed to a garage.

Every day, 300 people will decide that they need gas while traveling on our $3\frac{1}{2}$ -mile section. About three times a week, this decision will come too late and the driver will run out of gas on the road. And, probably another 300 a day will want to stop for food, for telephone, for some other reason. About twice a day some motorist will feel the hot breath of the law, since one and one-third police officers will be assigned to give this section 24-hour, seven-day supervision. Perhaps another 20 motorists a day, who stop on the shoulder to eat or rest, will be interviewed by this police officer, since parking has been prohibited on the shoulder of this highway.

These services, incidentally, cost as much as \$15,000 a year for this one section. There will also be an equivalent of two or three maintenance men assigned to our little section, since about \$25,000 a year will be spent on the physical maintenance of the road.

This, then, is freeway operation—the subject of our meetings.

Emergency Service Problems

One of the most pressing problems is the handling of disabled vehicles. The first problem will be to properly identify his location. AASHO has approved mile posts, but even these may not be entirely satisfactory. How will the driver be able to obtain help? Emergency

telephones may be helpful but their use is limited to rest areas or informational sites. To place them along at intervals off the highway would increase hazards due to the necessary exits and entrances to these facilities. An abundant use of these would defeat the principle of limited access control.

Once the emergency vehicle driver has been informed, the next problem is to get to the stranded motorist's location. The community where the emergency vehicle is located may only be a mile away, but the route required to reach the motorist may be several miles in each direction. Once on the freeway, the emergency vehicle may find that the stranded vehicle is on the other side of the road. Consequently, we find the need for frequent turnarounds—but to be used only by emergency and police units.

It has been suggested that new means of communication must eventually be developed. The use of special radio or wave lengths has been considered. By this means, the motorist could identify his position. Another suggestion is the use of some type of a device at each mile post that would respond to a key previously purchased by the motorist. This communication system would then relay the position of the mile post to a central control room.

Service Areas

The regular requirements of drivers and passengers must be provided. With the long hours of monotonous driving, certain services must be provided. It is anticipated that lodging, meals, and service stations will not be available on the Interstate, but proper signs will direct motorists at the interchanges. This may eventually present a problem if it is not satisfactorily handled. If proper facilities are not made available, the public will soon demand the location of such facilities on the right-of-way of the highway. This is quite contrary to the pressure the public is able to put on toll roads.

Another service that must be provided is rest areas and picnic grounds. People traveling with pets and children will require such rest stops. It is in such areas that informational signs are necessary to inform travelers on all types of travel information.

At the approach to large metropolitan areas, informational areas should be available to assist motorists in reaching their destination after leaving the freeway. Such facilities should contain large area maps. Telephones should also be included in the area.

Regulations

Another important aspect of operation relates to regulations of the vehicles. A primary consideration is the speed differential. Are we

going to permit slow traveling vehicles to mix with high speed? Some states establish minimum as well as maximum speed limits.

One of the important developments on turnpikes is the posting of a reduced speed limit during periods of bad weather. Before this can be introduced on the Interstate, many state laws must be changed so as not to require an administrative order before a speed limit can be changed.

Another regulation pertains to the restriction of parking except in emergency cases. When does an emergency exist and for how long? Detroit tows away vehicles remaining over three hours. Another problem relates to the passing of vehicles. Under our present two and four lane roads, passing is required on the left, but this would be impractical on an expressway of three and more lanes in each direction.

Consequently, all of these matters require much thought and attention before proper use of the facility can be made. Incidentally, much thought is being given to properly educating drivers in the use of expressways. The AAA is developing a film entitled "Expressway Driving." Several manuals have been prepared relating to this subject. (Refer to "How to Drive" and "Suggestions for Freeway Driving." Also relate the experience of acceleration lanes.)

Since signs will be treated in another paper at this meeting, they will not be discussed in this presentation.

MAINTENANCE

Snow Removal

Snow removal on freeways is an important consideration. If highway crews permit snowfall to get ahead of them, costly situations can occur.

Handling Traffic During Construction and Maintenance Operations

Contractors need to be guided and instructed in the handling of traffic in areas under maintenance or construction. The handling of large volumes at high speeds is not a small matter. Turnpike experience has shown clearly that advance warnings must be provided much farther in front of construction and maintenance work than on ordinary highways. Because of the delays to large volumes of traffic, much urban expressway maintenance work is done at night, not only to reduce delays in traffic but because of the safety element. A minute delay to thousands of motorists is far more costly than the added cost of night maintenance work.

Police Supervision

The maintenance of proper regulations requires the provision of adequate police supervision—not only for the enforcement but for educa-

tion and offering guidance to motorists. This requires specially trained police personnel. The California Highway Patrol provides 2.7 officers for each 100,000 vehicle miles in order to provide a minimum level of 24-hour seven-day police coverage. This ratio is generally confirmed by turnpike enforcing agencies. Experience has shown that the trained police patrol will spend 40 to 60 percent of their time on direct services to the motorists—answering questions, summoning aid, clearing congestion, etc. Their main job will be to offer public information.

In the rural area, officers will be trained to detect sleepy drivers to prevent the turnpike's deadly enemy—highway hypnosis. Incidentally, we still need to do much research in the area of fatigued drivers on long open stretches of expressway driving. We have made many studies in this direction and are encouraging highway officials to continue work in this direction. The New York thruway has purposely designed wide medial strips with trees, ponds, etc. to break monotony. We have found that carbon monoxide is present in cigarettes and, consequently, with several persons smoking in a car with little ventilation, will soon cause a drowsy condition.

CONCLUSION

I have attempted to point out some of the problems that highway authorities will soon be facing when new sections of the Interstate System are opened. As more and more experience is acquired, there will no doubt be many changes made in operational, maintenance, and design policies. In the meantime, it becomes the responsibility of all of the highway officials to provide the best controlled access highway possible. The public is expecting "great things" from this new program. Let's make sure that when they move from the acceleration lane onto the expressway, their ticket will be stamped "First Class."