

TRANSPORTATION - FOUNDATION FOR THE FUTURE

BY

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Today I am going to discuss changes that have occurred and are continuing to occur in highway transportation. I believe they are in the right direction. Change in any worthwhile activity must continually take place in any organization which is devoted to improving the conditions impacting the citizens it serves. Changes are necessary because future and present transportation must be compatible with changes which have and are occurring in society. These changes are also very important for future highway transportation because today's highway transportation is and will continue to be a Foundation for the Future of this country.

I was raised on a small farm in Indiana near a town with the name of Columbus in south central Indiana. My beginning was in 1920 and for my first 30 years I served in several occupations - a farmer, a household appliance repairman, in the Army WWII, and a student after that war. Since 1950 I have been a member of the faculty of Civil Engineering at Purdue University until retirement in 1991. Let me just note that although each of my past occupations was very much enjoyed I chose when the opportunity arose to become a civil engineer - and I have enjoyed that profession in the highway and traffic engineering fields very much.

Before I say any more about myself let me note some of the major changes which have occurred in transportation and most importantly what I see as the major problems of highway transportation today and in the future.

My families first motor vehicle was a Model T in 1927. The roads were very poor and often impassable. My parents had not been at that time more than 20 miles from home. All of my relatives lived within that 20 mile range. The only basic choice of an occupation was to become a farmer or a laborer in town unless your family had enough money to send you by train or interurban to a university. You only had friends who lived near you. Your girl friends had to be in the same area - and eventually your wife did too.

Today we live in an entirely different world. Travel today can be to almost all countries within 24 hours. Family members are scattered all over the world for many. I have four living children, only one in Indiana. The other three are residing in Minnesota, Kansas and Germany. Before she passed away, a fifth was in California. Obviously I travel much much more than my parents did and I am certain many of you do too. Communication by radio, television, telephone, space stations, postal services, and now by computer today bring information to us much faster and easier. The fact is that electronic and travel developments have made the entire world our neighborhood just as much as in the 1920's the neighborhood was first that within a couple miles by roads, then by better roads increased to a few hundred after WWII and then by several thousand by developments in air transportation and highways in the 60's and later.

And of course with the passage of time there are far more people in the world and also within this country. The more people, constantly growing, have meant more cars and trucks and more roads - and of course better roads.

Our U.S. society has also changed. Until after the Civil War this country was primarily an agricultural society. About 1900 we started to change to an industrial society and have been in that mode until recent years. In recent years this country's people are heavily involved in providing services to each other - a service society.

In an agricultural society people are primarily involved in utilization of material resources. Muscle power and the elements of the seasons shaped the rhythm of life. In the industrial society people became producers of goods. Equipment and machines dominated this country. Mechanical and electrical power replaced muscle power. In the service society, the profession's become the dominant influence - those who by education and training can provide the skills needed. Information and its use become the important resource. The production line shifted from laborers to dial watching and equipment maintenance and management of systems. Transportation and the other engineering professions become more important. In fact the Infrastructure of a community, of a country become more important to help provide the quality of life desired by people. Public Buildings, churches, police, parks, playgrounds, schools, hospitals, fire protection, water, electricity, jails, transportation, streets and highways become more important to serve the population with the quality of life desired.

Unfortunately many of these public facilities - the public infrastructure of the country still in use is 50-100 years old or more. Much destruction has occurred. Or the facilities are too small to handle the demand or are obsolete, inadequate and in need of major renovation or complete rebuilding. And the list goes on and on. The result is the lack of sufficient funds for public agencies to provide all that is needed.

On the other hand, electricity and gas distribution and water availability have largely kept pace with the demand because they are largely privately funded and paid for willingly by users through monthly billings. Schools and hospitals are steadily improving because citizens recognize the benefits received and have approved public expenditures for them. Storm and sanitary sewers, police and fire services, transit and roads and streets on the other hand have not been, as yet, adequately funded for new construction, improvement and adequate maintenance. The result is this is still one of the current big problems of the future, especially for Departments of Transportation in states, counties and cities.

The difference in the means of financing between the utilities and the financing of roads and streets is that utilities are financed by user fees collected by monthly billing. On the other hand funds for roads and streets are heavily by taxes. Taxes as we all know are never popular with people. They cannot be changed easily although they should be because income must be dependent on costs of roads and streets and needs all of which change continuously. We willingly individually pay thousands of dollars for motor vehicles and their operation. They certainly are not as useful when roads and streets are congested and in poor condition. Some way or another we must better market our highway needs or bill each motorist periodically for use of the roads and streets.

Let me now tell you what I believe to be some of the other important problems with transportation facilities in this country. One of the greatest complaints I hear everywhere is the very large amount of reconstruction on our arterial facilities in the state and in cities and counties. Detours then are also everywhere or dual lane traffic is restricted to a single lane. The result is delay after delay to highway users. Many times the reconstruction is due to failures of the pavement after only a few years. I am certain some failures result from poor design and/or construction. Perhaps, however, we need to design highway pavements for a longer life - say 40 years instead of 20. This can be done of course but it costs more money per mile but over the longer life it would be more economical. For some facilities new designs will have to be developed - and with improved materials or mixes. This then brings me to my next point.

For our important industry the design and construction of highways, we have been spending far too little on quality research so as to find improved methods. Typically for highway research we spend far less than other industries spend on improving their products and our relatively short pavement life shows it. We as highway personnel must strongly seek and support more and better ways to build better pavements. When we consider the added costs of delays to motorists and resulting accidents, we have no choice but to build pavements with longer life than we are now obtaining. We must insist on more funds for any needed research. And then we must be willing to utilize findings of such research to obtain the benefits. We cannot do as has been done too often - build them as we have always done it. We must minimize the constant complaint from motorists about the long delays resulting too often from reconstruction on arterial facilities.

Now to another important problem we must attack - motor vehicle accidents. Although the number of fatalities decreased for many recent years, the number now has leveled off or is slightly increasing. The killing of 45,000 or so people each year on our nations highways and hundred of thousands injured is far too much to just forget.

Accident rates are still high in urban areas and on many highways outside of the Interstate system, especially on many state and county roads and city streets. We know where a lot of those accidents are going to occur and we also in many cases know what needs to be done. The application of improved traffic engineering and controls at many locations on state, county and city facilities would be most useful. Areas where much better planning and traffic engineering needs to be provided include:

1. More access control on major streets and roads. We have experienced what access control has done for the Interstate system. We need to more intelligently apply access control on all new arterial route construction or reconstruction especially on major facilities approaching or near urban development because we know it will occur quickly unless wisely controlled. If we do not take such action with vigor now we are only going to have more fatalities and injuries and badly congested facilities. The absence of access control never is beneficial to the motorist. It only enables one developer to provide access to a few developments in the beginning at a better access than a competitor. That should never be a consideration in use of access control. The motorist has the vehicle to easily travel a bit further to where he wants or needs to go. We must utilize access control more wisely than what we are still doing in this country on new or reconstructed and expanded facilities.

2. In urban areas as well as in rural areas the major locations of traffic accidents are intersections. Even though we know this very well, there are far too many intersections where better traffic controls would reduce those accidents. Improved traffic signal controls, correct use of STOP and YIELD controls and pavement markings and maximization of approach driver visibility distances would reduce the problems. In many rural and urban communities no traffic or little engineering expertise is available or utilized to minimize accidents.

On county roads local officials too often authorize paving of narrow poor geometrically constructed roads to minimize dust conditions but do nothing else to minimize accidents. The result is major increases in travel speeds on roadways with poor geometrics and more accidents - and often more costs from maintenance of the poor pavement provided. That of course is no bargain for anybody.

3. Another area of traffic accidents in need of better handling because of high frequency of deaths, often multiple ones, to highway users are those at highway/railroad grade crossings. The motor vehicle and its occupants are always the loser in such accidents. Of course such accidents are most often caused by the failure of the motor vehicle operator to determine before crossing that a train is not approaching within a hazardous distance. We know many motorists do not so act every time. There are actions which highway authorities could take to reduce such accidents. Many crossings could be closed as other crossings are nearby. Controls at the crossings which cannot be closed could be better selected and better maintained. Sight distance on approaches could be improved. Perhaps improved controls at some crossings would be desirable. Perhaps research on new devices, such as devices now undergoing research in Ohio and elsewhere will be helpful.

4. Many accidents are often caused by high speed or aggravated by such speeds. Speed limits of course do exist on many roads but enforcement is rarely regularly done. The reason given is that funds do not permit better enforcement - and that is also usually true. I must compliment the State of Ohio on their enforcement of speed limits on I70 and I assume on other major arterials. I travel I70 frequently and when I do I find all trucks are travelling about 60 mph on that highway (the speed limit is 55) and obvious enforcement is present. Other motor vehicles travel about 70 mph top speed (65 mph speed limit) which also appears to be enforced.

High speeds results in more fatalities and more serious injuries. But one does not get less accidents unless speeds are enforced with regularity and fairly. Local authorities now have the responsibility over all speed limits within their jurisdiction on all highways and streets. I trust such authorities will use this authority wisely. In my opinion no highways in this state should be more than 65 or 70 and then only if built to Interstate standards. Other highways should be 60 or less depending on condition, volume of traffic and geometrics. Many should be 45 or less in counties and 35 or less in cities.

Those examples I have just given are in my opinion the four most likely areas where highway authorities could wisely reduce fatalities and injuries by reducing accidents.

Finally let me emphasize that roads and streets are a major factor in the quality of life of people in every state, county and city. They contribute much to what people want. They are heavily used by people. They are important to people and their quality of life.

Now let me comment on the reorganization of the State Departments of Transportation in recent years. I applaud the fact that it resulted from Federal ISTEA requirements and most states studied what their transportation department has been doing and what those conducting it should be doing in the future to improve highway transportation.

I trust the major emphasis of reorganization in each state was for the purpose of how can we do a better job for the citizens of our state - and that reduction in cost was considered only if a better job could be done with less funds. As I have noted in my address so far there are many matters in which highway authorities would do a better job by spending more money for road improvements and the Department should strive to do so. I am confident that those in charge of state, county and city roads and streets recognize the need for more money so they can do a better job of providing better transportation. I am also confident that every administration has a goal to do a better job. Will every change that has been and is being made in our state highway departments result in providing better and safer roads and streets? should be asked of each change - and also in each county and city.

As to the reorganization of State Highway Departments the last several years which I believe attempts to adopt a policy of TQM, Top Quality Management, as a major guideline for the Department hence forth, I also applaud this action. Let me just remind everyone, that TQM means the use of the best highly qualified personnel in the management and planning positions. Each such manager must not only be qualified in the art of management and planning but also must know from experience the basic engineering requirements of what he or she is managing or planning. Politics, and little or no management or planning experience in highway transportation engineering or closely related activities does not result in Top Quality Management. Of course some engineers with experience in highway planning, design, construction, and or maintenance and with some management or planning experience or training can also be excellent managers or planners. I am convinced that both experience and training in highway management and planning and highway engineering produces the best Top Quality Management personnel.

Management of a transportation activity at the Federal and State levels must always remember the goals must always be:

1. To serve the people whom I am serving in the best possible manner in the transportation engineering area.
2. To place major emphasis on transportation for the future as well as now.
3. To improve the quality of life of the people who live in my jurisdiction or who are visitors here.

I congratulate the State Departments of Transportation on their recent attempts of management and planning in reorganization of the State Departments of Transportation. Best wishes for achievement of future goals as envisioned. Let me finally emphasize perhaps the biggest job of management and planning in every highway department is to obtain sufficient funds and expertise to eliminate the inadequacies in the transportation system it has today. And I am sure it has some. Every state, county, and city Transportation Department has some. I trust those in Indiana will be some of the best in the nation.

Thank you for inviting me to be with you at this conference.