

Interstate highways, the states should, after an engineering determination has been made of their highways and the roads and bridges of the individual routes and systems, determine whether such roads and highways are structurally adequate and can safely and economically accommodate such traffic operation.

The AASHO recommendations further state that the 102 inch maximum width shall not be applicable to other routes of the state unless the state's highway system is predominantly of sufficient lane width to safely accommodate such width of vehicles.

VI. Iowa's Highway Capabilities

Could Iowa's highway system be safely and efficiently utilized by vehicles of greater dimension and greater weight than are presently allowable on such highways by state law?

No vehicle starts and completes its trip on the Interstate highway system alone. All movements of goods and freight must start on some other road system and proceed to the Interstate system. No destination exists on the Interstate system: each vehicle must leave the Interstate system to reach its ultimate terminal. For this reason alone it is entirely impractical to specify weights and dimensions for the Interstate system which are different from those for other systems.

It is these sections of primary, secondary, and city and urban street systems that are of most concern in any review of the proposals presently under consideration. Iowa is typical of many states. The road system is fairly well developed so far as primary roads are concerned but, many miles of primary roads are rapidly approaching structural and geometric obsolescence. Revenues at this time are not sufficient to finance an overall improvement of the system and are not sufficient to finance basic improvements to the system as fast as the ravages of time and traffic are making the system either obsolete or are making the system offer a lower level of service than that which the public is demanding. Each year Iowa is faced with a highway system which has greater needs than existed the year before.

At the present time Iowa has approximately 112,000 miles of roads and streets in all systems. Any change in weight or dimension, whether it be only on the Interstate system or on all systems, will ultimately affect all of these miles. If there is a change in federal legislation, the states individually will not long be able to hold the line in limiting dimensions or weights of vehicles using all the highways.

Of the 112,000 miles of roads and streets in Iowa, approximately 25,000 miles are paved or have some kind of a dustless surface. Of these paved approximately 10,000 miles are paved with Portland Cement Concrete. A few years ago a study was made of these 10,000 miles of Portland Cement Concrete, and this study indicated that only approximately 25 percent of these roads were 8 inches or more in thickness. Present loading on major highways requires more than an 8 inch thickness of non-reinforced concrete pavement.

The effect of increased loads on probable life of pavements presently constructed has been analyzed. A pavement has been designed based on the normal distribution of axle weights as presently experienced on the highways, and then, this pavement has been subjected to usage of the axle weights on a normal distribution as would be affected by the new limits being suggested. On this basis a flexible pavement with a present life expectancy of 20 years would have this life expectancy reduced to approximately 15 years (or a reduction of 25 percent). A rigid pavement constructed to a thickness of 9 or 9½ inches would experience about the same degree of failure in five years of service that we now anticipate in the first 20 years of its service life.

The results, with respect to these pavement life analyses, are very similar to those which have been conducted by other states.

On the primary road system in Iowa, there are now about 3,000 bridges. Forty-six percent are 24 feet or less in width. Only 43 percent of the bridges on the primary road system are adequate for an H-20 design load. An H-20 design load is based on a 20-ton truck, and is a modern design loading.

In order to evaluate several routes across the state, the actual bridge conditions on several representative highways have been reviewed. On one major cross-state highway, there are approximately 120 bridge structures. Of these, 46 are rated H-15 or less. (H-15 is loading designation for a 15-ton truck). On another, there are 146 bridge structures. Of these, 52 are rated H-15 or less. On a third major highway, there are 89 bridge structures, of which, 63 are rated H-15 or less.