There is a lull in general highway construction at the present time which is occasioned by the general depression in business, but my notion is that upon the return of normal times, highways will receive the same interest and attention which they have had in the past two decades.

OPERATION OF THE NEW TRUCK AND BUS REGULATIONS IN INDIANA

By A. H. Hinkle, Superintendent of Maintenance, Indiana State Highway Commission

During the past decade, highway development and its corollary, highway transportation, have made a phenomenal growth. The rapid growth in good roads is well illustrated in the statistics for the miles of high-type (dustless) pavement in Indiana, which increased from 2,837 miles in 1925 to 8,450 miles in 1932, or nearly 200 per cent in 7 years. The increase in miles of road on which some kind of a surface better than earth exists, has been from 48,120 miles in 1925 to 59,100 miles in 1932, or an increase of 22 per cent in 7 years. The miles of surfaced state roads increased from 3,106 in 1923 to 8,125 in 1933, or 160 per cent in 10 years. The miles of pavement (dustless type) on state roads have increased from 432 miles in 1922 to 6,744 miles in 1932, or 1,460 per cent.

The increase in highway transportation has kept pace with that in highway development. This is illustrated by the increase in registration of motor vehicles and gasoline consumption. During the last decade, the registration of motor vehicles has increased from 479,045 in 1922 to 821,062 in 1932, or 71 per cent. During the last four years, the registration has decreased each year, the peak of 901,740 having been reached in 1929. In the United States, nearly 35,000 miles of state highways were surfaced in 1931, bringing the total up to 242,700 miles, or an increase of nearly 17 per cent in one year.

The increase in good roads invited the increase in highway transportation, and likewise the increase in highway transportation stimulated the demand for improved highways. They are corollary in their relations, one encouraging and inviting the other. Perhaps the mechanical inventions and improvements in the machine had more to do with forcing improvements in the highways; nevertheless, the improvement of the highways was instrumental in bringing much of the increased transportation. This is proved by the much slower development of highway transportation in foreign countries where good roads have not been built so extensively.
Perhaps no industry in past history has made such rapid progress when you take into account the magnitude of the industries involved. The increase in highway development has been quite constant up until 1932, when highway transportation began to recede, and this year the development of highways will likewise start down grade.

NEW PROBLEMS

With this rapid development of highways and highway transportation, there came a host of new problems to be coped with. Among these are the problems of the common carriers to be granted special privileges in order to eliminate unfair competition in the bus and truck transportation. This problem is one for the public service commissions of the various states to cope with and will eventually be solved as a national problem in order to eliminate the interstate warfare provoked by different laws as to size and weight of loads and different rulings and regulations of one state with reference to vehicles registered in another state.

The constant increase of speed of motor vehicles from year to year has demanded new standards of our highways; in fact, this increase has been so rapid in some years that curves which were safe for the speed limit allowed one year become hazards the following year because of the increased speeds permitted.

To eliminate increased hazards, the increased speeds demand greater superelevation, flatter grades, and much flatter curves. The speed at which a vehicle travels upon our highways has increased on an average of about 2 1/2 miles a year during the past twelve years.

A safe width of pavement has increased for a two-lane pavement from 16 feet to 18 feet and now it is generally recognized that 20 feet should be the minimum on a road having fairly heavy traffic. Loads have increased in recent years from 5 tons to 10 tons, thence to 20 tons, and finally to an unlimited load until the law stopped advance. Before the truck regulatory law was passed by the 1931 legislature, 25-ton loads were being hauled frequently over the highways on a 6-wheel vehicle, which loads apparently complied with the then existing laws of the state. The length of vehicles had increased from that of the horse and buggy up to a train of vehicles aggregating a total length of 75 or even 100 feet. In fact, there was no legal limit on length of vehicles in Indiana.

NEW REGULATIONS

Although the miles of roads, and to some extent their width, can increase constantly, there must be some end to the ever-increasing weight of vehicles that travel our highways.
It was not practical to constantly increase the strength of the
great mileage of highways from year to year to accommodate
this ever-increasing load.

Also, the length of vehicles must be limited as a matter of
safety and convenience to the traveling public. All abuses of
the highways as described above led up to the passing by the
1931 Legislature of Senate Bill No. 124, known as “An Act
Concerning Highways, Regulating and Restricting the Use
Thereof.” Although there are many other important provi-
sions in this law, the principal features are:

Sec. 2. (a) Maximum Width—Vehicle and load, 8 feet.
    (b) Maximum Height—Vehicle and load, 12 feet.
    (c) Maximum Length—Single vehicle, 33 feet; any com-
bination of vehicles, 40 feet (semi-trailer is considered as
    separate unit).
    (d) Load Extensions—No load shall extend more than 3
    feet beyond the front of a vehicle nor more than 6 inches on
    the left side beyond the line of fenders.
    (e) Dropping Contents from Vehicles—Requires vehicles
to be constructed so as to prevent their contents from drop-
ping, sifting, leaking, or otherwise escaping therefrom.

Sec. 3. (a) Red Flags or Lights on Long Loads—Requires
    red flags or lights on rear of loads extending more than four
    feet beyond rear of body of vehicle.

Sec. 5. (a) Number of Vehicles in Combination—Forbids
    the use of more than one trailer in a combination of vehicles
    (in addition to one semi-trailer).

Sec. 8. (a) Load on Pneumatic Tires—On pneumatic tires
    restricts load to: 800 pounds per inch width of tire; wheel
    load to 8,000 pounds; and axle load to 16,000 pounds.
    (b) Load on Solid Rubber Tires—On solid rubber tires re-
    stricts the load to 80 per cent of that on pneumatics.

Load on Group of Axles—Also restricts total load on any
    group of axles to 24,000 pounds plus an additional 600 pounds
    per each lineal foot between extreme axles of the group.

Sec. 9. Reduced Load on Weak Bridges—Authorizes, for
    protection of weak bridges, a reduction of gross weight al-
    lowed, to that which may be safely carried.

Sec. 10. Permits to Exceed Specified Limits—Authorizes
    highway officials under certain conditions to issue permits to
    exceed restrictions specified in law.

Sec. 12. Seasonal Restrictions—Authorizes highway offi-
    cials to fix seasonal restrictions on loads hauled on non-rigid
types of surface, below those in the law when climatic condi-
tions and the road surfaces warrant.
Sec. 13. Officers to Enforce Law—Provides for enforcement of the law either by regularly constituted peace officers or by regular employees of the highway commission who have been deputized for that purpose. (State police under another law, authorized to enforce this law.)

Sec. 14. Unlawful Operators Responsible for Damage—Makes owners and operators of motor vehicles unlawfully operated responsible for damages to highways and bridges.

Sec. 18. Exempts Certain Machinery—Exempts certain farm machinery and that used in the construction and maintenance of highways.

Sec. 20. Penalty—In addition to fixing a maximum fine of $500.00, authorizes, for a second or subsequent violation, the suspension of the registration of a vehicle not exceeding 90 days.

It is believed by many of those who have studied this law that it is one of the best laws that has ever been passed for conserving the people's investment in their highways. Heretofore, such regulatory laws were usually inconsistent and no practical means was provided for their enforcement. Before this law was passed, there was not even a statute whereby a weak bridge could be protected by restricting the load to that which it could safely carry.

The legislature decreed that this law was to be enforced on and after January 1, 1932. On January 2, 1932, the Central Transfer and Storage Company of Indianapolis, Indiana, in the Marion County Superior Court obtained a temporary restraining order against the enforcement of the law. The court, on June 30, 1932, upheld the constitutionality of the law in every particular. On July 1, the Indiana State Highway Commission, in co-operation with the state police under the Secretary of State's office, started to prepare to enforce this law; but on July 8, 1932, the Michigan-Interstate Motor Freight, Inc., of Kalamazoo, Michigan, in the United States District Court of Appeals, asked for a temporary restraining order and the plea was heard by three judges, the court sitting at Indianapolis. The plea was denied and the constitutionality of the law again upheld.

DEPUTIZED PEACE OFFICERS

The State Highway Commission, recognizing the desirability of the participation of its employees in the enforcement of this law, has deputized one hundred and sixteen of its regularly employed maintenance men as peace officers for its enforcement. The men are regularly employed at maintenance work and devote only such of their time enforcing the law as the local conditions demand. There has also been deputized
one employee in the central office to supervise this work, his
title being "Inspector of Traffic and Accidents." The deputized men are furnished special uniform caps and badges showing their official position as law enforcement officers.

Fifteen pairs of portable weighing machines for use in weighing the loads of vehicles using the highways have been purchased. There have also been purchased standard weights and equipment for the testing and calibrating of these weighing machines. This testing equipment consists of two 5,000-pound weights, and two 2,500-pound weights with suitable hoists for handling the weights. The testing apparatus has been installed in the central garage at Indianapolis, and when the machines are tested a representative of the state sealer of weights and measures is present to put his official seal on the test. This precaution is taken to support the accuracy of the scales if legal procedure follows arrests for overloading.

Special instructions have been given the deputized men in enforcing the law. For many months, when trucks that were stopped and weighed and were found to be disobeying the law, only slightly, arrests were not made but, instead, instructions were given to the operators as to the provisions of the law. In most of the cases where the violation was found to be of sufficient importance to make an arrest, the operators were taken to the local justice of peace courts, where small fines were imposed. Up to date, arrests have been made and fines imposed in 207 cases.

A most encouraging feature is the co-operation of the general public and the willingness in general of the trucking and hauling interests to comply with the law. When the enormous amount of heavy hauling that passes over our state roads is taken into account, it will be recognized that the number of those that disobey the law is exceedingly limited. In some cases the disobeying of the law is done through pure ignorance or carelessness on the part of the operators and drivers rather than a willful disregarding of the law. It is being recognized more and more by the haulers that their own interests are best served by preserving the great investment made in our improved roads. However, there are always a few who are willing to disregard the interests of the general public and who, either through gross selfishness or shortsightedness are not loath to destroy the good roads that have been built up, in many cases, at a considerable sacrifice on the part of those who pay the bill.

PERMITS TO EXCEED LIMITATION ON WEIGHT AND SIZE OF LOAD

The most difficult part of the enforcement of this law has been the issuing of permits to exceed the limitations prescribed in the law. The legislature recognized the necessity of granting permits under certain conditions. As a guide to the en-
ployees who are responsible for the granting of such permits, the highway commission adopted the following rules and regulations concerning them:

"It is not contemplated to promiscuously grant permits for the exceeding of the regular limitations prescribed by law in Chapter 83 of the Acts of 1931, when other reasonable means of transporting the heavy loads are available. It is very clearly the intent of the law to grant such permits only in special cases where it is impractical, if not absolutely impossible, to comply with the specified limitations in the law. Such permits would be considered proper for the hauling of unusually long or wide articles, such as telephone poles, individual pieces of machinery, moving of small buildings, etc.; or the hauling of heavy loads for short distances where other means of transportation is not available. The requests to move buildings or any unreasonably large equipment or object on the main, heavily traveled highways may be refused where such movement will seriously interfere with traffic for any great length of time, or the movement of such obstacle may be permitted only during the period from midnight to early morning when the traffic is unusually light. Permits will not be issued for the hauling of heavy loads or extra long or wide loads when such loads can be reasonably sub-divided into smaller units complying, or more nearly complying, with the restrictions set out in the law."

Up to the present time 430 applications for special permits under this law have been received and 375 permits have been granted. Investigations and reports by our road and bridge departments have been made with reference to the damage that might be done to the pavements and bridges by heavy loads. These reports are used as a guide in granting these permits. Also the condition of the road foundation because of variable weather factors is taken into account. In the issuing of permits for wider and longer vehicles than permitted by the law, there is taken into account not only the practicability of shipping the objects and loads by some other means, but also, as a matter of safety to the traveling public, the density of traffic on, and width of, the highways to be traveled. For instance, a permit may be issued for moving an exceedingly long load on a week day which would not be permitted on a Saturday afternoon, Sunday, or holiday, when the traffic is unusually heavy. Sometimes permits are issued over routes that may be indirect rather than permit the long load to interfere with traffic in a congested area.

CONCLUSION

Until this law went into effect, there seemed to be little check on the increase of loads and length of vehicles that were coming upon our highways in Indiana. While it is held by some that the law is too stringent and although there may be
arguments for changing slightly the length of load permitted and the weight of load allowed upon the highways, there are so many good features in the law that in general it should be maintained for the permanent protection of the enormous investment the state has made in its highway system. It is believed by most of those who have studied the effects of this law that except in a few minor details it is one of the best laws ever passed by the Indiana Legislature to protect the taxpayers' interests.

The standard adopted by the American Association of State Highway Officials at its last annual meeting held in Washington, D.C., in November, 1932, recommends 8,000 pounds as a maximum wheel load on high pressure pneumatic, solid rubber, or cushion tires. It also states that "research indicates that low pressure pneumatic tires can carry 9,000 pounds per wheel without increasing pavement slab stresses." This same association also recommends a maximum length of 35 feet for a single vehicle and 45 feet for a combination of vehicles. The above recommendations were made after some years of study by this association's Committee on Highway Transport and after much research conducted by the U.S. Bureau of Public Roads. Many think the standardization of traffic laws in the various states is so important for the convenience of interstate traffic that conforming to these national standards should be seriously considered.

Granting that highway transportation will in the future replace to a large extent railroad transportation, the transition from one system to the other should be spread over a much longer time than represented by the rapid growth made in the past decade. In order to leave a healthy, economic condition in the country, we can not suddenly wreck even a single great industry. This depression illustrates as never before in the history of the world how one industry depends upon another and also how one nation depends upon another. Depressions are like diseases—both the just and unjust suffer from them. Therefore, we may conclude that even the highway and motor industry, in order to make a comeback, may have to lend a helping hand to a competing industry that helped them for so many years. Hence, serious consideration should be given before any material changes are made in the present Indiana law "Concerning Highways, Regulating and Restricting the Use Thereof," found on page 235 of the Acts of 1931.