

Recent Federal Highway Progress

By Thos. H. MacDonald, Chief

U.S. Bureau of Public Roads

Stimulated by the Public Works appropriations, State and Federal road building employment rose during the past year to the highest level yet attained. Direct employment on Federal and State highway work during the first year amounted to 4,441,300 man-months - equivalent to an average year-round employment of 370,000 men.

Federal projects accounted for 2,120,600 man-months of direct employment, 1,613,500 man-months were consumed on State highway maintenance, and 507,000 man-months on other State construction. Indirect employment generated may be estimated conservatively at around 1.4 times the direct, and total employment as not less than the equivalent of 880,000 men throughout the year.

These figures are, of course, average since actual employment varied from week to week and from month to month. The individuals employed changed from day to day and if account were taken of all individuals participating the number would probably run to a million and a quarter.

Appreciation of the highway employment effort made is carried in the report of the Executive Secretary of the Executive Council to the President under date of August 25 in the following words: "In the Federal classification, public roads have been outstanding in speed, accounting for half of the Federal expenditures but only a third of the Federal allotment."

This large amount of employment was distributed in the cities and in the country in close approximation to the need. In at least eleven States every county has had one or more projects, and in 86 percent of the total number of counties in the United States some highway employment was provided using funds appropriated by the National Industrial Recovery Act. This diffusion of employment opportunity exceeded the requirement of the Special Board of Public Works that road building projects be undertaken in not less than 75 percent of the counties in each State.

By requiring a reasonable minimum of expenditures on extensions of the Federal-aid highway system across cities, the city unemployed were offered work opportunities. Also a similar requirement assigning funds to secondary or feeder roads insured the direct employment of local rural labor. Limiting the hours of

employment had the effect of increasing the number of individuals employed.

Road construction as an emergency employment measure not only provides prompt response and wide diffusion but it also results in permanent and needed additions to the nation's capital plant. Highways in their building carry no threat of present over-production of consumption goods and they supply transportation facilities that will be the imperative necessity of the future economic order.

The first Public Works highway project was begun in Utah on August 5, 1933. On October 27 not 15 months later, 16,330 miles of new highway projects had been completed, 7,880 miles additional were under construction and 2,845 miles more were definitely scheduled for construction - a total of 27,055 miles. Of the 16,330 miles completed, 9,157 miles are on rural sections of the Federal-aid highway system; 1,318 miles are on cross-city connections of the Federal-aid system, and 5,855 miles are secondary and feeder roads outside of the Federal-aid system. These useful improvements remain to yield further benefits, both direct and indirect, in addition to the past benefit of providing employment for otherwise idle men.

All types of surface improvements have been made as a result of the adjustment of the road to the requirements of traffic and other factors considered in the case of each individual project. This wide use of many road types, so characteristic of Federal-aid roads in the past, is particularly noticeable in the roads built under the Public Works program.

The improvements planned on 25,479 miles of highways and streets in projects approved to September 30 are classified by types as follows:

<u>Type</u>	<u>Miles</u>	<u>Percent</u>
Graded, preliminary to surfacing	5,609	22.0
Low type, sand-clay, gravel, macadam, low-cost bituminous mixes	14,022	55.1
High type, bituminous macadam, portland cement concrete, brick	<u>5,848</u>	<u>22.9</u>
Total	25,479	100.0

The program on September 30 also included 4,402 bridge projects estimated to cost nearly \$60,000,000. Of special interest, there were 482 grade-crossing-elimination structures, estimated at \$22,500,000, of which 439 were railroad-highway grade separations and 43 were intersecting highways.

The building of these grade-separating structures conforms to suggestions in the Federal Act which listed these and other safety-producing projects among the important objects of the appropriation. The apparent imminence of railroad operation developments in lighter, stream-lined, high-speed equipment, introducing new hazards to both railroad and highway, emphasizes the importance of railroad grade crossing eliminations. For this reason as well as the increased speed, volume and general importance of main highway traffic, an accelerated program of grade crossing elimination must receive future attention.

The railroad's share in the cost of grade crossing elimination has been placed very generally by State laws at 50 percent of the total cost. These laws now operate in most cases as an effective stop order on such improvements, unless financing is supplied by the public. Legislation by State lawmaking bodies this winter could accomplish much to relieve the situation by removing fixed percentage requirements.

The construction of footpaths is listed among other desirable objects of expenditure in the National Industrial Recovery Act. There can be no question of the great hazard involved when pedestrians are forced to use the vehicle-throughed

roadways in the environs of practically all cities, especially the approach roads. Emphasis placed on the building of foot-paths in the Act is justified and necessitates the inclusion of such facilities when needed in future projects.

Measured in dollars and miles, the Federal and State venture into the landscape field is conservative with roadside improvement work up to September 30 covering some 1,000 miles of such specifically-designated projects. Results have been achieved that give evidence of thoroughness and thoughtful attention by the State highway departments. There is much to be learned that only experience can teach, organizations must be perfected and methods tried, making a present rather small program perhaps the part of wisdom.

The improvement of a limited network of main roads represented by the Federal aid and State systems has been the central pillar of our highway policy. To the faithful and unselfish carrying out of this policy of "the greatest good to the greatest number" every sound-thinking lawmaker, highway executive and engineer has given his wholehearted effort in the face of attacks on that policy often traceable to some temporary, specific self-interest which seems a benefit.

Every traffic survey made supplies concrete evidence pointing to the general soundness of these policies that have been followed. The latest traffic survey, that made by the State Highway Commission of Indiana, confirms most definitely the wisdom of established policies. It was found that the Federal-aid system roads in Indiana representing 6.4 percent of rural highway mileage carried 52.6 percent of the total vehicle-mileage. Other State highways comprising 4.5 percent of the total rural mileage carry 13.8 percent, and all other roads aggregating 89 percent of the State's total mileage carry only 33.6 percent of the total vehicle-mileage. These results justify the rightfully first improvement priority of Federal-aid and State highways. Moreover, it is interesting to learn from the Indiana traffic survey that the 2.4 percent of primary Federal-aid system roads serve an average daily traffic of 1,721 vehicles and with an average annual maintenance cost of \$286 per mile they earn a return in taxes paid by their traffic of \$2,410 per mile per year.

But due to the progressive improvement of our highways future extensions will be on a class of roads on which traffic growth following road improvement will be less marked. No amount of road improvement will convert a typical land-service road into a road of general use with great waves of new traffic flooding to main roads as experienced in the past.

These matters must be considered from the standpoint of informed and intelligent planning of work to be done. The improvement of secondary or feeder roads begun must be continued not only on grounds of direct service to road users but also on the grounds of social necessity and economic trends that are even now forming. Also, such local road improvement is of critical importance in shaping future highway policies.

Of equal importance, there is urgent need for the improvement of main routes in and near cities, and the refinement of other heavily-traveled highways for safety reasons. A few short years ago when the systematic improvement of rural highways was begun the best streets and roads were in cities and on adjoining rural highways. Now long stretches of rural highways are in reasonably satisfactory condition and traffic has grown in and near cities so that once relatively adequate highway facilities have become generally the least efficient sections of the road and street network. Also, on rural roads improved in the earlier years, when speed and density of traffic permitted road design that would not be justified today, there are curves and other features that must be revised to meet modern requirements. As suggested by their early improvement, many of these roads are today the most heavily-traveled of the rural thoroughfares.

Summing up highway improvement and utilization in broad outline, employment remains the great national problem. Highway work offers direct job relief and requires industrial production. Highways must be planned to meet future requirements. Of high importance and transcending State lines is the provision of greater traffic safety. Such safety involves many different types of facilities designed and provided with safe use as the guiding motive.

A national program of railroad grade crossing elimination is fundamental in the extension of safe traffic facilities. Without arguing the equities of the case, under existing conditions there is no other course open than to make highway funds bear the major burden of the cost of removing the hazard of railway grade crossings.

Proper coordination of transportation involves highway facilities to take the place of unprofitable branch line railroads as well as feeders to rail points, connections to airports, and probably the entrance of the highway organizations into the construction and maintenance of airports and emergency landing fields.

Finally, as a first step toward the advance planning of highways to meet not only traffic demands but also social and economic needs and trends, a traffic survey is needed in every State. Such surveys directed to the discovery of what additional road improvements may be justified on reasonable grounds of economy or social usefulness, should be undertaken under legislative authority, granted at coming legislature sessions if such authority does not at present reside in any of the State highway departments. To aid such highway planning the last Federal act makes available up to 1½ percent of the funds apportioned to the States. There is no better use to which such sums can be put in the present stage of highway development.