THE ESSENTIAL RELATIONSHIP OF HIGHWAY TRANSPORT TO THE NATIONAL SECURITY

By Thos. H. MacDonald, Commissioner of Public Roads, at the 15th Annual Convention of the Association of Highway Officials of the North Atlantic States, Philadelphia, - February 26, 1942.

"It is not enough to produce the materials of war. They must be moved, and moved swiftly, by rail, by truck, by boat to their destination. A successful transportation system depends chiefly on three factors: first, fixed plant equipment, which means motor roads, railroad tracks, navigable waterways, and such things as terminals, docks, and repair shops; second, carrier equipment in the form of freight cars, trucks, buses, barges, pipe lines; third, the use to which these facilities are put."

(The above is quoted from a report to the President by Hon. Archibald MacLeish, Director, Office of Facts and Figures, dated January 14, 1942.)

Modern Highway Transport a New National Tool.

A report of national resources and national progress in production of every essential for national security and national supremacy, written in 1917 when the United States entered World War one, would not have mentioned highway transport as a major element of available and efficient transportation upon which the nation could rely. The total truck registration at that time was only two-thirds of the 1941 increase in truck registration. There may seem a high degree of unreality to refer to motorized highway transport as a new tool when we have arterial roads in

service that have probably never had an animal-drawn vehicle upon them. But it is exactly this element of unreality that makes so important a clear understanding of the critical relationship of highway transport to the national security. In a clear perspective of all the involved elements and in the acceptance of the facts lie the guides for the policies of both State and Federal highway departments as well as the officials who have responsible charge of all local highway affairs, - urban and rural.

Highway transport has earned the right to be included as a major national resource by its established record of service. But at the same time, its infiltration into our whole national economy is now so complete that only the non-essential uses of the motor vehicle may be eliminated without impairment of that economy. To the fullest degree possible the total equipment must be reserved for essential transportation uses. So regarded, the United States possesses a vast reservoir of transport service that can and will contribute immeasurably to the national war effort and to national security. The realization of this objective depends upon public policy and private cooperation.

Motor transportation has become an integral element of our economic development. The exploding characteristic

of our modern city with its far-flung suburban development has been a product of the private automobile and its mass transportation counterpart, the motor bus. A generation of public dependence upon all forms of automotive transportation is reflected in an estimated 324 billion vehicle miles of travel in 1941, and is particularly reflected in the mass transportation movement, by common carrier bus, of nearly 5 billion revenue passengers and, by school bus, of more than 4 million children daily. Each and every element of this movement must be readjusted to the war effort.

War-time transportation includes both the movement of persons and of goods. Typical of the increases in traffic volume from a comparative peacetime basis are rail freight ton-mileage and rural highway truck ton-mileage which, in 1941, increased respectively by 26 percent and 15 percent over 1940. Similar increases in the movements of persons directly attributed to the war production effort are indicated in the figures of the mass transportation companies. Revenue passengers carried by street railway companies by mid-1941 had increased more than 8 percent over the same period of 1940. The difficulty in the adjustment of service to the overall increases in demand results from the distortion of

the normal requirements by the abnormal increase in spots. In the major industrial and defense urban areas of the country, the month of June 1941 showed traffic increases for all city transit, ranging from 17 to 79 percent over June of 1940. In July of 1941, intercity bus traffic was nearly 41 percent greater than in July of 1940. Conservative estimates by responsible government agencies indicate increases for 1942 over 1941 will be in the neighborhood of 13 percent for the movement of goods and 20 percent for the movement of persons.

In the North Atlantic States there is a high degree of reliance upon automotive transportation. In these several States are registered 28 percent of all passenger cars in the United States and 24 percent of all trucks, accounting for 26 percent of the vehicle mileage and 27 percent of the ton mileage in the country. Continuous traffic counts in three New England States during the past six years reveal typical traffic increases in the latest year which are 42 percent above the starting year.

Dependence upon Presently Available Facilities.

Closely related to the established position of highway transport in the national functioning is the automotive industry, which last year produced 4,838,561 passenger cars and trucks,

including military vehicles, valued at 3,630 million dollars. In the total conversion of this industry to war production, however, provision should be made to take care of needed production for replacement, and maintenance and repair parts for existing equipment.

Combined with the projected increases in total transportation during 1942 is the diversion of material and productive capacity to war production which certainly will limit the procurement of additional transportation equipment and facilities, and very definitely restrict the operation of some existing equipment. The combination of material shortage and traffic increase will tax to the limit the existing facilities of all branches of the transportation set-up.

The automotive branch of the total transportation field is made up of the motor vehicle industry, which provides the rolling stock, and the highway industry, which provides the roadbed. The materials requirement of this branch is but an incident in the problem of total material requirements for all-out war production. Nevertheless, it is an extremely vital incident. An improvident policy may well bring into double jeopardy the movement of persons and goods upon which the success of the war effort so heavily leans.

The areas of automotive production have rapidly become the areas of war production but these are by no means limited to the assembly plants. A Michigan tank arsenal is serviced by 700 outside suppliers making parts in 130 different cities of 20 different States.

In the State of Michigan, surveys by the State Highway Department, designed to develop the requirements for the several methods of transportation, have been conducted in 749 defense plants. In each plant, some part of both incoming and outgoing freight was shipped by truck. In 70 percent of the plants, half of the incoming materials were received by truck; in 38 percent of the plants, 90 percent of incoming materials were received by truck and in 13 percent of the plants, all incoming materials were by truck. Corresponding shipments of products were made by truck to the extent of half in 76 percent of the plants; 90 percent in 43 percent of the plants; and all in 15 percent of the plants.

The 749 plants surveyed employed 434,684 persons scattered within a 50-mile radius of the big war plants which had been purposely decentralized away from population concentrations. One out of every five workmen lived more than ten miles from the factory, and three out of each four workers

came to work in their automobiles. These facts indicate that out of 850,000 wage earners in Michigan industries, 635,000 are dependent on the private automobile.

At the Baltimore airplane plant of Glenn L. Martin, it was found that more than 98 percent of some 30,000 employees used private automobiles to get to work. In this latter case, car utilization averaged 2.85 persons per vehicle, greater than in the case of the Michigan survey where the average private vehicle carried less than two persons.

The existing stock of motor vehicles in operation at the end of 1941 provides a measure of the overall carrying capacity inherent in these vehicles and available to the war production effort. Some 4,912,000 trucks and tractor trucks, together with approximately 277,000 commercial trailers and semi-trailers, provide a total instant capacity of more than 13 million tons.

In the passenger carrier field, nearly 30,000,000 private passenger cars, 58,000 common carrier busses and 88,000 school busses, provide a simultaneous total passenger carrying capacity for nearly 124,000,000 persons. In the private passenger car field is a reservoir of 147 million tires produced from 1,641,000 long tons of crude rubber.

In these capacities lies this vast reservoir of transportation facilities which under necessity can and will be turned to meet the needs for the short haul localized transport, which is so characteristic of our war production industries.

The effect of any shortages on this transportation situation is of great moment. Retirements of older units are not being supplemented by new replacements. While those private units remaining in service must and will be subjected to more complete utilization, by operation at full capacity and by other conservation measures, it remains highly unlikely that additional mass transportation units may be recruited in sufficient number to offset the enforced retirements of private vehicles, in view of the steadily increasing employment in all of these plants. It is estimated that the peak production of the total war machine will require an additional ten million employees.

Conservation of Existing Facilities.

The threat of critical shortage which hovers over the transportation phase of war production is one with the threat of limitation in the war effort itself. It is translated in terms of critical materials; of restrictions all the way across the board. It is this possibility that must be met through conservation.

Conservation embraces the saving of critical material in the production of all the elements of automotive transportation by substitution, to the extent possible, by standardization in the interest of simplified maintenance and repair and by curtailment of production for auxiliary uses to the essential minimum consistent with war requirements. Conservation also involves the saving of critical material in the operation of all the elements of automotive transportation manifest in the opportunities for pooling and coordination, improved maintenance and driver education. Conservation, as it affects production, is being officially directed in the Division of Industry Operations of the War Production Board. Conservation, as it pertains to operation of trucks and busses, is lodged in the Motor Transport Division of the Office of Defense Transportation.

When all the possibilities of conservation inherent in pooling, coordination and improved maintenance have been probed and its potential savings have been realized, highway transportation will occupy a high place on the list of critical items. For we are compelled to realize that existing transportation equipment will all be utilized to such an extent that the greatest reservoir for needed new capacity lies in the highway transport field.

Realistic Plans for Meeting Transport Requirements.

In order to forestall chaos in the war production effort, plans are being formulated for a huge perpetual inventory of all available supplies of raw materials. These plans also embrace the establishment of a master bill of materials requirements for all production and for all transportation, inclusive of all war materiel and all civilian supply. Under this plan, it is contemplated that the allocations of critical raw materials for the authorized production of all essential items of military and civilian supply will be made in accordance with the relative availability of these items, as continuously revealed by this perpetual inventory.

In the transportation field, the requirements of the automotive branch are in process of being determined. The surveys currently being conducted divide the requirements of automotive transportation into those for the road bed and those for the rolling stock.

Materials and Equipment for Highways.

Preliminary analysis of the estimates of materials and equipment requirements for the Federal, State, county and municipal highway program for 1942 indicates that these were not geared to a uniform concept of essential minimum. The

equipment requirements of the highway program for the entire country, exclusive of contractors' equipment, have been estimated by expansion of the reported data on the basis of vehicle miles of travel. In excess of 63 million dollars for original equipment and more than 43 million dollars for replacement equipment is indicated. Measured against the total estimated cost of the construction and maintenance work contemplated, these equipment estimates produce percentages of 2.9 for State, 10.9 for the counties and 4.5 for the municipalities. The discrepancy here is obvious.

Fixed equipment for structures, lighting appurtenances and the like accounted for an additional 7-1/2 million dollars in a total estimated cost of approximately two billion dollars. About 28 per cent of the total cost and 17 per cent of the total material requirements are disposed to maintenance.

Drastic Reduction of Estimated Roadway Requirements Necessary.

For a normal and unrestricted highway program for 1942, the total bill of materials for highway roadbed and structures includes 1,819,780 tons of iron and steel including structural steel in the amount of 817,934 tons and nearly 3500 tons of brass, bronze and copper. It will be impossible to supply these critical items on a normal basis. Other less critical items include over seven million tons of bitumens, nearly 48 million

barrels of portland cement and almost 46 million cubic yards of mineral aggregate.

The initial request for the foregoing information based on normal annual requirements was made on December 9, 1941. On February 13, 1942 an additional request was made for estimates of material, labor and equipment for 1942, considered the minimum essential after the application of all possible conservation measures. These data are beginning to come in from the States but not yet in amounts sufficient to justify a revised estimate of total requirements.

Minimum Requirements for Rolling Stock.

The number of new trucks, trailers and busses to be produced has been calculated on the basis of the requirements for replacement to maintain existing rolling stocks at their present levels. Preliminary estimates of the total materials requirements for new production and for parts for repair and maintenance of this class of vehicles have been summarized. These involve the reduction of the required equipment and parts into some 46 basic raw material items, many of which are in a critical category. Total requirements for this class of automotive transportation amount to approximately 1,400,000 tons, of which some 36.5 per cent is for maintenance.

It cannot at this time be determined what will be the proportions in the total inventory of the automotive bill of materials, based on the full capacity utilization of existing equipment, the utmost effort in the practice of conservation, and the essential minimum production of rolling stock and roadbed facilities.

Census of Motor Trucks.

The nation-wide bus and truck inventory requested last fall by the Highway Traffic Advisory Committee to the War Department has been carried out through cooperation between the Public Roads Administration, the State Motor Vehicle Administrators and the Work Projects Administration. The field work of the inventory is now substantially completed with better than 85 per cent returns in practically all States. Work of the W.P.A. central tabulating unit has started in New York City. It is expected that this unit will provide analyses of the total numbers of vehicles available for necessary emergency defense, classified according to their utility. For the first time it is possible to

turn to State vehicle lists, already in use, to determine the reservoir of automotive equipment available for emergency purposes.

Rationing of Equipment and Tires.

Aside from the priorities procedure subsequently referred to by which the equipment, repair parts and materials essential to highway construction and maintenance are obtainable through the War Production Board, certain items subject to rationing are not so obtainable.

Passenger cars are to be made subject to rationing by local boards under regulations to be promulgated by the Office of Price Administration and made effective on February 26, similar to the tire rationing regulations. Deliveries were frozen as of January 1, 1942 but production was permitted to continue through January 31. It is not known what number of vehicles will be available but it is expected that current stocks will be budgeted. Rationed quotas of passenger cars will probably be made available according to preferred lists without other priority.

Procedures established for the rationing of trucks and busses provide that applications of prospective purchasers be

submitted to the field officers of the Bureau of Motor Carriers, Interstate Commerce Commission, who transmit these together with their recommendation, to the Office of Defense Transportation in Washington. The latter recommends approval or rejection and forwards to the Automotive Branch of the War Production Board for certification of authority to purchase. Regulations governing this rationing procedure are expected to incorporate allocations of trucks to preferred lists of purchasers and a measure of priority within the scope of each list. It is not expected that the number of such vehicles will exceed twenty per cent of last year's supply.

The rationing of tires by the Office of Price Administration is covered by revised Tire Rationing Regulations dated February 19, 1942 superseding those issued on December 30, 1941. The new program includes new tires and tubes, retreading and recapping of tires and camel back. Local boards may issue certificates for only limited numbers of tires to be budgeted out of greatly reduced total supplies and increasingly serious shortages of crude rubber. Applicants for tires are classified in two lists, "A" for new tires and

"B" for recapped and retreaded tires. Within the scope of any one list, there are no further priority limitations. Tires for trucks used in highway construction and maintenance are available under list "A", and tires for highway administration passenger cars, construction workers' cars and the like, are available with some restrictions under three classifications of list "B".

In connection with crude rubber limitations and tire rationing, it is interesting to discover that only 1.09 tires per year per vehicle have been required for replacement by all the motor vehicles in operation during the past 5-year period.

Critical Highways.

Through the wide-spread, intensive studies by the State and Federal highway departments with the field organizations of the Army and Navy, the roads directly important to the military services and their needed improvements have been reduced to definite programs. This is not true to the same degree of the roads needed to serve war production. Both classes are incomplete as new expansions are rapidly undertaken.

In the total required highway program for 1942, the construction of access roads and critical elements of the Strategic Network is of first importance. Access road

projects into military and naval bases, camps, replacement centers and depots, and into the numerous newly developed industrial centers, form a class as essential to the war effort as are the motor vehicles which use them. Likewise, the elimination of critical deficiencies in the 78,000-mile Strategic Network anticipates the possibility that any element of this system may on short notice assume prime military or industrial significance.

Access road projects originate through requests by the War and Navy Departments for study of defense areas to be made by the Public Roads Administration in cooperation with the State highway departments to determine the need for roads in those areas. By collaboration with Army, Navy and other interested agencies, projects required in the areas studied are listed in the order of their prior importance. The formal certification by the appropriate agency forms the basis for the assignment of preference ratings by the War Production Board.

As of February 6, 1942, the Army had issued letters of formal certification for 145 access road projects covering 1382 miles estimated to cost $64,404,051.00. The Navy Department had formally certified 94 access road projects, 438 miles in length, to cost an estimated $33,924,620.00.

As of February 16, the formal certification of an additional 18 unclassified projects brought the total for access roads to 257 projects, estimated to cost more than 103 million dollars.

On the Strategic Network, as of January 29, a total of 103 projects, 235 miles in length and estimated to cost in excess of 20 million dollars, had been sent to the appropriate defense agency by the reviewing board. Letters of formal certification received by February 12 covered 21 projects, 57 miles in length, estimated to cost $3,172,464.00.

Roads Needed for Industrial Production.

Up to the present time, access roads to serve directly the Army and Navy establishments have received first consideration. Perhaps these have been the most obvious. But they, as a general class, are not now the most important. The accelerated tempo of war production of all kinds, combined with the necessity for converting coastwise shipping facilities and deflecting traffic to the railroads, will place a larger share of the final burden of this conversion upon highway transport, thus emphasizing the need for adequate access to essential industrial plants and for the elimination of such critical deficiencies on the Strategic Network and such other important highways as may impede industrial transport.

In recognition of the new importance which attaches to motor transport and its essential relation to industrial production, the War Production Board has made arrangements for the certification of projects which are essential to industrial transport as well as for the endorsement of such strictly military projects as require legal certification by the Army or Navy.

In the New England States and other industrial areas, there is instant need for the State highway departments to make intensive studies of the requirements, first, for the highway movement of persons and materials to and from the individual plants, and second, for the elimination of critical deficiencies from the relatively short distance routes which will inevitably receive a high percentage of the increase in industrial traffic. This examination is of such urgency that the Departments should assign the Planning Survey Divisions to this work as a first priority.

Routes Supplementary to the Strategic Net.

The strategic net is conceived as a system of routes important to military movements. In time of an emergency, these routes would be in theory reserved for such uses. It would be negligence of the first degree if supplementary or auxiliary routes for civilian use were not planned now. A splendid example has been set by the authorities in the metropolitan area of New York, and this example should be followed for the whole area of the North Atlantic States, where such provision has not yet been made.

From a seldom-considered standpoint, the reservoir of seating capacity contained in the private passenger car field is at once a boon to defense and a menace to security. The potential chaos inherent in a fear-inspired, unplanned and sudden evacuation of a hysterical city by private automobile presents a foreboding subject for speculation. Hopeless congestion of highways and complete stoppage of essential military, rescue, police and fire protection movements might well result from such an uncontrolled evacuation. Civil defense authorities must give thought to such a potential menace and, in cooperation with the highway officials, incorporate in civilian defense training such measures as will be necessary to provide controlled use of private transportation in the evacuation of cities.

Post-War Highway Program.

It is apparent that the requirements for the procurement of needed materials and equipment for the entire field of automotive transportation are now, and for a long time to come will remain, largely subject to the restrictions and limitations necessarily imposed on the national economy by the war effort. It is confidently expected that the more intensive use of existing motor vehicle equipment and highway facilities, coupled with the enforced postponement of much needed replacement

for an indefinite period, will build up a latent reservoir of needed production after the war. Planning for the future peace, therefore, must of necessity be a part of our all-out war program.

Foremost on the "shelf" of public works to be made available in the future, not alone in response to pent-up needs but by reason of long-standing neglect, is the type of project concerned with urban redevelopment and housing. Conditions resulting from rapid changes incident to modern industrial development and in methods of transportation have been permitted to lapse. Problems of traffic congestion, of the lack of coordination of all transportation, of inadequate parking space for motor vehicles, of over-dense populations and needed recreational areas, have not been frankly met in the past, cannot be adequately dealt with in the present emergency, but will have to be faced in the future. The need for the extensive replanning and rebuilding of our American cities and towns will require the combined efforts of our several administrative agencies of Federal, State and local government together with the maximum aid of private enterprise. It is to be hoped that such rebuilding may be the result of rationalization of our needs rather than the result of the wholesale devastation that is war.