

# Highway Activities During and After the War

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In justice to the thousands of loyal and competent employees of the State Highway Commission of Indiana, it has been thought well to record in the Proceedings of this School an account of our activities during the war, and to take a look into the future of our Department and its activities after peace has been restored.

## CONSTRUCTION

The public is reasonably well acquainted with our routine activities during the period of the emergency and with some of our extraordinary activities, but we consider it doubtful if there is any general recognition of the rather surprisingly large volume of construction work which has been carried on to completion since the attack on Pearl Harbor on December 7, 1941. On that unhappy day we had 23 unfinished road construction contracts, 57 bridge contracts, and 14 maintenance contracts, or a total of 94 contracts in various stages of completion. The unearned or unpaid obligations to our contractors on these 94 contracts amounted to approximately \$4,000,000. Practically all of these contracts have long since been finished and the final estimates paid.

Special note should be taken of the fact that nine days after Pearl Harbor, or on December 16, the State Highway Commission of Indiana received bids on 14 road contracts and 13 bridge contracts. Of these contracts, 13 of the road jobs were awarded and nine of the bridge jobs. The total contract price for these 22 jobs was approximately \$3,350,000. Of course, this letting had been planned and advertised before Pearl Harbor, and the responsibility devolving upon the Commission with reference to going ahead with this work was indeed a heavy one. We decided to resolve the doubt in favor of action, rather than inaction, and proceeded with the work despite difficulties which changed their form from day to day and at times seemed almost insurmountable. It was necessary to secure a substantial amendment to the original construction conservation order before many of these awards could be made,

and it was necessary also to change a good many designs in the interest of conserving critical materials. Before leaving this subject of the road and bridge letting of December 16, 1941, permit me to say that this was perhaps the largest combined letting of road and bridge contracts in the entire history of the Department. Practically all of these contracts have been completed and the improvements are in use.

All road contracts awarded since December 16, 1941, have been defense access projects except 11 contracts for erosion control or sub-surface drainage and ten contracts for resurfacing or paving on the strategic network. All bridge contracts awarded since that date have been on defense access projects except 24, most of which were on the strategic network of military highways, and the rest of which were for making emergency repairs or replacements. All maintenance contracts awarded since December 16, 1941, have been State projects, but most of them have been on roads important to national defense.

The Commission takes justifiable pride in the fact that the various agencies of the Federal government having jurisdiction have permitted all of these contracts to remain in full force and effect, with stoppage of work in but a single exception. One road contract was stopped for a few weeks, but when the Federal authorities were fully informed as to its merits they allowed it to go forward. Surely this was an acid test of the legitimacy of the projects chosen for improvement. Because our projects were chosen with great care and with true conservatism, they withstood the test even of war-time necessity. On several occasions, by different agencies and different individuals connected with the Federal government, these projects were reviewed and always the stamp of approval was placed upon them.

#### ROAD DESIGN

Our Road Design Department has devoted much of its time since December, 1941, to the preparation of plans and specifications for access road projects serving military establishments and for the relocation of State highways within the limits of these military reservations. This group of projects, which includes projects serving Ft. Harrison, Camp Atterbury, Burns City Naval Depot, Jeffersonville Quartermaster Depot, Freeman Airfield, and the Bunker Hill Naval Airfield, required the construction of 45.8 miles of high-type highways at a cost of approximately \$2,566,000.

The Road Design Department has also prepared plans and specifications for highways and street improvements to serve as access roads and streets to essential war industries. This group of projects provided

for the improvement of 28 streets, totaling 14 miles, and seven highways, totaling 11.5 miles, at, or in the vicinity of, Indianapolis, Evansville, South Bend, Ft. Wayne, Anderson, Kokomo, Jeffersonville, Lafayette, Kingsbury and Newport at a total cost of approximately \$1,940,000.

The Road Design Department has also prepared plans and specifications covering the improvement or reconstruction of some of our more important highways to keep them in fit condition to serve war-time needs. This group of projects embraces 62.2 miles of high-type roads at a total cost of approximately \$4,223,000. The Road Design Department has also, since the virtual completion of the defense access road program, made very substantial progress in the preparation of plans for post-war projects. Although handicapped by the loss of experienced personnel, the Department during this period has been able to complete plans for a number of important post-war projects which will be ready to be placed under contract immediately after the end of the war. If our construction continues to taper off, there will be a substantial shifting of personnel from construction to design; and we are confident that the rate of production of post-war plans will increase rapidly in 1944. In fact, we have quite recently transferred, at least temporarily, about 25 of our district construction men to our road and bridge design departments in the central office.

We think it worthy of notice, also, that in order to take advantage of all available manpower we have utilized the part-time services of about 25 engineering students in this great University. For the past three months these young men have been engaged in such preliminary design work as the plotting of topography and road cross-sections. This development has attracted much favorable comment throughout the country. We have learned that these young men can do this class of work and thereby enable more experienced designers to devote their time to more advanced and more difficult work. It is not unlikely that many of these young men will take a liking to highway work and become available for positions of trust and responsibility with the Highway Commission after the war.

#### BRIDGE DESIGN AND CONSTRUCTION

As everyone knows, it is very difficult to build bridges or grade-crossing-protection devices without utilizing critical war materials, especially steel for bridges and both copper and steel for crossing protection. Consequently, upon the declaration of war and almost immediate imposition of strict limitations on the use of critical materials, it

became a major problem to complete the work already under way and to put and keep our highway bridges in safe condition for war-time use. On the day of the attack on Pearl Harbor we had 75 separate bridge structures under construction, and 20 more were advertised for the letting nine days later. Of these 20 bridges, 15 were placed under contract, making a total of 90 pre-war bridges to be completed under war-time conditions. Five of these were on access roads to war plants and military establishments, and 28 were on the strategic network of military highways. The latter group included all the bridges which had been rated as deficient on the strategic network except the bridge over the Wabash River at Montezuma. Plans have long since been completed for a new bridge at this point and the requisite right-of-way has been obtained; the building awaits only the lifting of the war-time restrictions. One of the 90 bridges mentioned was on a road of minor importance, and its construction was deferred. Work on two of the bridges was stopped short of completion by agreement between the Highway Commission and the Public Roads Administration, as it was felt that these structures were not essential to the successful prosecution of war. The other 87 bridges were completed despite numerous changes in design and delays growing out of war-time conditions.

Since December, 1941, only 35 additional bridges have been placed under contract. Of these, 18 were on access or strategic network roads and five were on flood replacements carrying priorities sufficiently high to permit the use of designs utilizing reasonable amounts of steel. The other 12 bridges were essential to the completion of active road contracts, to replace wrecked or washed-out bridges, and for the repair of damaged bridges. Many ingenious expedients were utilized by our engineers in their patriotic desire to curtail the use of new steel. These expedients included the use of salvaged steel spans, of native timber flooring, of salvaged reinforcing steel, of unreinforced concrete abutments and piers, of structural timber designs, and of unreinforced concrete arches. One 65-foot span was built entirely without reinforcing steel.

A standard design for unreinforced concrete arch culverts was developed to permit the completion of many road projects held up for lack of steel. Many such culverts were built, even on defense access roads. All bridges on the State Highway System have been re-rated for both military and civilian loads. Naturally, the Army has been supplied with complete information in this connection. The State Highway postings are being revised in accordance with this study. The railroad-crossing-protection program was drastically curtailed because of

material and labor shortages, but a number of special installations required by war plants and military areas have been designed and placed under construction. The completion of some of these installations has been seriously delayed by the lack of materials.

#### HIGHWAY MAINTENANCE

The employees of the Commission in our Division of Maintenance have exerted themselves to the utmost to maintain our highways to the standard to which the public is accustomed despite innumerable difficulties growing out of the war. Many maintenance materials ordinarily available in unlimited quantities have been either difficult or impossible to secure. Our highways are growing old and are gradually wearing out in many cases, and these roads have been subjected to the heaviest volume of truck traffic ever upon our highways. While very few trucks are actually overloaded, nearly every truck is loaded to capacity; and in some cases it has been impossible, with the men and materials available, to keep repairs abreast of road failures. That excellent work has been done, considering all the circumstances, is the verdict of the public; and this is a source of gratification to the Commission and its employees.

During the last calendar year we applied, for maintenance purposes only, approximately 13,000,000 gallons of bituminous material either by contract or by force account. This work included surface treatment, patching, crack pouring, centerlining, etc. This is the greatest amount of liquid-bituminous material ever applied to our highways in one calendar year. This amount of work was made possible only by prolonging our construction season into the months of November and December, and by taking advantage of every day when the temperature would permit this class of work to be done.

During the last two years we have been unable to obtain any material for signs; so we have refinished and re-erected old signs and have supplemented these with the few new signs in stock at the outbreak of the war. Our road signs are in good condition even despite these difficulties. The Department erected about 600 four-by-four-foot war-time speed-warning signs, and this was done in a single week.

The Commission is co-operating with the Public Roads Administration by maintaining about 58 miles of county roads used by the Army on maneuvers in the vicinity of Camp Atterbury. This maintenance includes clearing and grubbing, ditching and reshaping the roadbed, adding aggregate, and maintaining the surface. A road from Newberry to the Scotland Housing Project was constructed for the Federal government during the winter season in utter disregard of the weather.

This included the grading of approximately three miles, the installation of structures, and the application of a surface course of aggregate. We co-operated with the Federal government in maintaining a county highway from Bloomfield to Scotland. This involved the construction of ditches, patching, and the applying of a heavy bituminous mulch surface.

The Department has carried on various forms of co-operation with war-time agencies entirely outside our normal range of activity. We have taken an active part in the aluminum, scrap iron, rubber, license plate, and other drives. We operated trucks in 43 counties in the scrap metal drive, and at one time in November, 1942, we had 57 trucks engaged in this work for 44 hours per week. During one four-month period the actual out-of-pocket cost to the Commission for participating in these drives amounted to nearly \$50,000.

Two state-wide patching and two state-wide surface-treatment programs were prepared, submitted, and approved by the Public Roads Administration. One state-wide resurfacing program was prepared and approved by the Public Roads Administration and the War Production Board. The Commission has co-operated in tire and gasoline conservation. When tire sales were frozen and rationing instituted, we inaugurated our own tire-rationing plan to conserve the tires we had in stock in our central stock room and at the subdistrict headquarters. This system, with the co-operation of our employees, has enabled us to continue our operations in a satisfactory manner. We also instituted our own gasoline rationing under a system which designated every sub-district garage as a bulk plant to serve as a distributing point for fueling our equipment.

Naturally there has been a heavy turnover of employees in our Maintenance Division. Of six district clerks, we found it necessary to replace three. Of 36 subdistrict clerks, 26 left us either for the Army or for the war plants. We lost 266 out of 474 patrolmen, and of our 36 sign men 24 left our services. We also lost 39 foremen and 22 machinery operators. It became necessary for us to hire and train successors to the competent men we lost. Among the machinery men we lost were shovel operators, centerline markers, and mud-jack operators. Foremen leaving us included both maintenance and shop men.

Since the early months of the war we have not been able to obtain new equipment and have found it very difficult to secure repair parts for our machinery; this problem is still giving us much concern.

The Commission has refused with firmness all requests to permit the regular use of motor-vehicle equipment exceeding the legal limits as to width, height, length, and weight. We have, however, continued

the practice of granting permits for over-size or over-weight equipment for single trips. During the last two years we have granted a total of 3,720 special permits. In other words, while we felt that the law clearly authorizes the granting of special permits for single trips, it does not lodge in the Commission the discretion to set aside these legal limitations for regular hauling.

#### TESTING DEPARTMENT

Our Testing Department has co-operated with various defense agencies in addition to carrying on its own routine work. Included in this war work were tests of concrete blocks, cylinders and beams for Fall Creek Ordnance Plant, Ft. Benjamin Harrison, Camp Atterbury, airports at Kokomo, Columbus, Seymour, and Stout Field. Tests of bituminous materials were made for the Vigo Ordnance Plant and the Goodyear Bag Plant at Charlestown. Our concrete core drill, with our operator in charge, was rented to the Army engineers for use at Baer Field and the New Haven Ordnance Depot at Ft. Wayne, and elsewhere. Various steel products manufactured in Indiana presumably for the use of the American and British Navies, such as chains, eyes, bars, shackles, and hooks, were tested at various times. The fees collected for these outside services totaled nearly \$2,000 and, of course, were added to highway revenues.

#### RIGHT-OF-WAY

At the end of 1942 the field forces of our Right-of-Way Department were reduced from nineteen men to five. During 1942 about 1300 regular project grants, 34 state road grants, and 100 free grants were acquired at a total cost of nearly \$840,000; 164 miles of right-of-way were acquired that year. During 1943, 426 grants were obtained at a total cost of \$127,000. This work covered about 46 miles of right-of-way, practically all of which was for defense access road projects and was paid for by the Federal government.

#### TRAFFIC DEPARTMENT

Our Traffic Department has conducted numerous campaigns and surveys in connection with transportation conservation. This work has been greatly appreciated by many of our important cities and by the large war industrial plants. During the past summer our Traffic Department began making traffic surveys in and near a number of cities in connection with post-war planning. The primary purpose of

these studies was to obtain facts relative to the origin and designation of traffic upon approach roads, entrance roads, and city streets. It has been our purpose to learn from these studies the localities in which through streets are desirable as compared with by-passes or distributing routes. Work of this sort has been finished in the cities of Ft. Wayne and Evansville, and the recordings for Muncie and Anderson are being processed. Indiana is pioneering in this field to a large degree, and this work has merited and received considerable national attention. Our Traffic Department has worked closely with our Design Department in making studies of, and helping to determine the treatment for, major intersections on all plans.

#### ROADSIDE IMPROVEMENT

The work performed by our Roadside Improvement Department during the war years has been largely in connection with proper erosion control. Four construction contracts and one force account project were carried out, and three others are to be let soon, to reduce excessive maintenance cost due to erosion. Research has been carried on in connection with roadside grasses in co-operation with Purdue University. The co-operation with Purdue in this field also includes research on stabilized shoulder soils which will support vegetation. Use counts were made on roadside parks to determine the advisability of curtailing this service; but these counts revealed a surprisingly large use of these facilities, and consequently the maintenance of these parks has been continued. It has been our purpose to safeguard the investment in these parks with a minimum of maintenance expense. Work has gone forward in connection with planning for the roadside park developments, and several such plans have been completed and filed with our post-war projects. About 20 of these properties, purchased before Pearl Harbor, are available for later development.

#### AS SEEN FROM THE DISTRICTS

Let us now take a look at the picture as it appears in and from the six Districts:

*Fort Wayne District.* Knowing from past experience that some bridges would be lost either because of flood or traffic damage, an inventory of salvaged bridge material was taken early in the war and a supply of native timber was requisitioned. Designs were made for several temporary bridges using this material, and these plans and materials have been successfully employed in replacing bridges which collapsed or were severely damaged.



Because of the necessary curtailment of road and bridge construction, some unusual maintenance problems have presented themselves for solution. Extensive concrete patching and widening of old and narrow pavements have been undertaken. This work was carried out under maintenance contracts under the supervision of District road construction personnel. Extensive bituminous patching has also been undertaken on roads which normally would have been resurfaced and replaced. In one instance an old concrete pavement which in normal times would have been replaced now requires an almost continuous bituminous patching operation to be kept in usable condition. The District has directed special attention to the general problem of drainage, both subsoil and side drainage. Extensive French drains have been laid to soft spots in subgrades, and good progress has been made in cleaning side ditches.

*LaPorte District.* Many of the principal highways in this District have suffered severely because of the excessive war-time-load demand of truck traffic, and some have been near the point of failure. These roads have either been reconstructed or repaired to take care of this heavy traffic movement.

As in the other districts it became necessary in the LaPorte District to build and repair a number of bridges with our own forces and with whatever materials could be found. For the past year a skilled bridge gang has devoted all of its time to this class of work, using salvaged steel members and structural timber when they were available and, in some cases, utilizing new native timber.

A problem peculiar to this District was the necessity of devoting additional time to the maintenance and repair of our rolling-lift bridges over the Indiana Harbor Ship Canal in East Chicago. These bridges are old and were subjected to a very serious strain, which was put on them by the increased volume of shipping in the canal as well as by the great increase in traffic passing over them. It has been essential to keep these bridges in operation so there would be no interruption in the flow of oil and gas from the adjacent refineries. To accomplish this result our men, supervised by bridge engineers, have carried on the necessary work of overhaul and repair largely at night during the past summer. The interruption to traffic, either highway or canal, since the start of the war has been negligible, and the District Office has been commended both by the U. S. Coast Guard and the adjacent war industries for this service.

*Crawfordsville District.* This District reminds us that the winter last year was the most damaging in many years so far as highways are

concerned. Even yet we have not entirely recovered from the effects of excessive moisture and alternate freezing and thawing. The restrictions on bituminous materials in 1943 hampered the repair work, and the construction of war plants severely taxed the production capacities of all producers of aggregates, so that deliveries of these materials were somewhat erratic. The construction of defense plants has shifted traffic, in some cases, to roads which were never intended to carry such heavy loads, and this has necessitated constant patching.

All the District equipment has been kept active without the usual replacements, so that in many cases vehicles were continued in service which had clearly outlived their period of economic usefulness. Repair parts have been extremely hard to obtain, so that it has been a very difficult task to keep this equipment in operating condition. Loads on our trucks have been reduced because of the critical tire shortage. A program of extensive recapping of tires has been carried out so as to preserve the available tires as long as possible.

Steel structures which ordinarily would be given an all-over coat of paint have been merely spot painted because of the shortage of paint. This accounts for the mottled appearance of some of our bridges. In each subdistrict there has been stored enough lumber and timber to build a complete bridge of 60-foot span for temporary use. Footings, abutments, and floors of structures which in normal times would have been replaced have been repaired. On some important bridges across the larger streams in this and other districts, guards have been stationed to protect them from sabotage.

*Vincennes District.* The greatest emergency in the Vincennes District was encountered during the flood on the Wabash and White Rivers in May and June of 1943. Numerous levees were built on these rivers within recent years, and because of changed characteristics affecting stream flow it was impossible to determine very far in advance what stage a river would reach. Flood damage in this district to highways and bridges amounted to \$150,000. In addition to direct damage to roads and bridges, the flood caused much extra work for the district forces in cleaning the right-of-way. When you recall that many highways have ten acres of right-of-way per mile, it will be appreciated that the job of removing debris from this area is a formidable task, to say nothing of repairing shoulders, embankments, and cleaning ditches.

In addition to taking care of our own work, a helping hand was extended to the city of Vincennes, which was in grave danger of being flooded. The levee around the city was constructed for a flood stage of not more than 25 feet, while directly across the river a levee had

been constructed for a stage of 27 feet; so it became necessary to raise the levee around the city a minimum of two feet. Workers provided by the city, county, the Army, the U. S. Engineers, and the State Highway Commission succeeded in doing this job in a little over two days. State Highway forces dug, loaded, and hauled to the site between one-third and one-half the sand required for sand bags and embankments. At times we had two power shovels and as many as 25 dump trucks on this job.

A tremendous acreage of farm land was flooded in this district, and the farmers lacked sufficient equipment to get their crops planted. The Highway Commission authorized the rental of tractors to the farmers to expedite this work. We had as many as six tractors rented at one time, and this work covered a period of about three weeks.

*Seymour District.* New construction was drastically curtailed here as elsewhere; so it became necessary to resort to intensive maintenance and salvaging operations to serve defense and civilian needs. Many roads were resurfaced which had reached a stage of deterioration beyond which ordinary maintenance methods would not suffice. This work progressed rapidly and was done under traffic, which is now the standard practice of the Commission. May I remark in passing that we are now down to our last three detours, or, more accurately, three truck detours, two of which are also passenger car detours? The present Commission desires nothing so much as to reduce the number of detours to the irreducible minimum.

Our District Engineer directs our attention to much work that must be done in the District after the war, in addition to the Post-War Construction Program we have all discussed with so much enthusiasm. Many bridges have suffered from lack of attention during the period of war restraint, and their repair or replacement is one of our first responsibilities after the war. Some steel structures, otherwise good, are suffering from a lack of paint, and the same may be said of guard rail in general and especially of steel guard rail. Guard rail posts have decayed and cannot be replaced now. Many dangerous locations are entirely without this form of protection. Equipment, both rolling stock and tools, requires replacement. Many of our buildings need additions and repairs. Even office equipment is well worn and will need early replacement. These unromantic needs should not be overlooked. When our roads again become congested, as they most certainly will, and that, too, with obsolete vehicles and inexperienced drivers, every precaution should be taken for the safe guidance and warning of traffic. This will call for the replacement of signs now quite ancient and the addition of

new ones. Pavement markings, railroad flashers, and the revamping of traffic signals is another big item. Drainage problems, widening of backslopes, control of erosion, and many small relocations are waiting for correction and will pay returns in future maintenance economy.

Much research is needed in connection with the use of bituminous materials and their proper combination with the native aggregates. The causes of failures of concrete surfaces must be determined and corrected. Additional attention must be given to subgrade treatment; this problem, which has long been a challenge to the highway engineer, must find an early and an adequate solution. Research is necessary also to develop paint with lasting qualities.

Our District Engineer calls our attention also to the imperative need for bringing about a proper and definite alignment and balance between highway strength and capacity and the destructive effects of vehicles which will be permitted to use them. Very properly he reminds us that we cannot expect to build a road adequate to carry present traffic and then subject it to ever-increasing loads throughout the years of its anticipated usefulness. He reminds us that it is up to us, whose principal thought is on highways, to supply most of our own enthusiasm and initiative and to attack these problems now and not wait until they are thrust upon us by conditions we can now reasonably forecast.

*Greenfield District.* The Commission has noted with appreciation and approval a recent development in the Greenfield District. Recently at a District Staff Meeting the Commission's Post-War Program was under discussion. It was proposed that the District attempt a program of its own consisting of an inventory of useful projects which could be handled with our Maintenance Forces if need be. Such an inventory is now being taken and a report of the findings will be made. It is expected that similar inventories and reports will be compiled in the other districts, which, of course, have also given some attention to programming this class of work. It is the desire of everyone to avoid another made-work program, and it is believed that a reservoir of useful work can be established in connection with the State Highways which will be made up of comparatively small miscellaneous projects intermediate between routine maintenance and new construction. Such projects can absorb a great deal of labor and utilize it productively, if the labor becomes available and the funds necessary to finance the work are forthcoming. It is just possible that the proponents of Federal highway aid, in their desire to do work of permanent value, might profitably give thought at this time to the wisdom of making some part of proposed Federal highway appropriations available in emergencies for this class

of work. Projects of this type can legitimately employ the maximum amount of labor, and the work can be prosecuted without the aid of detailed plans, the slow preparation of which is a great impediment to the rapid inauguration of any program of public improvements.

In the Greenfield District, the District Maintenance Engineer has two engineers from the District Office who cover the subdistricts with the subdistrict superintendents and clerks. All useful projects, in the category under discussion, such as subsurface drainage, small culvert extensions, shoulder widening and lowering, are listed. The District Bridge Engineer has three engineers covering the District in company with the subdistrict superintendents to check all bridges. This survey is intended to identify all bridges needing small repairs, such as underpinning and bracing with additional structural members. This survey also embraces a study of small structures which should be replaced and where a standard plan may fit the situation so that the job can be let by contract.

The District Landscape Supervisor is covering the District to check on such projects as erosion control, ditching, and sodding. It is recognized that several roads in the District would benefit greatly from this type of improvement.

After the information has been collected in the field, the various items will be sorted, classified, and listed by subdistricts and road sections. On such projects as a subsurface drainage the requisite length and sizes of tile will be indicated. Attempts will be made also to make a rough estimate of the number of man hours each of these jobs will require. It is felt that all our Districts can furnish much useful employment for a large number of men on short notice if we have the projects identified in advance and know just where these men can be put to work. It might be that this class of work on state and county highways throughout the country will provide the best possible insurance against the return of the made-work program of the depression years with all of its inefficiency, waste, and other recognized evils.

#### FUTURE ACTIVITIES

As we have already indicated, all the time that is not required in our routine work at present is being devoted to our post-war planning. We have held meetings in most of our principal centers of population with city and county officials and civic leaders for the purpose of identifying projects of genuine merit for inclusion in post-war-construction programs. In December, 1942, we designated improvements, then rec-

ognized as desirable to our State Highway System, the aggregate cost of which would approximate \$160,000,000. This great program has been augmented by the inclusion of many projects identified in studies made after these meetings in our larger cities. Others will be added as rapidly as their merit is established.

The Commission is co-operating with other highway departments throughout the country in support of legislation to appropriate Federal funds for a great post-war highway development program. Bills to appropriate such funds are pending in Congress and are receiving the active support of the Commission. It is hoped that some of these funds will be available for use on city streets not on the State Highway System and for feeder roads also off the State Highway System. It is not possible to state at this time, however, just what form this legislation will finally take, either as to the amount of money that will be appropriated, the method under which it will be apportioned among the various states, the basis for matching Federal funds with state funds, or the mileage and types of roads and streets under various governmental jurisdictions which will be eligible for improvement with these funds. It can be asserted, however, with complete confidence, that an appropriation of unprecedented size will be forthcoming; and there seems no reason to doubt that enough of this money will come into Indiana to insure a great highway development program at the end of the war.

One cannot study our highway needs without reaching the conclusion that men in the highway industries have an assured future. Whether in the public service or in the service of private business firms, it appears that every highway worker, in every category and in every capacity, will have interesting and profitable work in the highway field for many years to come. There is no mistaking the fact that the public is favorable to the continuation and extension of the highway program at the earliest possible date. While it is not necessary to sell the public on the need for additional highway facilities, we should secure popular support for legislation to provide the requisite funds. In this work the representatives of the various units of government should make common cause, joining in the effort to secure the enactment of the best obtainable legislation. As an active worker for such legislation as the post-war period will require in our field, the speaker confidently relies upon all of you to exert your influence for the early enactment of the necessary legislation so that we can plan our future improvements with a clear understanding as to the amount of money which will be available and the rules and regulations under which it will be expended.