

"KENTUCKY'S PROGRESS ON THE INTERSTATE SYSTEM"

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In describing the progress made on Kentucky's Interstate highways, it is necessary to start with the 1956 Federal Aid Highway Act. Credit must be given the Congress for passing this historical legislation, which has set in motion across the United States the greatest construction project ever attempted. Many comparisons have been made with spectacular construction projects of the past, such as, how many Panama Canals, Boulder Dams or Pyramids it would take to equal the complete Interstate System. Most of the well known awe inspiring projects fill our vision from a single viewpoint. In contrast, it is very doubtful if the entire 41,000 miles plus of the Interstate System will ever be seen or traveled by any one person.

The money for the Highway Trust Fund, set up by the Congress in the 1956 Highway Act, comes from earmarked taxes on the highway user, such as an additional one cent gas and diesel fuel tax for a total of three cents, buses and truck trailers tax, a new tax of three cents per pound on retread rubber, and a new tax on vehicles weighing over 26,000 pounds. The January, 1959 revised estimate of cost to complete the Interstate System is 39.5 billion dollars. As you have probably heard, a deficit of \$100,000,000 is expected by July 1, 1960, in the Highway Trust Fund. The Congress agreed that the Interstate highways should be completed in the shortest possible time, and sixteen years was determined to be the shortest practical construction time. The looming deficit presents a financial problem that can only be solved by additional legislation. The President has recommended increasing the gas tax another 1½¢ to keep the program on schedule. Highway user groups generally are opposing the recommendation, contending that all of the Federal aid money comes from the highway user, and since the new highways will benefit the general economy and be used for national defense, any additional money needed should come from general revenues.

The financing of the federal aid program is very important as the flow of money will determine how fast the Interstate will progress. Kentucky would have been unable to fully participate in the accelerated program if its citizens had not approved the \$100,000,000 bond issue for use in matching federal aid funds.

Excepting Route I-24, Kentucky has 615 miles on the Interstate System. When this route is finally selected, the total mileage will be approximately 700 miles. At present the Interstate program is slightly ahead of schedule nationally. In Kentucky we are not up to schedule, but the gap is closing fast, and by late spring we should be on schedule and be able to maintain the pace to completion. By March 6, 1959, we will have Federal Interstate funds authorized and obligated in the amount of \$89,352,622, covering engineering, right of way, and construction. The total appropriation to July 1, 1959, is \$90,180,400.

I believe the Kentucky Department of Highways acted wisely three years ago when it was decided not to fly into the program and spend the appropriated money just to keep on schedule initially. We were determined to obtain for Kentucky the highest type highways the Bureau of Public Roads would approve. A considerable amount of time was justifiably spent in working up the Interstate geometric design and obtaining Bureau approval. As an example, some highway departments, anticipating the 1956 Act, prepared expensive plans based on their best guess as to what the minimum standards would be so that they would be ready to let contracts early. One State Highway Engineer told me that they had a

hundred miles of completed plans designed for a 20' median on their Interstate, which must have cost them 3 million. He gave me this information at a meeting where it had just been announced that the minimum standard approved by the AASHO and the Bureau for a rural Interstate median would be 36'. The Bureau approved a 60' median for Kentucky along with other desirable designs. A few months delay avoided expensive reworking of plans and substandard designs.

Slide (1) Typical Section

This is a stripped-down view of the Kentucky Interstate typical section. Much of the drawing has been painted out in order to emphasize the main features on the cross section. Knowing that the Interstate in Kentucky was going to average a million dollars per mile, the Department's best and most experienced designers spent many hours and considered all known factors before agreeing on this section. I will explain a few of the more important features of the design.

With a 60' median, it will be possible at any time in the future to economically convert the four lanes to six lanes, simply by adding two 12' lanes on the inside, and still have a 36' median remaining. The shoulders will be full depth. The outside shoulders were made 12' in order that there would be 2' of support at the edge for the 10' paved portion. The slopes and ditch widths are designed so that the bottom of the pavements will be above the bottom of the ditches. The shoulder slopes are $\frac{1}{2}$ " per foot. This affords good shoulder drainage on a paved shoulder, and gives a minimum and safe break in slope from the $\frac{3}{16}$ " per foot pavement slope. I can assure you the superelevated section was much more troublesome than the tangent section. All that I can say at this stage is I sincerely hope the Department's design results in safe and pleasant travel on the Interstate.

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The Department was ably assisted by consulting engineering firms in the preparation of plans. Our top locating engineers and designers were overtaxed in supervising our own forces and in checking and approving road and bridge plans prepared by the consultants. We now have the work load under control, and plans should show continual improvement.

Realizing that the Interstate grade lines would result in deep cuts and very high fills with enormous quantities of excavation, it was deemed necessary to have as complete soil and sub-surface information as possible. Therefore, soil testing and boring contracts were negotiated with outside consulting engineers. Accurate soil and subsurface data eliminated a large part of the guesswork for the contractor; however, I find that most of the experienced contractors still want to put down a few holes of their own. We feel that the contractors appreciate good boring information, and will give us better bids on excavation.

Since this is a report on progress of the Interstate highways, I think that it is fair to mention that during the period of big push on plans, the Department was undergoing a complete reorganization which involved numerous shifts in engineering personnel and changes in line of command. Credit must be given to the men who carried the work forward for two years while the reorganization was being perfected. A brief description of the Department's engineering organization gives a good picture of how the Interstate projects, along with other projects, are handled.

All bridge design is performed by the Bridge Division in the Central Office at Frankfort. Four other divisions in the Central Office—Design, Right of Way, Construction, and Materials—have their field forces operating out of 6 area offices throughout the State. The 4 divisions, headed by directors, and the 6 area offices, headed by Area Engineers, are supervised by an Assistant State Highway Engineer.

The Central Office Design Division consists of the Road Drafting Room where plans are finally checked, the Contract Section, Specifications, Location Engineering Section, Aerial Section and Reproduction Section.

The Right of Way Division has complete charge of right of way acquisition.

The acquisition of right of way has increased year by year. Due to the huge amount of money now being spent for right of way, it became necessary to make some radical changes in the methods of right of way acquisition to insure, as well as possible, that the Department is treating property owners fairly, and that all purchases are fully documented so that when audited by the Bureau of Public Roads, full reimbursement can be expected. The heart of right of way work is the appraisal of the property. Much time is devoted to training the personnel in making good, sound appraisals. Many of our right of way people have taken university appraisal courses. Since the Department's policy is to make only one offer to the property owner, and that is the approved appraisal amount, the Right of Way Division must have a detailed appraisal that can be defended in court, if necessary. The Right of Way Division's personnel consists of appraisers, buyers and attorneys. It has a Utility Section which obtains written agreements with all the railroads and utility companies covering the adjustment or relocation of their facilities due to highway construction.

The Construction Division takes over as soon as the contract and work order is turned over to them by the Design Division. They are charged with the supervision of all construction contracts, and when projects are completed in accordance with the plans and specifications, they officially accept the projects for maintenance. A recent addition to the Construction Division is the Labor and Wage Rate Compliance Section.

The Materials Division operates the Testing Laboratory, where all materials used in highway construction are tested. They also prepare soil profiles for the Design Division.

Each of the four divisions just described have their functions in the field handled by the Area Engineer who has four sections representing each division.

Slide (2) Map of Interstate

The progress that has been made on the Interstate System in Kentucky is best illustrated by this map showing the Interstate Highways. If the different markings and legend are readable, you can see where engineering is in progress, the sections where right of way acquisition is going on, the design engineering sections, the boring contracts and the sections under construction.

Without resorting to cost figures or mileages, I will endeavor to describe, as briefly as possible, the existing situation on each Interstate Route.

Starting with I-65, we have the Louisville-Jeffersonville Bridge and the route south to Chestnut in various stages of preliminary design. Plans are complete, and we will have the North-South Expressway completely under contract from Chestnut to the constructed section at Woodbine this year.

I-65 is complete from Woodbine to the Watterson Expressway. Continuing south, it includes the completed Kentucky Turnpike, then a section to near Upton which has been graded and the surfacing contract will be completed this fall. Engineering studies are in progress south to Munfordville.

On I-64, the Louisville-New Albany Bridge is being designed, and preliminary engineering studies are in progress east to North Middletown. From North Middletown to Ky. 35 just west of Frankfort, Interstate I-64 has all been let or advertised for letting. Plans are being prepared from Ky. 35 across the Kentucky River to Jett east of Frankfort. Work on I-64 then skips to engineering from just west of Winchester to the section of grade under contract between Winchester and Mt. Sterling. Plans have been completed from west of Grayson to the Big Sandy River. Right of way acquisition is under way through Boyd County. The Boyd County section should be under contract for grading by fall.

Dropping back to Louisville, I-264, the Watterson Expressway has one more contract to complete construction from US 31-W to the Shelbyville Road on US 60. The interchange with US 60 will be let just as soon as right of way acquisition is complete. A short section of grade is complete between US 60 and US 42. The remaining sections to complete I-264 are under engineering study now.

Interstate I-71 is in the preliminary stages of engineering design from the junction with I-264 to a point near LaGrange.

I-75 begins with the Covington-Cincinnati Bridge and approaches, now under design. From the Covington Expressway now under contract, we will have I-75 completely under grading contract to Cherry Grove by June, and by the end of the year it should be contracted to Georgetown.

I-75 in Madison County from Fayette County line to Richmond will be ready for contract this year. A preliminary engineering report has been completed covering the Interstate Routes 64 and 75 in the Lexington area. A preliminary engineering study is in progress between Richmond and Corbin. Plans are almost complete from Corbin to the Tennessee Line. To meet the Tennessee schedule, we expect to contract the section from the State Line to Saxton this summer.

I-24, known as the Nashville-St. Louis Route, was added to Kentucky's original Interstate mileage in October, 1957. Nothing other than the planning study has been done on this route to date.

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The Department is preparing maps such as this at the request of the Bureau of Public Roads. It furnishes information at a glance relative to the location of major structures, interchanges and railroad crossings. Traffic and bridge loading used in design is shown. Some day, not too far distant, the traveling public will appreciate the issuance of Interstate Route Maps with interchange layouts shown on a larger scale as on this map.

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The following pictures were selected to illustrate some of the interesting construction on the Interstate:

1. Metal retaining wall construction permits frontage street adjacent to residences.
2. Taylorsville Road Interchange showing construction carrying on with heavy traffic flowing by constantly.
3. More Watterson Expressway work.
4. Box culvert construction in Hardin County last summer.
5. Grading work and bridge work on the interchange joining the Kentucky Turnpike south of Elizabethtown.
6. Twin bridge construction.
7. Good workmanship in pipe laying.
8. Observe string lines, grade check, rounded excavation and bedding material.
9. Stone backfill at abutment. It is hoped that this will prevent settlement at bridge ends.
10. Another view of the same. This is rather expensive construction and the Department is open to suggestions on a cheaper method.
11. Winter bridge construction.
12. Wagon box used for minor roads and where large farms are severed by the Interstate.
13. Another view of the wagon box.
14. Typical reinforced concrete girder bridge across Interstate. The beauty of this design will be appreciated by all who will drive Kentucky's Interstate Highways in the future.
15. Another view of formwork.
16. Rock fill on frontage road in background.

In conclusion, I wish to express my sincere hope that we will all be here a few more years to enjoy using the Interstate Highways, not only in Kentucky, but throughout the nation.