# THE BUREAU OF PUBLIC ROADS AND THE APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM

by
J. B. Kemp, Division Engineer
Bureau of Public Roads, Frankfort, Ky.

Passage of the "Appalachian Regional Development Act of 1965," in March 1965, created an unprecedented opportunity - as well as an unprecedented challenge for the Kentucky Department of Highways. The opportunity is for the construction of approximately 430 miles of highways in the Appalachian area of Kentucky, as well as a large number of local access roads. The challenge is to do this in a six year period, and to locate and construct these roads in a manner which will contribute most to the development of the Appalachian area.

The 1965 Act authorized $840 million of Federal funds for development highways in Appalachia. Of this, $35 million has been reserved for access roads, leaving $805 million to be spent on 2,350 miles of development highways. Kentucky is one of 12 States in the Appalachian area, but Kentucky's 430 miles represents over 18% of the total mileage to be constructed.

The Bureau of Public Roads has been assigned certain administrative responsibilities for the highway portion of the Appalachian program. Responsibility for most aspects of the program - particularly design and construction - will be the same as Bureau of Public Roads responsibility for other Federal-aid highway programs. In the areas of fund allocation, location, and construction priorities, Bureau responsibility will be different.

The Bureau of Public Roads and the Kentucky Department of Highways will maintain their normal Federal-State partnership in the administration of the Appalachian program, but the Appalachian Regional Development Act of 1965 provides for a third partner - the Appalachian Regional Commission- to cooperate with the State and the Bureau in the conduct of the program. I will cover the five principal areas in which the procedures for the Appalachian program differ somewhat from normal procedures used in the asministration of our regular Federal-aid programs. These are:

(1) The Appalachian Development Highway System Itself

(2) Detailed Location and Centerline Location Concurrences

(3) Adequacy Ratings

(4) The Cost Estimate

(5) Funding

## THE APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM

The Appalachian Regional Commission, after consultation with the States and upon the recommendations of their engineering and economic consultants, has selected a group of corridors or routes known collectively as the Appalachian Development Highway System. This system was approved by the Secretary of Commerce on August 11. These corridors are described very generally since in most cases the specific locations have not been determined.

Corridor G, for instance, is described as extending from US 23 near Pikeville to Interstate Route 64 near Charleston, West Virginia, generally along US 119. Kentucky has portions of five other corridors, while two corridors lie entirely within the State.

The status of the Appalachian Development Highway System at this time is analogous to the status of the Interstate System about 1956. Total mileage, route termini and route designations have been established, but detailed location work is just beginning. The total length of the Appalachian Development Highway System is approximately 2,712 miles, of which not over 2,350 miles are to be improved.

The Appalachian Development Highway System will be improved to consist primarily of new highways on new locations or of new highways rebuilt on present locations. However, in those cases where existing highways are adequate, the adequate sections will be incorporated into the Appalachian Development Highway System. Kentucky has about 158 miles on the system which are considered adequate, in addition to the 430 miles eligible for construction.

There is no requirement that Appalachian Development Highway System corridors or access roads be on an existing Federal-aid route, but the bulk of the Appalachian Development Highway System is on the Federal-aid Primary System and the rest of it will be incorporated into the Federal-aid Primary System as it is completed. The maintenance responsibility of the State for both development highways and access roads will be similar to its responsibilities on other roads constructed with Federal-aid funds.

## DETAILED LOCATION AND CENTERLINE LOCATION CONCURRENCES

The first step in the process of determining the detailed location of the Appalachian Development Highway System is for the State to begin route location study work on particular sections of corridors. Bureau

of Public Roads engineers coordinate with State Highway Department engineers on these studies to insure that both the State and the Division office are in agreement on locations at an early date.

When these studies have been completed, the State submits a "detailed location map" to the State representative of the Appalachian Regional Commission. Upon approval by the State representative, the State submits the map to the Appalachian Regional Commission and to the Bureau of Public Roads Division office. The Bureau of Public Roads Division office assumes that the detailed locations are acceptable to the Commission if not notified otherwise within ten days. If the location is satisfactory, the Division office approves the map and accepts the route location study. The State may then be authorized to proceed with design engineering.

During the preparation of contract plans, Bureau of Public Roads engineers coordinate with State Highway Department engineers under normal Federal-aid procedures. Upon completion of the construction plans, the State must determine whether the construction centerline location varies in "any significant respect" from the location as shown on the previously approved detailed location map. If it does, then "centerline maps" must be submitted to the Appalachian Regional Headquarters and the Bureau of Public Roads Division office, and appropriate approvals obtained.

The Division office again assumes the concurrence of the Commission if not notified otherwise within ten days and is in a position to approve the final plans and authorize the State to advertise for receipt of bids when so requested, provided that the usual Federal-aid requirements have been complied with.

The Appalachian Regional Commission therefore has the opportunity to approve or disapprove location decisions at two critical points- at the beginning and near the end of the design engineering phase. Adequate procedures are, of course, provided for top level coordination and resolution of any location problems that cannot be resolved locally.

ADEQUACY RATINGS

A new concept in Federal-aid procedures has been introduced in the Appalachian program with the requirement for adequacy ratings. Under present Federal-aid programs, the State has specified amounts of money to spend for work on each of the Federal-aid systems. The determination of which sections of the system to improve first is generally the prerogative of the State. Under the Appalachian program, the Appalachian Regional Commission is concerned with improvement priority. Initially, the Commission intends that funds will be earmarked for specific project improvements. The Commission will determine the amount of funds and the specific projects and make recommendations to the Secretary of

Commerce. On the basis of these recommendations, the Secretary of Commerce will approve specific projects. The Bureau of Public Roads, which is a part of the Department of Commerce, will establish ceilings of funds and authorize the State Highway Department to begin work in accord with the approved project listings.

Later on, after adequacy ratings and firm cost estimates become available, priorities are to be proposed by the Appalachian Regional Commission and approved by the Secretary of Commerce for the entire system. Present interim procedures will then be simplified.

The adequacy ratings are similar to the old sufficiency ratings with which many of you are familiar, but are less complex than most sufficiency ratings due to the necessity for uniformity between the States and the short time allowed for making the ratings. Basically, the rating and the serviceability rating.

The structural rating involves assigning 3, 2, 1, or 0 points according to condition to the wearing course, base and subbase, and drainage. Three points is good, 2 is occasionally substandard, 1 is substantially substandard, and 0 is continuously substandard. Ratings have been made on the existing highways within the Appalachian corridors. Sections on new locations are rated zero on all counts.

The serviceability rating involves actually driving designated sections of existing roads on the Appalachian Development Highway System at AM and PM peak and between-peak volumes, and computing average "running speed." Four runs are required and a table provides a numerical value for the rating.

Traffic, bridge, railroad crossing, accident and miscellaneous factors are also reported. The Bureau of Public Roads Division office has the responsibility of checking the State's rating procedures, both field and office, to insure uniformity within the State. The Bureau of Public Roads Region and Washington offices will take measures to insure uniform rating procedures among the States.

The Appalachian Regional Commission will review the adequacy ratings on an Appalachian-wide basis. The State Highway Department will recommend construction schedules by fiscal year in the preparation of the Appalachian cost estimate. On the basis of this information and evaluation of the development potential of the area, the Commission will recommend construction priorities for major segments of the system. Upon approval by the Secretary of Commerce of the sections of corridors on which work may proceed, the Federal Highway Administrator will establish fund ceilings in amounts sufficient to cover the approved work.

This procedure represents a change in the usual procedure for administration of Federal-aid highway funds. Highway construction funds will be allocated on the basis of need or development potential on a region-wide basis, and funds will be assigned to be used on selected sections of the Appalachian Development Highway System. For the first time, an agency other than the State Highway Department will have a voice in the determination of construction priorities.

## APPALACHIAN HIGHWAY COST ESTIMATE

Preparation of an Appalachian highway cost estimate is now beginning. The purpose of this estimate is to make an accurate determination of the cost of improving those segments of the system found inadequate by studies of the adequacy ratings and development potential. This estimate will be very similar to the Interstate cost estimates which have been used for determining the amounts of Federal and State funds necessary for the completion of the Interstate System.

The estimate is to be prepared to embrace only those elements of construction required to meet the needs of 1975 traffic, although the basic design year is 1990. Where 1990 traffic justifies 4 lanes and 1975 traffic only 2 lanes, right-of-way for 4 lanes will be included in the estimate and the construction estimate will be for 2 lanes.

It is expected that full control of access may be employed on multi-lane highways where the 1975 ADT exceeds a certain level - probably in the range from 12,000 to 15,000 - or on any multi-lane by - pass. It is expected also that partial control of access may be employed on any highway where 1975 ADT justifies multi-lane construction.

Except where full control of access is employed, interchanges or grade separation structures will probably not be financed under this program when the combined 1975 DHV for both the Appalachian highway and the cross-road is less than 1000 for 2-lane highways on 4-lane right-of-way, or 2500 for 4-lane highways.

Design of the system is to be based on three ranges in average running speed which, in combination with the design speed of the highway, governs the design capacity. The three ranges of running speeds and corresponding design capacities are outlined in the revised "Blue Book," approved by AASHO on August 27, 1965.

The above traffic, access control, and design concepts are being used in the development of the Appalachian cost estimate. Public Roads engineers are working closely with State Highway Department Engineers in the preparation of this estimate.

FUNDING

Regular Federal-aid Interstate, Primary, Secondary and Urban funds come from the Highway Trust Fund which is administered by the Federal Government and which derives its revenue from Federal taxes on gasoline and other highway user imposts. Appalachian highway funds come from the General Fund of the U. S. Treasury.

Appalachian funds are matched by the States on a 70% Federal, 30% State ratio. A preliminary estimate made last spring indicates that the total cost of the Appalachian program in Kentucky will approximate $267 million. The recently completed adequacy ratings and economic data will be used for a new determination of which roads on the Appalachian Development Highway System are inadequate. The Appalachian cost estimate will be made for those roads and it is very likely that the estimate of the total cost of the Appalachian Development Highway System in Kentucky will change. To date, Kentucky has received $18 million in Appalachian funds which, when matched, provide for about $25.7 million worth of highway improvements.

PROGRESS AND CURRENT STATUS

The Kentucky Department of Highways has moved quickly to take advantage of the opportunities offered by the Appalachian program. Construction work is already underway on Corridor F, US 119 southwest of Harlan in Bell and Harlan Counties; on Corridor I northwest of Whitesburg in Letcher County; and on the Louisa By-pass in Lawrence County. Route location studies, design engineering, utility relocation and right-of-way acquisition are underway on other sections of the Appalachian Development Highway System. Bureau of Public Roads engineers are cooperating with the State Highway Department engineers in every phase of these activities, and we are all conscious of the need for expeditious handling of engineering and administrative problems to insure completion of the Appalachian Development Highway System by 1971.

This is an enormous undertaking, but we have every expectation that the State Highway Department, the Bureau of Public Roads, and our new partner, the Appalachian Regional Commission, will enjoy fine cooperation and that the Appalachian Development Highway System will be located and constructed in a manner that will most effectively further the objective of the Appalachian Regional Act of 1965 - the development of the Appalachian Region.

SUMMARY

1. The Appalachian Development Highway System is a regional network of 2,712 miles of highways supplementing the Interstate and other major routes in Appalachia. Of the 2,712 miles, a maximum of 2,350 miles may be improved under the Act. Kentucky has about 588 miles of the total 2,712, or 22%, and it has 430, or 18% of the 2,350 miles eligible for improvement.

2. The Appalachian Development Highway System improvements will be administered similar to Federal-aid Primary projects with certain added features relating to location, funding and construction priority controls to be exercised by the Appalachian Regional Commission.

3. Adequacy ratings have been made and will be used to compare routes and help identify inadequate sections and as a tool in the determination of construction priorities.

4. The Appalachian highway cost estimate will be made to determine the cost of improving the inadequate sections of the Appalachian Development Highway System to acceptable standards.

5. This program is expected to average about $50 million per year in Kentucky. The program will be of great benefit to Kentucky not only by fostering economic growth in Eastern Kentucky, but by stimulating the construction segment of the economy over the next five years, and by benefitting road users in the form of reduced operating costs, reduced accident rates and in comfort and convenience in travel.