

## REPORT OF COMMITTEE ON ROADSIDE DEVELOPMENT

By H J NEALE, *Chairman*SUMMARY<sup>1</sup>

The Committee on Roadside Development was first organized in 1932 as a Joint Committee of the American Association of State Highway Officials and the Highway Research Board. By 1939, the Committee work had reached a point where it could be more efficiently handled by separate committees. Beginning in 1940 research and technical roadside problems have been studied by the "Committee on Roadside Development" of the Highway Research Board, while administrative problems of Roadside Work have been handled by a corresponding Committee of the American Association of State Highway Officials under Mr. John L Wright of Connecticut.

During the decade of its existence the Committee on Roadside Development has accumulated data on almost every phase of roadside improvement. As in other similar undertakings, incomplete information on some research projects has left gaps in the records of past work. Studies of closely allied subjects by separate project committees have resulted in some overlapping of reports.

To provide for better cooperation between related project committees, and to avoid repetition in their reports the Committee on Roadside Development was organized into three divisions at the beginning of 1942. The divisions and project committees assigned to each are as follows:

*Division I—Design, Right of Way and Border Control:* Embracing project committees on Roadside Design, Waysides, and Right of Way and Border Control.

*Division II—Construction and Maintenance:* Including project committees on

Drainage and Drainage Structures, Slope Erosion, Plant Ecology, Turf Culture, and Cooperative Agreement Project Analyses.

*Division III—Education, Economics and Public Relations.* With project committees on Education; Economics, Evaluation and Statistics; and Public Relations.

About the time this procedure was initiated, war was declared. It was realized that the technicians engaged in the construction and maintenance of airfields, cantonments, and similar war developments would encounter many of the problems found in highway and roadside development. The Committee therefore directed its efforts to make all pertinent accumulated data available in concise form. The 1941 report<sup>2</sup> includes some of this reference information.

For this year's meeting, "Roadside Practices for Wartime Problems" was the theme adopted for discussion. The reports of the divisions and the various project committees for 1942 include additional information and data to supplement that contained in the 1941 report. The following is a brief résumé of the reports of the three divisions and their various project committees.

## DIVISION I—DESIGN, RIGHT OF WAY AND BORDER CONTROL

This Division of the Committee sponsored a paper by Dr. David R. Levin, Transportation Economist, Public Roads Administration, outlining the many focal points of weakness in the present public land acquisition machinery for highway purposes. The paper reemphasizes the fact that the construction of new facilities

<sup>1</sup> For complete report see "Report on Roadside Development 1942" of the Highway Research Board.

<sup>2</sup> Roadside Development 1941, Highway Research Board

and the modernization of existing highways are being delayed too often because of outmoded land acquisition laws, practices and policies.

It is easy to understand how these aggravated conditions came to exist, for along with the transfer of local highways to the State highway departments, the States fell heir to already ancient laws dealing with right-of-way acquisition. These laws represent the accumulations of over a century, and, except in isolated instances, little revision or simplification has been attempted. The result is that we are attempting to build a modern highway system for the stream-lined motor vehicle with land acquisition laws and devices of the horse and buggy period of our grandfathers.

The paper presents 13 definite recommendations. These indicate that the problem is one of revising existing right of way acquisition practices to fit varying needs and circumstances. A land acquisition policy, to be efficient in implementing the creation and modernization of our highway system, must facilitate acquisition with the maximum of speed at the minimum total cost consistent with the preservation of the rights of private property.

A paper was submitted by the Project Committee on Design presenting one detail of cross-section design as practiced by the National Park Service. The setting back of the cut-slope to allow transition rounding at the junction of the road gutter and the toe of slope, together with top rounding, has lessened maintenance costs, increased stability, and encouraged natural revegetation. The inclusion of this or similar treatment in the original design of the cross-section increases the cost of construction only slightly, which increase should be more than compensated for over a period of years through the reduction of maintenance costs and the possible reduction of later slope protection and

planting costs. The method has been reduced to a formula easily incorporated in design. Additional material already in use will be presented in future reports of this Committee.

Under war conditions, labor for hand mowing and similar hand maintenance work is no longer available. It is now essential that machine mowing, snow removal, and other maintenance operations be simplified through proper slope flattening and rounding. The experience of the State highway departments in the development of improved graded earth cross-section, and methods to protect soil surfaces can be of great value under wartime conditions. Most of the State highway departments have had experience, on a large-scale, in integrating topsoiling, seeding, sodding, and mulching, with regular construction operations. Information from this experience is especially useful now, not only in war emergency construction and maintenance of access roads, but also in application to flight strips, airfields, cantonments, and similar military construction areas where large-scale operations are required. The latest results of roadside development research and experiment, combined with the lessons of hard experience, are brought together in the appendices of the 270-page 1941 Annual Report of the Committee in its effort to meet the immediate need for the practical application of available knowledge to critical problems.

Off-the-highway parking facilities on important motor routes provide essential public service comparable to that of off-street parking facilities in the metropolitan areas. Therefore, the roadside park or wayside has logically become a definite part of the highway system. In recognizing this fact, the Committee is aware that these safety turnout areas require care and upkeep commensurate with their use and investment. The following policy is recommended in order to hold this up-

keep to a minimum without any sacrifice to the design in the interest of economy.

- 1 Sites for roadside parking and rest areas should be carefully selected, must be safely accessible to the highway, and must have natural advantages which may be developed with a minimum of construction effort.
2. Driveways, parking areas, footpaths, and incidental construction features, with sanitary facilities, water supply, and other essential services, should be so designed and placed that the maximum use of the area may be provided with the minimum disturbance to the site and upkeep of the improvement.
3. So selected and so planned, maintenance will be simplified and reduced to routine care.
4. In some instances, an over-finished lawn maintenance policy has been followed in conflict with the rustic character of the original planned development. Discontinuance of this practice, the Committee feels, will greatly reduce upkeep costs and tend to restore the natural character of the site.

We must keep the long time objectives of roadside development clearly in sight. The streamlined cross-section with all exposed bare soil outside the traveled way protected by an appropriate vegetative ground cover is an essential part of the complete highway. Proven roadside practices should be made a part of regular construction in accordance with plans prepared and ready for the post war employment problem that is certain to develop

#### DIVISION II—CONSTRUCTION AND MAINTENANCE

*Project Committee on Cooperative Project Analyses.* During the past sev-

eral years, 109 Cooperative Highway Erosion Control Demonstration Projects were constructed under cooperative agreements made by the Public Roads Administration, the Soil Conservation Service, and the State Highway Departments. Progress inspection and final reports are being analyzed, and recommendations made, based on project results. These analyses will be continued as rapidly as is consistent with approved research practices.

*Project Committee on Slope Erosion Control* The Committee presented a review of several new methods for the establishment of turf on both exposed and mulched steep slopes by pressure spraying a fluid mixture of topsoil, fertilizer and seed. But further study and refinement are necessary before this method can be recommended for general use.

*Project Committee on Plant Ecology:* This report summarized the findings of a series of informal meetings and contacts with civilian and military engineers interested in the development of turf and other vegetative ground cover on airfields, drill fields, cantonment, and other military areas.

There is great need for the collection and publication of large scale landscape engineering experience in the establishment of grasses and other vegetative cover in all climatic regions. A few authentic articles on airport turf have been published in 1942 but the general problem of ground cover establishment (outside of airfields) has as yet no literature other than our own Highway Research Board publications and a few articles, of local bearing only, by highway engineers of the various State highway departments. Many published articles and bulletins on cover crops and pasture grasses are of great interest and of some value, but these deal mainly with the relatively good soils found on agricultural lands.

The use of quick growing pasture grasses and legumes on the poor soils of highway and general construction areas

is a relatively new practice. A few cover crops have, however, been used on poor hill soils and on roadsides, and these show promise for use on military areas where time does not permit complete establishment of permanent turf before such areas are opened for use in training and housing troops.

These cover crops can be seeded during late spring and summer and late fall seasons when successful turf grass seeding may not be possible. The so-called cover crops add nitrogen and organic matter to soils in which more permanent grasses, vines, or other ground cover will later be established. Cover crops of which descriptive lists are given will be generally useful on military areas subject to soil erosion, outside of airfields and drill fields which will usually require turf cover.

The advantages of various types of mulching materials in controlling erosion immediately following construction of peace-time highways is now well established. Mulching in construction, with the seeding of various types of grasses, legumes, and grains, has proven even more useful than mulching alone.

The application of tested peace-time methods of establishing ground covers on highway slopes and shoulders, to military areas, is now in progress and will continue to the extent that this Committee publishes, or otherwise makes such information available to military authorities.

#### DIVISION III—EDUCATION, ECONOMICS AND PUBLIC RELATIONS

The following is a brief summary of recommendations by Division III:

Formal technical education is now undergoing such rapid changes under the conditions of war that specific recommendations are not practicable at this time.

Transportation and the use of highways by the public will continue to be a feature of American life both during

and after the war. It is of special importance that we encourage the various organizations which have supported and will continue to support the roadside development programs in the various States.

The need for more effective regulation and control of lands on the borders of our highways continues. Reduction of rural traffic has already reduced the hot dog, billboard and similar problems. It is hoped that "ribbon development" can be held in control after the war.

Wartime research in roadside problems should as far as possible continue. We can also continue to learn from field experience during a curtailed highway program. High standards of roadside development will remain in themselves the best possible means of public education.

Post-war highway construction programs involving local, state, regional, national and international highways and parkways will no doubt have a place of first importance in employment programs. We should, therefore, utilize all available technicians in preparing plans for this program.

Roadside development methods effective in reducing annual highway maintenance costs should be continued during the war. High standards of work are a guarantee of maximum effectiveness and should as far as possible be maintained even during the emergency.

A bibliography of articles, books and other publications relating to roadside development and associated problems of land use, published during the year will be assembled by the Project Committee on Education.

For several years the Committee has realized the need for research on varieties of turf grasses, especially those adaptable to roadsides. The need for establishing low growing varieties of blue grass, bermuda and other permanent grasses is of the greatest economic importance in that less mowing is required, weeds are better controlled, and a closer covering of the

soil is obtained. Grass seed specifications of today compare with those of a decade and more ago, insofar as varieties are concerned. The rank succulent growing varieties are mixed with the lower growing strains and sold as the same species in practically all turf grass seeds. With the demands of the armed forces for low growing sod on air fields and other defense areas, your Chairman together with other members of the Committee, enlisted the support of other organizations having turf problems similar to ours, in an appeal to the Congress for an adequate appropriation for turf culture research. Fifty thousand dollars was made available to the Bureau of Plant Industry of the U S. Department of Agriculture for the current year Our appreciation for this consideration should be manifested by our fullest cooperation with the administrators of this fund Much can be learned today, even under the adverse conditions of wartime speed

and inadequate preparation, that will be most beneficial in post-war activities.

Landscape and engineering experience gained in access road projects, on air fields, and other similar developments during the war, should be of great value to the anticipated expanded highway and roadside development programs in the future. The Committee, in cooperation with the Committee on Roadside Development of the American Association of State Highway Officials, has organized co-ordinating groups of roadside engineers embracing every state in the Union. Our 1941 report has charts covering this organization. The personnel of these groups, with years of practical experience, should be available to the various war agencies having similar problems We do not hesitate therefore to offer their services with ours in any way we can help to bring an early victory and a lasting peace to our nation and our allies