

R.D. 1933

β 540

# HIGHWAY RESEARCH BOARD

## REPORT ON ROADSIDE DEVELOPMENT

by the

JOINT COMMITTEE

of the

AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS  
and the  
HIGHWAY RESEARCH BOARD

Luther M. Keith, Chairman

LIBRARY  
HIGHWAY RESEARCH BOARD

NATIONAL RESEARCH COUNCIL  
Washington, D. C.  
December, 1933

108-113



## REPORT ON ROADSIDE DEVELOPMENT

by the Joint Committee of the  
American Association Of State Highway Officials  
and the  
Highway Research Board

Luther M. Keith, Chairman.

### Introduction

In 1932, a joint project of the American Association of State Highway Officials and the Highway Research Board was organized to make a survey of the laws, funds, organizations and technical practices relating to roadside development.

This progress report does not attempt to cover all the details of roadside development. It defines the objectives of roadside development and discusses means of reaching them. The Committee expects to collect and present further information on some phases of the problem in a future report.

Appended to this report is a digest of information received from several States on their laws, funds and administration for roadside development, and a list of references pertinent to this subject.

### General Discussion Of The Problem

From a study of the available information, it appears that the fundamental principles of roadside development are well known to the people who have worked extensively in this field. However, the general public and many highway officials who have not heretofore been concerned with this matter have given the problem little thought. That does not mean that the citizen or tourist will not appreciate anything which is done to make the highways more pleasant and useful. The ordinary motorist may not be vocal in his desire for better looking highways, but he does not need a course in Landscape Architecture to be able to appreciate consciously or sub-consciously, an unmarred landscape or a pleasant shady place for a rest along the road. Nor will he have any regrets for the elimination of the many eye-sores such as billboards and signs, uninviting camps, hot-dog shacks and ugly filling stations, automobile graveyards and trash dumps.

### Need For Education

Many of the most important phases of roadside development cannot be carried out until legislative action is taken. For this reason, the people must be informed as far as possible of the need. In order to make satisfactory headway in some phases of the work, definite allotment of funds must be made for the purpose. Before any such funds are furnished, it is necessary to have the support of the taxpayers. Hence it is necessary that the



public be familiarized with the aesthetic requirements and possibilities of highways. The educational work that is being carried on by highway authorities, Women's Clubs, Garden Clubs, Legion Posts, the American Nature Association, the American Civic Association, and the National Council for Protection of Roadside Beauty and others shows that many people are willing to cooperate even to the extent of financing some betterment work when they understand what is needed.

In California, some 700 miles have been planted with trees and maintained for the first year by public spirited individuals and organizations. The same sort of work has been done in several other states and has been of great value in furnishing the general public with concrete examples of what can be done to improve the roadside appearance. Many opportunities to do this lie in the improvement of business structures along the way. It has been found that many owners of such establishments are willing to improve the appearance of their property but they are in need of ideas of how to accomplish it. A trade journal is now being supplied to wayside business men by the Art Center of New York for the purpose of helping them to better their businesses through improvement of their property.

It is essential that the highway engineers themselves become more familiar with roadside development. Some states have made notable progress in this phase of highway work. Others have done very little; perhaps because of lack of public support or because the need to change prevailing practices has not been apparent. Especial impetus has been given this year to roadside development by the ruling of the Public Works Board under the Industrial Recovery Act. Six items of highway work are to have priority and the second one named is: "appropriate landscaping of parkways or roadsides on a reasonably extensive mileage". A further ruling (October, 1933) of the Public Works Administration stipulates, by resolution, that insofar as practicable and feasible the rights-of-way for highways built with loans or grants from public works funds after January 1st, shall be at least 150 feet wide to accommodate foot paths and screening by planting trees and shrubs.

In order to properly execute roadside development work, the personnel of highway organizations must be educated in the economics, practices and increasing importance of this work. The first essential is that each organization should have a competent person with authority to design and carry out roadside development work.

#### Definition of Objectives

Roadside development must conserve, enhance and effectively display the natural beauty of the landscape through which the highway passes as well as provide maximum safety, utility, economy, and recreation facilities by means of proper location, design, construction and maintenance of the highway.

#### Conservation of Natural Beauty and Advantages

To conserve the landscape is to so adjust and adapt the highway as to make maximum practical use of the landscape without unnecessarily disturbing the balance of nature. This is accomplished by preservation of desirable



native growth, outstanding topographical features such as water courses and geological formations, scenic values and historic sites.

Designs should be varied according to the kind of road (parkway, commercial or recreational) and will be affected by the location, width of right-of-way, alignment and cross section. Standards will also vary with the regions they serve; some being suitable for open country and others for suburban areas. Near the larger cities, there are opportunities for parkways for passenger traffic only. Less expensive design must be used near most cities and towns but it should be remembered that the better the highway, the farther out the urban area will spread. Most of the highway mileage will be in open country and elaborate designs are not necessary or justified. The requirements of these roads will be met, in large measure, if adequate rights-of-way are provided and the abutting lands are protected from unsightly encroachments.

Location enters into the design only on those roads on new routes or radical relocations. If the road is to carry a large amount of commercial traffic, the location should minimize the depreciation of residence property. In many sections of rough country, a new location away from the old crooked roads will not involve destruction of trees and old structures toned to the landscape. Location to fit the landscape is tied up with width of right-of-way, alignment and cross section. The right-of-way must be of sufficient width for the proper cross section and also for future planting. In wooded territory, extra width will preserve strips of timber of great value and utility. Alignments both in plan and profile offer design opportunities not usually recognized except by men trained to see their effects on appearances. Curves rather than tangents fit a rolling topography. Long tangents may possibly be justified in flat country although excessive length invites operating hazards due to boredom. The design should minimize the scars of construction. While it is desirable to have a limited number of standard cross sections, such standards should be flexible enough to fit special problems. Flat slopes rounded into the natural surface will look better and be easier maintained. Many times a good tree could be saved by slight changes in cross section or alignment.

Too often the highways are built where the aim seems to be to lay down a series of geometrically exact figures of cut and fill on the face of nature. A modification of this plan might fit unobtrusively into the landscape at no greater expense even though some increased cost might well be justified. If it is worth while to spend money on embellishments of highways such as plantings of trees and shrubs it is important to plan the alignments and cross sections with due regard for their effect on appearance.

Construction practices should be revised if necessary to preserve trees or other features worth saving. In many cases, the fertile top soil from cuts is buried in the bottoms of fills leaving only sterile soil on the slopes where the maintenance crew tries vainly to grow sod to prevent erosion. At no great expense, the top soil could be saved for the slopes. In timbered country, some trees would be worthy to stand inside the cleared area without harm to the safety or use of the road. Is it necessary to hew exactly to the



inch and clear everything between two arbitrary lines? The resident engineers and contractors can find many ways to improve the new road's appearance if they are given the instructions and authority to do so. All construction debris and material should be cleaned from the right-of-way and its vicinity.

After construction is finished, regular maintenance will be necessary to preserve the good appearance of the roadside. The natural growth trees and shrubs will need trimming and some tree surgery will be needed for injured or diseased trees. Spraying may be needed to control insect pests. New plantings must be cultivated and perhaps watered. In some states such cultivation may be necessary for as long as five years. Weeds or other noxious growths must be cut. Trimming of trees may be required for telephone or power lines. Rubbish must be removed. Recreational facilities such as roadside parks, camps and drinking fountains must be maintained in a neat manner.

#### Enhancement and Display of the Landscape

The enhancement of the landscape is achieved by properly designed plantings to enrich existing growth, to relieve monotony and add interest, to cover and screen unsightliness and to create and frame attractive vistas.

All planting should be harmonious and adapted to the locality and should usually be native stock indigenous to the locality. The use of native stock has three distinct advantages. First, native plants harmonize with the plant character of the surrounding country and preserve its individuality. Second, native plants are hardier under roadside conditions than are imported or developed plants. Third, native plants require less maintenance, an important factor in any state-wide program. In some cases, it is desirable to use non-native stock as an addition to the predominating native species. Trees may be set in groups or in rows although, as a rule, the group planting is preferable. It is important that the width of the right-of-way should be such that any planting will be reasonably free from future disturbance. This will require foresight as to the possible later development along the highway.

Locations usually most in need of plantings to improve appearance are grade separations, approaches to cities and towns, slopes of cuts and fills, bridge approaches, intersections, and state entrances. Pole lines and other unsightliness along the highway may be screened.

#### Safety, Utility and Economy Features

Roadside development in several of its phases adds to the safety, utility and economy of the highway. Flat slopes from the shoulder to the ditch and on fills of less than five or six feet permit seeding and are less dangerous to traffic than steep slopes. Flat slopes with uniform sod are easier to mow and maintain and less subject to erosion. Where it is possible to use flat slopes on fills, less guard rail will be needed. In rough country where rock is available, rock guard rail may be used for better appearance and greater safety. Back slopes of cuts should be planted to improve appearance and control slides and erosion. Erosion by streams may in many cases be controlled by tree planting. Formal plantings may be used to designate certain locations such as schools, intersections and railroads. Trees can be planted on the outside of



curves and at sharp turns or corners to indicate change of direction. Where sufficient right-of-way is available, prevention of snow drifts in the highway may be accomplished by planting hedges or trees. Parking places, even though small, where the traveler may stop are of great utility; where feasible, these should be landscaped and equipped with drinking fountains. Where laws permit, the location and construction of pole lines should be controlled to give minimum interference with the use and appearance of the highway.

### Recreation Facilities

Along many highways, there are no places where the traveling public may stop except along the shoulder of the traveled way or upon private property. Since a large amount of travel is for purposes of recreation, there should be convenient stopping places on public property such as picnic grounds, highway parks, drinking fountains, turn-outs and lookout points. Such areas need not be large nor expensive. On some roads, stopping places may be available in naturally wooded areas; on others, some planting will be desirable. In many places, there are small tracts between old and new locations which should be retained or acquired for the benefit of the public and to prevent their use by private business. Some small areas may even be acquired by gift from the owners. Many rights-of-way are wide enough to permit turn-outs or small picnic grounds to be built.

### Committee Recommendations

1. Every road-building agency should contain a person competent to design and carry out roadside development work. His work should be considered an essential part of the design, construction and maintenance.
2. Absolute control of the highway right-of-way and all its appurtenances should be vested in the highway authority.
3. Highway authorities should have power to acquire adequate right-of-way for present or future roadside development. They should also be empowered to keep or acquire title or easements in strips or parcels of land along the highway for the benefit and enjoyment of the public.
4. Highway authorities should budget a definite part of their funds for roadside development and its maintenance.
5. There should be cooperation by the highway authorities with individuals, organizations and local communities interested in roadside development.
6. This Committee endorses the following resolution of the Roadside Development Committee of the American Association of State Highway Officials: "The Committee further recommends the establishment of State Highway Department nurseries only for the development of salvaged or collected native plant material, for the storage of surplus purchased plant material, and for the growing of such stock as is not obtainable from commercial nurseries."



APPENDIX - I

Laws and Funds for Roadside Development

Following is a digest of information received from several states concerning their laws, funds and administrative practices for roadside development.

CALIFORNIA: In general, the work is done by the Division of Highways under its authority to construct and maintain state highways. In 1931, the Highway Commission was given authority to secure lands adjoining highways for public parks, and also land and trees within 300 feet of the center line on each side of any state road, for culture or support of trees when such acquisition is an aid in maintaining or preserving the roadbed or an aid in the maintenance of scenic beauties. Under an act passed in 1933, provision is made for carrying on as maintenance such general utility services as roadside plantings. The funds are from specific maintenance moneys, not detailed in the budget. Work is financed as projects develop and funds become available. Much help has been given by individuals and organizations who deposit sufficient funds with the department to plant and maintain trees for one year. The work is handled by the regular maintenance organization, T. H. Dennis, Maintenance Engineer, and an Arboriculturist who supervises the work throughout the state. He advises district maintenance engineers and superintendents and prepares plans for particular projects.

CONNECTICUT: The law requires any person to secure a permit from the highway commissioner to remove or prune any tree, shrub or vegetation in the right-of-way. The Commissioner may plant in the highway or on adjoining land by agreement or by condemning easement. Funds are budgeted from state highway funds. In 1932 \$425,223. was spent for planting, maintenance, mowing, construction of gardens, picnic grounds, etc. The Bureau of Roadside Development, L. M. Keith, Director, has supervision and maintenance of everything except drainage, on the roadsides outside of the outer gutter edge and of waste areas. The work includes mowing, removal of trees, maintenance of slopes and embankments, planting, seeding, maintenance of picnic grounds, etc.,

ILLINOIS: The Department of Public Works may issue permits for planting of trees, shrubs and flowers to persons, associations or societies. The Department prepares the ground, supervises the planting and maintains it with regular forces. The work is largely of an advisory nature. All trees, shrubs, etc., are protected by law. Funds to care for and maintain plantings are taken from the Maintenance budget of the highway department.

MASSACHUSETTS: In 1921, an office was created to be filled by one with special training in landscape planting to "beautify the state highway roadsides". The program has since progressed with definite aims and accomplishments. Planting is done under the maintenance engineer and is supported by a separate allotment of funds for that specific purpose.

MICHIGAN: Trees and shrubs on all highways are protected by law. It is the State Highway Commissioner's duty to plant trees along state trunk and state reward roads, with the consent of the owners of adjoining property. Money is budgeted from construction funds for development on new trunk lines. Money for yearly roadside maintenance is budgeted from general maintenance funds. The work is in charge of a Landscape Forester.



MINNESOTA: The Commissioner of Highways designates the necessary width of right-of-way. One hundred feet is the standard width. All highways, roads and trails within forest areas are established as fire breaks. The Division of Forestry has authority to remove or clean up any inflammable material for 200 feet on either side of the center line of the fire-break roads. Any money used is taken from the highway funds but local groups are encouraged to plant and maintain the plantings. An assistant engineer and forester have been assigned to development work, under the joint supervision of the construction and maintenance engineers.

MISSOURI: The law provides for construction and maintenance and all work incidental thereto. This is interpreted to provide for roadside planting and development. Trees, shrubs, etc., on the highway are protected by law. No signs or places of business are allowed on the right-of-way. Funds are approved for expenditure by the Commission from general highway funds. The commission urges cooperation of local groups interested in planting. The work is handled by the Bureau of Maintenance. An experienced landscape designer is employed.

NEW HAMPSHIRE: There is no special law to provide authority or funds for roadside work. About \$6,000. is budgeted annually for Highway Marking and Roadside Development. Dependence is placed on cooperative effort with local groups. F. A. Gardner, assistant engineer is in charge of the work.

NEW JERSEY: The Highway Commission is empowered to plant and care for trees and shrubbery along state highways, or otherwise beautify the highway. The money is to be expended under the supervision of a landscape architect employed by the commission. Funds for roadside projects are to be not more than one per cent of the amount expended in the preceding year for construction of highways. The appropriation must be approved by the Governor. There have been no funds approved the past two years. Appropriations for maintenance of projects is made from the motor vehicle registration money.

New projects are recommended to the State Highway Engineer for his approval and that of the Commission. O. A. Deakin, Landscape Engineer.

NEW YORK: The superintendent of Public Works may plant, remove trees or trim trees, and may seed or sod within the highway. Trees and shrubs are protected by law. Special permit is required for signs in Adirondack Park. Any highway money may be used for tree or shrub planting, seeding or sodding. Lack of funds has handicapped the work.

OREGON: The State Highway Commission is empowered to acquire by purchase, gift or condemnation, land necessary for the culture of trees and preservation of scenic places adjacent to state highways and for parks and recreation grounds; also to improve, maintain, and supervise the same. Trees, shrubs, and flowers on the highway and on private land within 500 feet of the highway are protected. The costs are paid from state highway funds. The law is administered by the State Highway Commission and the State Parks Engineer.

PENNSYLVANIA: The law authorizes planting of trees, shrubs, vines and grasses on or along state highways; also the establishment and maintenance of live snowbreaks. Highway authorities may, when necessary to construct or widen a highway, remove trees up to four inches diameter, at  $2\frac{1}{2}$  feet above the ground;



for larger trees they must have the consent of the owner. All trees, plants, etc., on public or private property are protected by law. Money for planting, etc., comes from the regular road fund. A large amount of the work is done in cooperation with interested organizations or individuals. The work is carried on by a Highway Forester and six Division Foresters, under the direction of the Secretary of Highways.

RHODE ISLAND: The State Board of Public Roads is empowered to plant trees, shrubs, and otherwise beautify the area within a state highway. Trees, shrubs, etc., are protected by law. The work is paid for from the general highway fund. It is classed as betterment work under the construction item of the budget. The work is done under the direction of the Maintenance Engineer.

VIRGINIA: The law provides for a landscape architect who is a regular member of the Highway Commission staff, to devise methods to beautify and improve the rights-of-way. The highway department may make rules for the protection of trees, plants, etc., on the right-of-way. On new work, an allocation of funds is made for seeding and planting the right-of-way. Maintenance work is paid for from maintenance funds. The State Landscape Engineer, H. J. Neale, under the Assistant Engineer in charge of Maintenance, makes an intensive study of conditions and makes recommendations to the construction and maintenance departments.

WISCONSIN: Highway authorities may acquire land for highway purposes and it may be used for any purpose deemed for the public benefit. Irregularly shaped parcels and corners along the highway may be acquired. Suitable plantings to improve the highways are authorized. Trees, shrubs and vegetation are protected by law. On new construction or relocations, any roadside work is charged to the project. Maintenance of planting is handled by the regular maintenance forces. Beautification is made a part of the construction project and plans are prepared by a part-time landscape horticulturist from the University of Wisconsin, under the direction of the Highway Commission. J. C. Schmidtman, Vice-Chairman; M. W. Turkelson, Director of Regional Planning. Work is also carried on in cooperation with cities, clubs, etc.,

\* \* \*



List Of References

1. Abstracts from "The Roadside Bulletin", published by the American Nature Association, Washington, D. C. (Indiana Supreme Court billboard decision. Michigan roadside funds. Shenandoah Valley billboards. Points to include in billboard legislation.)
2. California Highway Roadside Beautification Survey, Progress Report, 1932, by the Department of Public Works, Division of Highways. (Outline of plan with recommendations.)
3. Compilation of Laws of the Several States Relating to Outdoor Advertising. U. S. Bureau of Public Roads, August 30, 1933.
4. Drinking Fountains Along Oregon Highways, T. M. Davis, "Public Roads", April, 1930. (Construction details and cost.)
5. Fitting Highways to the Landscape. A report by the Section on Architecture of the Commonwealth Club of California. In the Official Journal of the Club, November 15, 1932. (A study of factors which affect aesthetic aspects of rural highways.)
6. Four Years Along Connecticut Highways, State Highway Department, Hartford, Connecticut. Luther M. Keith, Director of Roadside Development. (Development of roadside beautification, highway landscaping in Connecticut, conservation and nurseries, shade tree planting, pole line and shade tree inspection.)
7. How Massachusetts is Improving her Roadsides, R. E. Tribon, "Public Roads", April, 1928. (Details of organization and work done.)
8. Landscape Planning and Planting of Highways in President's Conference on Home Building and Home Ownership, 1932. Volume I, page 181. (Types of highways. Aesthetic design and planting. Restriction of roadside additions. Recommends legislation.)
8. Manual for Forestry Unit Operations, Pennsylvania Department of Highways. (Detailed information on duties, operations, practices and standards of the Forestry Unit.)
9. Minnesota Conference on Roadside Development and Use. St. Paul, Minn., 1932. Mimeographed report of the meeting by S. Rex Green, Secretary of the Conference. Department of Highways. (Outline of problems. Details of roadside planting.)
10. Modern Roadside Development, John C. Schmidtman, Vice-Chairman, Wisconsin Highway Commission. Mimeographed paper from the author. (Policies adopted by Wisconsin Highway Commission.)
11. Natural Snow Fences, R. A. Drought, University of Wisconsin. "Public Works", August, 1929. (Comparing costs of planted snow fence with temporary fence.)



12. Parks and Highway Beautification, Grover C. Dillman. "American Highways", January, 1930. (Fundamentals; points to be covered by law.)
13. Parkway Features of Interest to the Highway Engineer, E. W. James. "Public Roads", April, 1929. (Main features of Bronx and Westchester Parkways.)
14. The Practical as well as the Aesthetic Side of Roadside Beautification, Luther M. Keith, Connecticut State Highway Department. "American Highways", October, 1931. (Controlling factors, benefits derived.)
- 14a. Pennsylvania Highways Beautiful, Department of Highways. (Suggestions for highway beautification. Cooperation with clubs, associations, etc.,)
- 14b. Report of Committee on Roads and Highways, American Society of Landscape Architects, P. H. Elwood, Chairman. (Enumeration of more important activities of 1933 under State and Federal jurisdictions.)
15. Resolution Favoring Roadside Beautification by American Association of State Highway Officials, November, 1930. (Adequate right-of-way. Conservation of natural growth. Control of right-of-way. Competent person in the Department of Highways.)
16. Roadside Beautification, Jay Downer, Chief Engineer, Westchester County Park Commission, "Proceedings of Association of Highway Officials of the North Atlantic States, 1931". (Broad principles to be observed.)
17. Roadside Development, J. M. Bennett, Superintendent of Parks and Forestry, Wayne County, Michigan, Published 1929. 265 pages. (Field work, design, planting materials and procedure, pole lines, comfort stations, parkways.)
18. Roadside Plan and Progress in Massachusetts, James H. Taylor, Highway Landscape Supervisor. "Public Roads", August, 1929. (State Nursery, planting procedure, maintenance.)
19. Roadside Planning, P. H. Elwood, Jr., Iowa State College, January, 1933. Mimeographed paper. (Needed development in Iowa and other states.)
- 19a. Roadside Planting and Development Committee Report, C. B. Andrews, Chairman. The Friends of Our Native Landscape. October, 1932. (Benefits of highway planting. Use of native plants stressed. Physical aspects of highway development. List of trees and shrubs suitable for Illinois highways.)
20. Roadside Trees, Frank P. Rogers, "Michigan Roads and Airports", February 16, 1933. (Provision for planting since beginning of the state.)
21. Roadside Work in Wayne County, Michigan. "Roads and Streets", March, 1929. (Details of organization and work done.)
22. Snow Removal, V. R. Burton. "Public Works", August, 1928. (Replacing temporary snow fence with trees.)



23. Supreme Court Decision on Billboards. Opinion delivered February 23, 1932, sustaining Utah Supreme Court. (Law restrained billboard advertising of tobacco products. Law upheld.)
24. Symposium on Roadside Development. "American Civic Annual", 1929. Published by the American Civic Association, Washington, D. C. (Ways to improve roadsides. Movements needed. Billboard control. Improving wayside stands.)
25. Wisconsin Arbor Day Annual, 1933, Madison, Wisconsin. Issued by John Callahan, State Superintendent. (Planning and planting rural school grounds. Ways to improve roadsides; elimination, conservation, additions. Snow hedges. Soilerosion control. Recommended list of trees and shrubs for roadsides.)
26. Zoning in Non-Urban Districts in President's Conference on Home Building and Home Ownership, 1932. Volume I, page 34. (Zoning for all areas, urban and rural.)

\* \* \*



## DISCUSSION

Mr. Wilbur H. Simonson  
U. S. Bureau of Public Roads

\* \* \* \*

The presentation of this interesting report is most opportune and timely. The careful and detailed analysis of the more general problems associated with roadside development, as learned from the experience of those States which have already made considerable progress in roadside work as well as from the systematic observations and research of the members of the Joint Committee, should be very helpful in effectively coordinating work of this character in connection with the present large program of highway construction. The report is quite thorough and complete, which should make it especially useful at this time in harmonizing various ideas and policies upon this relatively newer phase of highway improvement.

The recommendations at the end of the committee's report are particularly important just now when such a large amount of work of this character is being planned and rushed for execution in the 1933-34 planting season. The relative order of the recommendations is logical and to be highly commended. The following detailed comments aim only to emphasize by repetition a few of the principle points enumerated in the report under discussion:

It is extremely important that the services of competent designers be utilized as far as possible in consultation and collaboration to insure the proper and efficient planning of the work so as to make doubly sure that good and satisfactory results will be obtained. The effectiveness and permanency of roadside improvement work as an essential part of highway construction programs depends largely, of course, upon how successfully the details of roadside development are carried out. It is vitally important, therefore, that roadside improvement work be thoroughly done during this present program so that the plantings will be successful and come through with relatively small losses of stock. Nothing would handicap or more harmfully slow up the present efforts directed toward the proper planting of the roadsides than "dead" trees bordering the highways a season or two hence, like veritable tombstones in a graveyard. Careful preparation in the planning and execution of the work in accordance with approved landscape design and horticultural standards is the best safeguard against unnecessary losses of this kind. The best and most lasting results may be assured in the present program of "putting men to work" through the collaboration of landscape architects and engineers and other technical experts. It is not only important that plantings be made to live successfully; it is equally important that the attention of qualified designers be used to develop attractively the incidental structures that the motorist finds along the roadside. Care should be given to the detailed design of drinking fountains, the appearance of parking spaces, railings, headwalls, sidehill spring outlets and other similar features that the motorist sees and enjoys. A good looking and attractive construction does not necessarily cost any more than a poor looking and ugly one.



Conservation of the natural assets is emphasized in the report. In this connection, true conservation means the careful trimming of trees and the judicious selection of plant growth for removals in an artistic and scientific manner under competent landscape supervision, and not the careless "butchering" of trees and the haphazard cutting of undergrowth along the highways. It is well to emphasize here that considerable thought be paid to this phase of roadside improvement work where clearings are contemplated.

Conservation means the saving of topsoil wherever possible during the initial stages of construction for later use in the final seeding and planting operations. Conservation means the avoidance of "rigidity", or hard and fast uniform standards in design and during construction that cause unnecessary "scars" and the irreparable losses of valuable tree growth. Conservation also means that careful adjustments be made in the widths of rights-of-way to include scenic spots, groves, or other landscape features where reasonably available.

Conservation policies are economic, because they reduce to the minimum the need for later introductions of materials or extra constructions. Conservation means the practical use of indigenous types of local materials, such as boulders or native stone for guard rails, the salvage of suitable plant growth in the path of construction operations in advance of such activities when the material proves to be subject to easy transplanting and storage in a temporary nursery.

Conservation may be best secured by the cooperation of all interested organizations. Initial harmony in the planning and execution of the work contributes very largely to the final harmony and attractiveness of the results. The first recommendation cannot be too strongly stressed. In the midst of the rush of work during this present emergency, competent supervision is vital to insure the economic conservation and successful preservation of the irreplaceable natural assets along highways.

The other recommendations are essential if adequate control of the highway borders is to be assured for the safety, comfort, and convenience of the public. Legislative authority is vital in some States to put the responsibility in the proper place. Unified control is necessary to protect highway investments for the benefit of the users of the road collectively, and not for individual interests. It is only through such definite responsibility that the State Highway Departments may ever hope to design, construct, and then control highways for the fullest and most efficient traffic service at the lowest cost. The importance of these recommendations is proportionately increased as the widths of rights-of-way are necessarily increased, and as the roadside borders tend to become more fully developed for the use and enjoyment of the public.



Roadside improvement is a fundamental part of modern highway design. As such, the setting apart of a reasonable portion of available construction funds for appropriate work of this character is a wise policy. It is conservatively estimated that approximately thirty miles of roadside improvement plantings may be accomplished for the equivalent expenditure of \$25,000, the assumed average cost, let us say, for one mile of high-type highway improvement. While the expenditure for roadside mileages will vary, of course, under different conditions and localities, it is believed that this statement is reasonably correct as a basis of comparison of the relative value of the roadside dollar when considering a State highway system as a whole.

Recommendation No. 6 is deserving of particular notice as to the question of policy in connection with the supply of materials essential to roadside improvement work. The business of properly designing and executing the highway projects is a big job in itself, and deserves the fullest attention of the highway organization if it is to be well done. The business of producing and propagating material for planting use is the specialty of nursery organizations experienced and equipped for such work. The committee's recommendation indicates that careful consideration was given to the possible sources of supply for the materials needed, which tends to show that plant requirements may be purchased satisfactorily on the basis of definite standard specifications in a similar manner as other highway materials.

In the highway program, roadside development should be organized and handled on the same basis as the regular older types of highway work. Road materials such as cement, stone, asphalt, steel, et cetera, are usually contracted under competitive purchase. Should not plant materials be secured the same way, wherever and whenever required? Fair competition under carefully prepared specifications should insure reasonable prices for average needs. While it is quite possible that in some localities or regions, where suitable nursery material may not be available in sufficient quantities, resort may have to be made to the use of some collected stock growing in the vicinity of the work, - still it is well to bear in mind that as time goes on it is reasonable to expect that opportunities of this kind are necessarily limited and may gradually dry up as a dependable source of supply. The last recommendation is particularly important, since present indications point to the expansion of roadside improvement operations into quantity production over a reasonably extensive mileage.

Conservation policies should be kept in mind throughout any highway program. The collecting grounds of woods and mountains cannot be always depended upon as a constant supply of plant needs. Robbing Peter to pay Paul is not the most satisfactory way to get plant materials for use along the roadsides, except for emergency use and in limited quantity. The last recommendation of the Committee's report on policy therefore, is to be commended as showing the practical vision of the committee in looking forward to a reasonably continuous and relatively permanent program of roadside development that aims to insure an economic source of supply of plant material for anticipated requirements.