

REPORT OF THE JOINT COMMITTEE ON ROADSIDE DEVELOPMENT

OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS AND THE HIGHWAY RESEARCH BOARD

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SYNOPSIS

This report presents abstracts of the reports of the subcommittees on erosion, plant ecology, zoning, highway types and roadsides areas, and education and public relations. The complete reports together with some additional paper on allied subjects have been published in a special bulletin of the Highway Research Board, *Report on Roadside Development 1939*

SLOPE EROSION

The Subcommittee on Slope Erosion reports that 100 cooperative highway erosion demonstration projects are now under way in 31 States. Two hundred miles of highways are either planned or under construction in accordance with the outline prepared by this subcommittee, through cooperative arrangement of the Bureau of Public Roads and the Soil Conservation Service. This work is being executed in most cases by CCC forces under direction of the Soil Conservation Service.

Dutch Design and Treatment Certain field tests and experiments concerning ditch design and treatment have been initiated, which are to be checked against information obtained in the hydraulic laboratory. Some of these are:

1. Determination of the maximum velocity of flow of water over different varieties of grasses and soil types without scouring, or the minimum without silting.

2. Proper width and depth of ditch in relation to the drainage area, soil type, and cover material used.

3. Effects of minimum ditch design required for safety and maintenance against theoretical capacity design.

FINDINGS AND RESULTS

The following findings are based upon observations on the cooperative projects

1. The proper design of cross section is the basic requirement for controlling most types of erosion.

2. With the use of Bermuda grass or similar type grasses, effective covers may be established in ditch cross sections where velocities of eight feet per second may be expected.

3. Strip sodding is effective in some areas when the strips are placed on very short spacings. However, the cost of sodding by this method is almost as much as solid or block sodding, and the results are not nearly so good. When the strips have been placed on slopes with intervals of four feet on erodible soils, serious trouble has developed from benching and eroding between the strips. Even when nurse crops or mulches are used the results have not proved to be economical.

4. In the establishment of grasses by seeding, brush and straw mulch has proved very effective in some areas. Especially is this true if plantings are made during the season of heavy rainfall. There is a need for more information on low fertility grasses.

Mechanical covers such as cotton cloth, twisted paper, and burlap have proved successful in holding the soil until plantings develop. However, the costs are such that the use must be confined to critical areas.

5. Spot-planting of low, woody plants

and vines has proved ineffective in most instances. Experimentation has proved that the trench method used in Virginia is highly successful in the soils and climate of that region.

Benefits to Adjacent Land Many benefits from slope erosion control accrue to land outside of the highway right-of-way. A successful program of slope erosion control is beneficial to the adjacent land and the landowner in the following ways:

1 It prevents gullies from extending into farm lands and destroying farm structures (sloughing banks have passed right-of-way fence lines and in many instances destroyed farm boundaries)

2 It prevents the silting of adjacent lands

3 It prevents fast (flash) run-off from highway right-of-way which contributes materially to overflows and floods

4 It prevents the silting of streams

5 It provides irrigation and eliminates surface erosion. In the semiarid regions of the United States, water may be diverted by the use of terraces and levees to adjoining pasture lands and spread over wide areas for irrigation purposes. On some small watersheds it has been possible to treat the adjacent land by the use of contour furrows and level terraces so little or no surface water reaches the highway, or runs in highway ditch or over slopes, thus automatically eliminating surface erosion.

Conservation of Moisture It is further indicated that the control of erosion and the conserving of moisture on highways and adjacent lands will be beneficial to the farmer in increasing the capacity of underground reservoirs which will increase the amount of moisture for all plant growth. Drainage areas adjacent to the highway that flow to the highway must be considered when improvements are made in the condition on the right-of-way.

PLANT ECOLOGY

The subcommittee on Plant Ecology emphasizes in its report the factors of adequate right-of-way, good centerline location, well-rounded ditch and slope section, conservation of topsoil and of existing trees, rocks, and other vegetation. Above all, it stresses the need for making the most of the landscape advantages of each highway route during original design and construction. The following principles are cited as being applicable to all plant growth regions of the United States.

1 Satisfactory roadside treatment must begin with original highway design, particularly flattened and well-rounded cross sections

2 Effective ground cover protection is only possible on well-rounded earth slopes prepared for seeding, sodding, or planting

3 Observations of old highway slopes and existing vegetation along their borders will indicate the kinds of native plants which come in as "volunteer growth" in each locality. As far as possible such native plant material should be used as the basis for the selection of ground covers for highway slopes

4 Plants and trees which require costly intensive maintenance methods should not be used on open country roadsides.

5 Appropriate vegetative slope protection tends to reduce the cost of annual highway maintenance. Where highway maintenance costs are increased by landscape treatment, a definite need for revision of landscape methods is usually indicated.

The subcommittee recommends that intensive highway planting be largely restricted to primary suburban highways where the highway investment and land values are relatively large. Intensive methods may occasionally be justified at city or town approaches, at special

major bridge locations, and within special roadside park areas

In general, roadside development must be "extensive" in character, and designed to improve highway appearance and safety and reduce maintenance costs on the greatest possible mileage

ZONING

The Subcommittee on Zoning has given this subject a great deal of study during the past few years, and concludes that the most effective and permanent zoning procedure is by county action

The report on Zoning is based on the experiences of the State of Wisconsin, where 50 per cent of the counties have adopted comprehensive zoning ordinances. It is understood that California has obtained excellent results from county strip zoning. It is clearly recognized that there is no uniform ordinance which will apply to all States, but the outline prepared by the subcommittee should be of valuable assistance to those that do not have effective enabling legislation at the present time

HIGHWAY TYPES AND ROADSIDE AREAS

The purpose of this year's report is to analyze current practice in multiple-lane highway construction and to find indicated trends in the sectional lay-out of divided highways

The report shows the trend toward extreme simplicity in the treatment of the wide median strip, and the provision for more ample roadside space for easy slopes and opportunity for natural landscape treatment in the outer borders. Where these provisions are made on a wide right-of-way, it is advantageous to locate any necessary pole lines along the highway borders

Wide median strips permit more latitude in planting arrangements, but simplicity and group effect should be accomplished, rather than a scattered unrelated arrangement which tends to

divide rather than unite the total cross section

Wider right-of-way also provides opportunity for wayside development. A wayside is any special turn-out or stopping area set aside for the temporary use and convenience of the traveling public with particular reference to safety and with essential facilities

Waysides are needed to increase highway safety and to provide additional recreational areas where they are most needed along the highway. The types and kinds of wayside areas include picnic areas, lookouts, concourses, historical markers, spring developments, trailer camps and small parks. The size of the area could well be determined by the character of the development of the wayside and may range in size from an incidental turn-out space for an historic marker to a small roadside park, provided the use by the traveling public justifies the maintenance cost

EDUCATION AND PUBLIC RELATIONS

The subcommittee on Education and Public Relations reports that many State highway organizations have entered upon continuing programs of education for their landscape personnel through the use of manuals, handbooks, and schools of instruction. Roadside development subjects have been topics for several publications, magazine articles, radio, motion picture exhibits and newspaper features

In the education field Purdue University, Iowa State College, and Massachusetts State College conducted short courses dealing with roadside problems

In a number of States there is evidence of a decided upswing toward the employment of professionally-trained landscape engineers for this highly specialized type of work. Among the important educational needs suggested by the Subcommittee and others are the following:

1 More interstate exchange of ideas, methods and techniques through a central clearing agency

2 More contacts and inspections from representatives of the Bureau of Public Roads

3 More instruction in landscape engineering to civil engineers and foresters

at the universities and colleges This should include lectures on general landscape understanding

4 A booklet or syllabus on the scope and the latest and most approved techniques

5 A study manual or series of loose-leaf instruction sheets