REPORT OF THE COMMITTEE ON ROADSIDE DEVELOPMENT

by

H. J. Neale, Chairman

The report of the Committee this year includes progress reports by the several project committees and the special papers sponsored by some of these committees. It also embodies in the Appendix the results of Nation-wide surveys made by the Coordinating Committee on Roadside Development of the Highway Research Board and the American Association of State Highway Officials, and the report of the Committee on Roadside Development of the American Association of State Highway Officials which covers resumes of coordinators' meetings held in ten of the Public Roads Administration Districts, at which 37 of the 48 States were represented. The Appendix also includes (a) organization charts, (b) typical grassing specifications, and (c) a directory of committee members.

The following paragraphs contain a brief resume of the reports and the special papers.

1. Project Committee on Highway Types and Roadside Areas (Roadside Design) presents the widths of highway lands necessary for various cross-section patterns as determined in detail by the 3 major factors: traffic, topography, and prevailing use of lands adjacent to the highway. In this report the whole cross section or entire width of development is analyzed and classified as a unit. Thus, if to the roadbed width required by traffic, are added the requisite roadside widths such as design of drainage ways and slopes, as determined by local conditions of soil and topography, and adjacent land use, we find the land width necessary for the satisfactory construction of each section of the modern rural highway. In looking at the cross section as a whole pattern of interrelated development on this step by step basis, we arrive at a logical variation in land boundaries to meet the needs of existing topographic conditions and given traffic requirements. This classification procedure will naturally result in the use of flexible patterns in cross-section development.

2. Project Committee on Right-of-way and Roadside Control report stresses the need for more consideration being given by State

highway departments for border control measures to protect highway investments, promote safety, and develop cleaner and more attractive roadsides.

3. Project Committee on Slope Control and Protection (Erosion) report reviews proven practices of erosion control in use but on which study is being continued to improve technique in order to adapt them to mass production methods. Stress is placed on the need for more consideration of erosion prevention in initial highway design and construction on (a) coordination of highway erosion control with erosion control on adjacent lands; (b) design of drainage channels to discharge peak flows at safe velocities over the selected channel lining; (c) use of drop inlets at intakes of culverts and use of velocity dissipators at outlet ends; and (d) flexibility of cross section from the shoulder lines outward to accomplish erosion prevention under varying field conditions.

In order to segregate various erosion control practices, a simple classification of raw-soils of *C* horizon is being used, with three general climatic regions being set up; dry climate raw-soils, cool-humid climate raw-soils, and warm-humid climate raw-soils.

3a. Special paper - The Design of Roadside Drainage Channels: Good surface drainage is an important element in the safe, convenient, and economical use of a highway. In this paper, the author presents a simple method of analysis which indicates how to design channels to avoid future difficulty and abnormal expense in maintaining the surface drainage system. This analysis consists of first estimating the peak rate of run-off from each drainage area contributing to channels on the highway; secondly, checking the ability of these channels to carry the estimated discharge without eroding or overflowing; and finally, designing protection against erosion or designing modified channel sections for increased capacity where necessary.

4. Project Committee on Plant Ecology deals with a survey of seeding and sodding practices in the various states covering all regions. During the past nine years this survey shows that: (1) Of some 1100 kinds of native and naturalized grasses only about thirty have been used on any considerable scale in the seeding of highway areas. (2) Common practices for lawn or pasture seeding have, in the past, aimed at intensive cultivation of soil to meet

the requirements of selected grasses, while under average roadside conditions we must select a grass to fit existing poor soil conditions.

The Committee makes the following recommendations: (1) That combinations of mulching and seeding or broadcast sodding be developed in all climatic regions, to replace solid sodding and other costly grassing methods wherever practicable. (2) That commercial seed companies, the Soil Conservation Service, the State Experiment Stations and other agencies, be encouraged to develop sources of supply of seeds of native drought resistant grasses. (3) That soil engineers and landscape engineers cooperate during the coming year in a series of country-wide projects aimed to develop practical methods of amending existing soil on shoulders and gutters (and on flight strips and other roadside areas,) to provide a sufficiently stable, porous, surface soil for the quick establishment of a grass turf.

4a. Special paper - "Turf For Protection of Gutters and Slopes". The successful growth of turf is dependent on a great many factors. Just as the physical characteristics of soil are important in the stabilization of soil under road surfacings, these characteristics have an important bearing on the development of turf. In addition to physical properties of soil one must also consider its fertility in producing turf. There are also many biological and climatic factors that have a direct bearing on successful turf production. The inter-reactions of these factors which determine the success or failure of efforts to establish turf along highways, are discussed by the author. The results of a set of practical tests show that the quality of permanent turf is much more economically attained by proper fertilization than by increasing the rate of seeding. The author also points out the need for scientific study of grasses from the standpoint of roadside uses. Dwarf strains of grasses now being discarded because of their lack of forage values may be found useful for roadside purposes.

5. Project Committee on Roadside Economics report covers an analysis of a survey made by the coordinating committee on grass seeds and fertilizers throughout the country. This survey showed that over 2,000,000 pounds of grass seed costing in excess of $275,000, and over 7800 tons of commercial fertilizers costing in excess of $190,000, a total outlay of about one-half million dollars, was made by the several states. It is of interest to note that specifications for these commodities are extremely variable and show very little

change during the past ten years. In one state, four different grades of fertilizer of varying nitrogen content were applied at the same rate. Seeding reports show variance of 70 to 160 pounds per acre. All of this indicates the need for intensive research by the Bureau of Plant Industry, State Experiment Stations, and other State and Federal agencies, on grasses for highway use as contrasted to previous efforts to produce forage grasses. Support is urged for adequate funds to facilitate this research work. The Committee also reports on the study of waysides and roadside park uses and supplies cost data which should prove valuable factual information for highway administrators anticipating such a program in their respective states.

6. Project Committee on Public Relations and Education reports that the collection and presentation of information regarding improvements in highway cross-section design and landscape development methods continues to be the most important service which the Committee on Roadside Development may render. The Subcommittee on Education and Public Relations will compile a list of references in the form of articles, books, bulletins, and other publications, issued during the last three years (1939-1941), as its report for this year.

A review of information available regarding Short Courses, such as those given in 1941 at Iowa, Illinois, Michigan, and Ohio State Universities, will have special value at this time as will very brief reviews of outstanding publications during the past year.

6a. Special paper - Roadside Development, Assets and Liabilities. A trial balance of assets and liabilities in roadside development shows certain features distinctly to the credit of design, construction and landscape engineers, but the other side of the ledger has some warning signs.

Among the major assets are: more interesting and attractive roadsides brought about by flatter shoulder and back slopes and the increase in natural planting; safer roadsides have been brought into being by these same flatter fore slopes and the removal of obstructions from the shoulders which also increases the effective use of the full width of the highway itself; savings in maintenance costs through the elimination of erosion and through motor mowing instead of hand mowing.

As liabilities we have among others: too much planting of shrubs and saplings on grassy slopes; still too great use of exotics instead of natural ground cover; and over-emphasis of roadside parks, the annual care of which can absorb too great a proportion of maintenance money.

7. Coordinating Committee Reports. A study of the reports of coordinating groups in the various districts indicates a general prevailing tendency throughout the nation to recognize the value of one per cent Federal Aid Roadside Funds for roadside demonstration purposes, and the general need for integrating accepted landscape practices with original highway design and construction.