THE FOLLOWING SUMMARY FROM THE PRELIMINARY REPORT OF 15 MIMEOGRAPHED PAGES COVERING COOPERATIVE SOIL EROSION CONTROL PROJECTS BY DISTRICT IS BASED ON OFFICE RECORDS ONLY AND IS SUBJECT TO FIELD CHECK BY THE COMMITTEE BEFORE THE FINAL REPORT IS MADE.

SEPTEMBER 15

A rough summation of the accompanying *Tabulation and Classification of Cooperative Soil Erosion Control Projects by Districts and States* indicates that three-fourths of the projects appear to be comprehensive in treatment. Better than 9 out of 10 projects utilize the vegetative treatment while about three-fifths depend upon some form of supplementary structural treatment.[1]

In general, the review indicates that about 60 percent of the projects are typical of ordinary roadside problems and about 40 percent are aimed to designate special problems along highways.

In research value two-thirds of the total number of projects appear to have "good" possibilities while the remaining third appear to be "fair." It is assumed, of course, that some of the latter projects may deserve a higher rating if a field check indicates such potential research value. The present rating is based on office information at hand, subject to further field study and investigation as the Committee may consider necessary and desirable.

Prevention of soil erosion is a basic phase of roadside improvement and is a most important part of the whole roadside problem. In fact if erosion control is properly and successfully achieved through fundamental slope grading and plant protection of the newly graded surfaces, the greater part of the work on the roadside is done. The cross section will be greatly improved with its widened and flattened ditches or gutters and flattened and rounded cut and fill slopes. Under favorable climatic conditions grasses and ground cover will be successfully established to cover exposed earth. Natural protective measures are most economical in the majority of cases and therefore tend to be the first choice. Structural means to supplement vegetative methods are used only when necessary. Special problems must receive special and often expensive treatment, which, however, should prove economical over a period of years.

---

1. To better understand the tabulation and classification of projects on the following two pages, definitions are given below for some of the terms used.

COMPREHENSIVE TREATMENT: Either vegetative or structural treatment or both as may be necessary to reasonably control erosion according to existing conditions on a given project.

VEGETATIVE TREATMENT: The use of vegetation and vegetative methods, (plant materials) including seeding, sodding, planting, and mulching to control erosion.

STRUCTURAL TREATMENT: The use of structures and mechanical methods (structural materials) such as masonry ditch checks, drop inlets, jetties, rip-rap wind walls, culverts, etc., to control erosion.

TYPICAL PROJECTS: Projects with ordinary problems of erosion.

SPECIAL PROJECTS: Projects which present a special erosion problem

The 71 projects distributed among ten districts, on the whole, are or will be of great value as research demonstrations. Practices which prove successful may well be adopted by State highway departments as a regular part of roadside improvement, highway construction, and maintenance operations. Practices which seem unsound, of course, will be discarded. A careful study should be made to note all causes for success or failure. Many times insufficient attention to details, which may have seemed unimportant during the execution of the work, may prove to be the real cause for failure. An unsuccessful practice in the case of one or two reported demonstrations may prove successful under different conditions, and likewise a successful practice may fail under different circumstances. Careful field analysis and continued field observation should be helpful in realizing the greatest benefit from these demonstrations through a report on the reason for success or failure in each individual case.

It is realized that these projects represent demonstrations on soil erosion control in a comparatively new field, and that no definite standards of presentation or execution have yet been developed. The research purpose of the cooperative endeavor has not been realized to the fullest extent because of the limitation in: (a) experimental test plots on every project, where vegetative control was attempted; (b) seed mixtures at different rates of application under a variety of conditions of soil, degree of slope, exposure, and moisture content; (c) variety of fertilizers used with different rates of application; (d) a comparison of different treatments on the same project under the same and also under different conditions. For instance: various seeding and sodding treatments as well as vine and ground cover planting treatment could be tested on slopes having the same ratio, exposure, and soil. Then the same treatments could be tried with one factor changed - say the slope ratio. This one factor could be changed several times within reasonable limits, so that, for each climatic growth region, the best type of treatment from the standpoint of economy and results could be determined for a certain type of soil at a certain exposure but at different degrees of slope. Then experiments could be made with different soils, all other influential factors being the same. All sorts of combinations could be worked out to determine the best and most economical treatment for certain conditions. In some cases vegetative treatment could be compared to structural treatment; such as sodded gutter compared with paved gutter.

The practical and economic aspect was often overlooked in slope flattening carried out to such extremes that no highway department would consider adopting such slope ratios as standards in its own work. The increased costs would make such practices too expensive for the resulting benefits. It would seem wiser to strive for standards which would be economical enough for the States to adopt for their own, the increased grading costs being considered a cheap price for returns in the form of a more pleasing cross section, which is easy to treat vegetatively and which brings increased safety to the traveling public and materially decreases maintenance costs.

On projects where trees and shrubs were used, it is noticed that in many cases the plants were arranged in rows and were spaced at regular intervals in the rows. For rural roadsides a more free group arrangement with variable spacing between plants will appear more natural. Row planting is proper for urban areas, due to the extremely limited area in which trees can be planted.

Test plots are needed of various methods of trench row planting of vines and ground cover with mulching in combination.

The selection of plants from an ecological and aesthetic viewpoint was not always of the best. Plants such as English ivy, periwinkle, crepe myrtle, tartarian honeysuckle, lilac, Van Houtte's spirea, and other similar species, although fine plants in themselves, are of questionable use on the rural roadside. Also red pine, Norway spruce, and other exotic conifers, particularly in sections where evergreens are rare.

A thorough technical analysis of the particular conditions applicable in each case should go far to develop sound principles as guides to the regular highway landscape development programs in each administrative district. A twelve-sheet tabulation of all cooperative erosion control projects, indicating all pertinent available data and listing the projects by States and district is now in the hands of the Committee on Erosion for review. Detailed final reports on these tabulated projects are to be submitted by the Soil Conservation Service for committee study after which the Committee will prepare a complete final report with conclusions and recommendations.

Ψ Ψ Ψ

Coordination of landscape design in the original studies of our modern road construction is most important from the standpoint of safety, economy, and appearance. Safety and freedom of traffic flow dictates that widening beyond two lanes is necessary along certain routes. A long time planning program is most essential in order to achieve and acquire maximum efficiency from the highway system and in order to design intelligently for future traffic needs.

TABULATION AND CLASSIFICATION OF COOPERATIVE SOIL EROSION CONTROL PROJECTS BY DISTRICTS AND STATES

District	State	Number of Projects	Treatment			Project Type		Research Value	
			Comprehensive	Vegetative	Structural	Typical	Special	Good	Fair
1	Oregon								
	Montana								
	Washington	1	1	1	1	1		1	
	Total	(1)							
2	Arizona	2	2	1	2	1	1	2	
	California								
	Nevada								
	Total	(2)							
3	Colorado	1	1	1		1		1	
	New Mexico	9	7	8	4	6	3	3	6
	Wyoming								
	Total	(10)							
4	North Dakota								
	South Dakota								
	Minnesota	1	1	1	1	1		1	
	Wisconsin	1	1	1	1	1		1	
	Total	(2)							
5	Iowa								
	Kansas								
	Missouri	3	2	2	1	2	1	2	1
	Nebraska								
	Total	(3)							
6	Arkansas	2	2	2	2	2		1	1
	Louisiana	1	1	1		1		1	
	Oklahoma	1	1	1		1			1
	Texas	5	5	5	5	5		5	
	Total	(9)							
7	Kentucky	3	3	3	3	3		3	
	Illinois	14	1	14	4	1	13	1	13
	Indiana	3	3	3	3		3	3	
	Michigan	1	1	1		1		1	
	Total	(21)							

TABULATION AND CLASSIFICATION OF COOPERATIVE SOIL EROSION CONTROL PROJECTS BY DISTRICTS AND STATES (Continued)

District	State	Number of Projects	Treatment			Project Type		Research Value	
			Comprehensive	Vegetative	Structural	Typical	Special	Good	Fair
8	Alabama	5	5	5	4	5		5	
	Florida								
	Georgia	2	2	2	2	2		2	
	Mississippi	8	7	8	4	7	1	7	1
	Tennessee								
	Total	(15)							
9	Connecticut								
	Maine								
	Massachusetts								
	New Hampshire								
	New Jersey								
	New York								
	Rhode Island								
	Vermont								
	Total	(0)							
10	Delaware								
	Maryland	1	1	1		1			1
	Ohio	5	4	5	4		5	4	1
	Pennsylvania								
	Dist. of Col.								
	Total	(6)							
11	Alaska								
	Total	(0)							
12	Idaho	2	2	2	1	2		2	
	Utah								
	Total	(2)							
14	N. Carolina								
	S. Carolina								
	Virginia								
	West Virginia								
	Total	(0)							
Total No. (All Districts)		71	53	68	42	45	27	46	25
Approximate Percentage of Total		100%	75%	95%	60%	63%	38%	65%	35%

1941 ANNUAL REPORT OF COMMITTEE ON ROADSIDE DEVELOPMENT

AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS, PRESENTED BY MR. JOHN L. WRIGHT, CHAIRMAN AT THE ANNUAL MEETING OF THE A.A.S.H.O., STATLER HOTEL, DETROIT, MICHIGAN.

SEPTEMBER 29

This five-page report with three charts outlined a *Summary of 1941 Survey of Roadside Development Practices* based on reports by Administrative Districts. The three climatic regions in the United States, the three basic factors affecting cross-section design, and the three basic factors controlling plant growth were analyzed with the following conclusion by the Committee:

> "We have seen that the three basic factors of climate, topography, and soil greatly influence highway design and practices in the three general regions outlined.
>
> "With few exceptions the highway cross-section development in each State has not reflected the influence of these factors. The general tendency of each highway department has been to adopt one typical cross section to meet prevailing topographic conditions over the State as a whole, even though such a standard cross section may be ill-adapted to varying local conditions of soil and topography.
>
> "From the above facts it may be readily seen that a typical earth cross section, to be satisfactory from a soil protection standpoint, should be designed to meet local conditions of topography, soil, and climate, and to vary with varying ground conditions. The ideal earth cross section for a given set of local conditions is still to be evolved. To a limited degree, each State has variable local differences in topography and soil (and sometimes climate) to which typical cross sections should be adapted. Therefore, a typical cross section for each general type of soil for each respective type or class of topography should be designed. A section may well be developed for pervious (sand type) or impervious (clay type) soil in either easy, moderate, or rough topography."

THREE RECOMMENDATIONS BASED ON THIS NATION-WIDE SURVEY[1]

The Committee therefore recommends that:

1. Each State design and adopt a typical cross section to fit each existing class of topography and type of soil. Instead of one standard cross section being used for all conditions over the State, there would thus be available for use a

86a

1. See tabulation on page ~~89~~ showing order of priority of topics discussed at the district group meetings and emphasized in the coordinators' reports.

series of typical sections more nearly fitting the requirements of each existing local condition pertinent to that State.

2. Well rounded cross sections be graded with efficient machine equipment during original highway construction to avoid the uneconomical practice of regrading highways as part of a mulching, seeding, or sodding operation. The inclusion in the regular construction contract of the basic operations of saving topsoil, rounding and warping slopes, and soil preparation of shoulder and drainage areas will provide a foundation for most effective use of the 1-percent Federal-aid roadside improvement funds.

3. Width of right-of-way taking be determined by the design requirements of the highway. In other words, the right-of-way should be adjusted to the construction rather than the construction be confined by an arbitrarily limited width of standard right-of-way which has no relation to the existing design factors. To achieve this, the design, construction, landscape, and right-of-way engineers must collaborate so that all these factors may be considered in preliminary study before plans are developed and specifications prepared.

Ψ Ψ Ψ

A FOUR-PAGE MIMEOGRAPHED MEMORANDUM WAS DISTRIBUTED TO ALL CHAIRMEN AND MEMBERS OF THE PROJECT COMMITTEES ON ROADSIDE DEVELOPMENT, HIGHWAY RESEARCH BOARD, TENTATIVELY OUTLINING SUBJECT MATTER FOR CONSIDERATION IN PREPARING THE 1941 REPORT FOR THE COMMITTEE.

OCTOBER 10

Ψ Ψ Ψ

TOPICS DISCUSSED AT GROUP MEETINGS AS REPORTED FROM THE TWELVE DISTRICTS

+ No.	• A	• R	Topics	Western Districts				Eastern Districts						
				1	2	3	12	4	5	6	7	8	9	10	11
7	x		Complete coordination with regular construction	x		x		x	x		x	x		x	
7	x		Proper uses of 1-percent Federal-aid roadside improvement funds	x		x		x	x			x		x	x
5	x	x	Shoulders; design and sodding			x		x		x	x				x
4	x		Topsoil salvaging			x			x					x	x
3	x	x	Slope transitions; rounding and design	x		x	x								
3		x	Mulching practices	x					x			x			
3		x	Safety turn-outs	x					x			x			
3	x		Away from ornamentation in rural areas	x		x			x						
2	x	x	County planning and zoning laws				x	x							
2	x	x	Classification of cut slopes											x	x
2	x	x	Mowing								x			x	
1	x	x	Low vines and shrub ground covers	x											
1	x	x	Imported versus native grasses	x											
1	x	x	Trees and public utilities	x											
1	x		Personal contacts; Federal and State	x											
1	x		Flexibility for changes in field			x									
1	x		Purchase of seed from S.C.S.			x									
1	x		3-percent Federal-aid for roadside areas						x						
1	x	x	Specifications on plant material						x						
1	x		Illustrated descriptive articles							x					
1		x	Snow control								x				
1	x	x	Seed testing								x				
1	x	x	Inadequate right-of-way									x			
1		x	Trench method planting											x	
1	x	x	Roadside gutter design												x
1	x	x	Soil classification							x					
1	x	x	Overfinishing of slopes												x
1		x	Raw soil seeding												x
58	23	19	Totals	10	0	8	2	4	8	3	5	5	0	6	7

+ No. - Number of group meetings at which topic was discussed and emphasized in the district report.

• A - Administrative R - Research