

PANEL DISCUSSIONEROSION CONTROL AND PLANTING

H. J. Neale, Moderator

H. J. Neale: We will now turn to consideration of roadside erosion control planting and other types of roadside development between the shoulder and right of way lines, a subject to be covered in the 1950 report by this committee. The first question concerns improvements in turf establishment and erosion control practices. Dr. Monteith, will you open this discussion?

Dr. Monteith: (Covered high points of recent developments in turf establishment on highway areas.)

1. Development of better turf closely connected with streamlining of typical cross section with flatter slopes and with need for acquisition of wider rights of way. Increased interest in turf cover for airports and highway areas.

2. Trend is away from use of topsoil--cost of topsoil too high considering its usual low quality, and fact good turf can be established without it.

3. Good fertilizers lower in cost--can be used on poor soils to reduce cost of turf establishment.

4. Trend is toward rougher seed bed finish. Many specifications of past years called for refinements such as removal of all stones one inch in diameter. Such refinements add greatly to cost of seeding, but have little effect in improving turf.

5. Trend is toward lower rates of seeding--on some highway slopes mulching alone results in good stand of turf, through seed in the mulch.

6. Mulching used in all regions in connection with seeding. Equipment now in use that shreds mulch from bales and blows it over cuts and fills.

7. New methods of seeding in use on highway slopes. Fertilizer, seed, sometimes with soil added is sprayed over slopes in water solution. Very economical in use of seed. Research needed as to amounts of fertilizer pounds of seed of different types in gallonage to acre proportions.

8. In general much less sodding on highways than in previous years. Solid sod use increasing in drainage channels. Strip sodding more frequently used than solid sod.

9. Vital need is to have seeding done at best season for rapid establishment and growth. In Connecticut, slopes seeded at once after finish grading. Seed selected to meet seasonal requirements. Study needed of the problem of contractor-engineer cooperation. Seeding of unnecessarily large amounts of seed has immediate results but may defeat long term purpose of establishing permanent turf cover. (Moderate to light seeding by reference much safer than too high rates of seeding from standpoint of permanent slope cover.)

H. J. Neale: Information is needed on best types of fertilizers for varying regional soil, and climatic conditions. We need to know more about use of asphalt over hay or straw mulches to hold them in place. More information is wanted by the committee on various types of seed spraying equipment.

Dr. Monteith: Where a light cover of topsoil has been spread over slopes, good turf has been established from native seed in such soil.

Mark Astrup: We are interested in lowering costs of turf establishment. Elimination of noxious weeds in agricultural areas is another of our problems. Good turf on road slopes eliminates weeds, and also prevents establishment of undesirable trees and other seedling growth.

J. V. McManmon: In our Cape Cod area low growing types of woody growth are our usual ground cover. Our policy is to mulch slopes, protect native ground covers and encourage their establishment. Establishment of turf on slopes not a natural one, sometimes not a desirable practice.

J. L. Wright: We consider it common sense to seed and mulch our slopes and thus eliminate undesirable weed growth to be dealt with later.

F. H. Brant: Weeds must be eliminated on roadsides to avoid criticism by farmers. Certain grasses such as Bermudagrass are objectionable in agricultural areas. These objections must be considered.

Torbert Slack: There are places in Louisiana (Coastal Plain Region) where the use of topsoil and Bermudagrass roots is necessary to control slope erosion. In other localities seeding of hulled Bermudagrass seed will establish a turf cover--seed on slopes is frequently washed away by heavy rain before it can germinate.

Our seeding costs about 50 dollars per acre when it is done as a part of construction contracts. As now performed, if a heavy rainstorm follows seeding by the contractor, seeding must be done again by our own maintenance forces.

Our contracts now call for seeding or sodding or both to be done by our own State maintenance forces.

We used to do slab sodding (solid sodding). This work was high in cost, of course. We have now reduced the amount of slab sodding as far as possible. We have now drawn up our seeding specifications so that the project engineer can select a kind of seed to meet existing soil and moisture and slope conditions on each job. He can select a kind of seed adapted to each season.

H. J. Neale: Thank you, Mr. Slack!

I would like to say at this time that if you have any problem in your State for research by the Committee we will appreciate your submitting it in writing to any member. This will be of great help to us in working up the over-all picture of Nation-wide roadside development that is our present objective.

Mr. Spelman, have you any further comments?

H. J. Spelman: We need information on what can be done to establish turf on firm shoulders. We have attempted to seed gravel shoulders on a highway a few miles out of Washington. The work has not been too unsuccessful--we looked at some of it yesterday. We still have trouble with topsoiled shoulders after we seed them. After rain or when the frost is coming out in spring, a vehicle turning out on these topsoiled shoulders makes a rut. If we can develop gravel shoulders and then turf them we shall solve two problems.

1. Bare gravel shoulders are hard to maintain in themselves.
2. A turf covered gravel shoulder will look better and will probably be easier to maintain. The gravel shoulder will still be firm enough to hold traffic.

There is room for further improvement in turfing methods as outlined by Dr. Monteith. We have found that mulching is of the most vital importance following the seeding operation.

If we were to omit anything in the normal cycle of ground preparation, topsoiling, fertilizing, seeding, mulching, etc., we would at least continue the mulching.

As far as seeding is concerned plenty of seed usually exists in any topsoil as can be observed wherever topsoil has been salvaged. There is room for economies in both mulching and seeding practices with just as good results, as Dr. Monteith has pointed out.

H. J. Neale: Thank you, Mr. Spelman!

This development of turf on gravel shoulders is one of our most important subjects for research. Has anyone further questions in turf establishment at this time?

I have heard no comments on chemical weed killers. Has anyone further comments on turf maintenance?

Our next problem in connection with erosion is ground cover planting.

Has anyone comments on that?

N. M. Wells: Did I understand your last question? Was it in regard to herbicides?

Various conferences in chemical control of weeds have been held in all regions of the United States. In our New York-New England area the control of ragweed and poison ivy and other noxious weeds from a standpoint of health, has received a lot of attention.

The next Northeastern Weed Control Conference will be held at the Hotel New Yorker, January 3 to 6, 1950. Papers presented at this meeting will be available for your reading.

H. J. Neale: We hope that those attending this weed control conference will give us a digest of what was said and done.

A discussion of new types of equipment for grading and handling of turfing operations may be pertinent at this time.

Question might be asked: What progress has been made in machine equipment for low cost development of roadsides in your State or region?

Possibly Mr. Garmhausen will comment on this.

W. J. Garmhausen: Last year our subcommittee reported on spray equipment of both low and high pressure types. Choice of high or low pressure equipment depends upon kind of materials used and the time of year when chemical weed control is to be carried out.

The Northwestern Weed Control Conference was held at Sioux City, Iowa last week. Papers presented will be available for reading by those interested.

H. J. Neale: Is your report for this year typed? If so, you need not read it at this time.

Thank you, Mr. Garmhausen. We particularly appreciated your excellent report last year.

Has anyone further comments?

J. J. Forrer, Maintenance Engineer, Virginia: In Virginia we have been using the standard tractor mowers of cutter bar type. International Harvester has developed a special cutter bar to replace the usual grass cutter bar. This will cut small trees up to $1\frac{1}{2}$ inches in diameter.

We have about 35,000 miles of secondary roads in Virginia. Neither the necessary labor or funds are available for brush clearing on this mileage by hand. This new type of cutter bar makes machine brush cutting practicable.

W. J. Garmhausen: Our reports to date have largely covered the types of machine equipment used by contractors. We might well broaden our reports, I think, to cover other types of equipment used by maintenance forces.

H. J. Neale: We should use herbicides to follow-up brush mowing. Large stubs left by mowing equipment such as Mr. Forrer described will seriously damage normal cutter bars designed for grass.

Mark Astrup: In roadside brush cutting you can use the special cutter bar the first time. The second mowing will require lifting of any cutter bar. The stumps left from brush cutting (when well seasoned) will wreck any type of mowing equipment. We have used every type there is and have developed our own special mowers.

A herbicide control job can be done just after brush cutting. Chemical herbicides can be dynamite!

Our experience with esters in solvents has not been satisfactory.

We have used acid compounds of 2-4-D in water solutions with good results. You must get a ground cover of grass following use of herbicides. You have to cut brush and then dispose of it. We use chippers and dispose of chipped material right on the roadside. The mechanical chipper disposes of the limbs very well.

We are still looking for a machine that will cut brush on our rights-of-way. No machine available today will do our transmission line cutting.

Costs of brush cutting per acre per year are very high. Chemical brush control is not satisfactory. Growth comes back on old stumps (even after spraying).

H. J. Neale: Thank you, Mr. Astrup!

W. J. Garmhausen: We have had good success with 2-4-D and 245.T in oils. Woody plants are sprayed in winter. We have time then.

H. J. Neale: Our time is getting short. We have another subject for discussion. It is roadside tree planting, planting of medians for headlight glare control, maintenance of existing trees, wire clearance, etc. Has anyone comments on these subjects?

F. H. Brant: Here are some questions that would be of help if answered: What minimum distance should we have shade trees away from the pavement? A number of variables enter this question--fills, cuts, grade points, etc. The answer is usually "it all depends." We should be able to make a definite recommendation. Is it 5, 10 or 20 feet?

H. J. Spelman: Trees should be back of the ditch and shoulder line. No tree planting should be done where it is a hazard.

H. J. Neale: In Virginia we plant trees 5 feet back of ditch, 16 feet in from outer edge of right-of-way. This provides space for utility line clearance and for a service road if required. On 160 feet of right-of-way this gives us 25 feet of space for tree planting.

J. V. McManmon: We plant trees 15 feet outside edge of traveled way.

N. M. Wells: We have issued tentative standards to guide tree location based on conferences with various agencies interested in tree planting in our State. Standards are for use by highway designers. They are based on traffic speed various radii of curvature, perception time, braking time and all related factors as they apply under average traffic conditions. Standards for set-back of all obstacles are used as a guide for the work of maintenance forces

Questions answered by standards are for example:

How far back must trees and other obstacles be placed on outsides of curves of various radii?

How far in from edge of right-of-way?

How should planting design of intersections be handled?

These policy standards have not been released. A few copies are available.

H. J. Neale: Mr. Brant would like 80 copies of this New York policy as outlined by Mr. Wells. (Mr. Brant was complimented on his excellent work in the distribution of information in the "Clearing House" during 1949.)

The second part of our afternoon program is now on. The subject of parking turnouts and wayside areas will be covered in a preliminary report.