

DISCUSSION OF "HIGHWAY AND AIRPORT DRAINAGE DESIGN"

N. F. Schafer, Superintendent of Maintenance,
State Highway Commission of Indiana

Mr. McClelland has presented an excellent paper on a subject that is often neglected. We know that a road will last longer if it is well drained, but first costs often cause us to follow the path of least resistance and eliminate certain expensive drainage installations because a road must be constructed or maintained for a given sum of money. This is false economy.

Soil surveys should be used in the location of roads and in solving maintenance drainage problems after the roads have been constructed. The Joint Highway Research Project is publishing a bulletin that discusses many phases of drainage and the use of soil maps and soil surveys in the solving of highway drainage problems. This bulletin will be supplied to all engineers interested in highway and airport construction and maintenance.

Probably the most outstanding thing in McClelland's paper is his reference to the proper grain size of a good filter. Quite recently we were talking in terms of small boulder size—not grain size. We now know that the use of large aggregate for a French drain was wrong because the drain soon became clogged and did not function. The use of a large-sized aggregate in a French drain should be eliminated unless there is a filter between the aggregate and the surrounding soil.

The ordinary dry-well is not used enough. When water stands in the side ditch along a flat section of highway, you should investigate to see if a stratum of sand is present reasonably close to the surface. If it is, drain the surface water into this stratum by means of a dry-well.

The primary drainage system of a road is the side ditch. The side ditch is designed to carry the normal amount of surface water because it has a given cross-sectional area. Too often ditch maintenance is neglected, and many times the former ditch bottom elevation is not restored when it is cleaned. This reduces the volume of water the ditch will carry and often stops the flow of the water entirely.

It should be remembered that the most properly designed road will fail if the drainage facilities are not properly maintained.