

EROSION

By

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Erosion is an age-old landscape-forming factor, the effect of air or water in motion on the earth's surface. A brief discussion of such a universal factor must, of necessity, ignore many of its interesting and important phases, while those mentioned can only be suggested or briefly analyzed.

Through the ages, particularly in glaciated areas, erosion has contributed largely to the formation of the present topography. From even a casual study it is evident that enormous factors, both of time and of volume of water, have been involved in carving out the enormous valleys and the lesser tributaries reaching out in diminishing size but with increasing numbers to form our natural drainage systems.

Prior to the arrival of civilized man in this country, nature had developed a protective ground surface cover of grass, brush, shrubs and trees, which, generally speaking, had reduced erosion to a minimum. These, through their soil-binding qualities, more than offset the soil-depleting force of erosion in all but the steepest non-agricultural areas.

The full enjoyment of our natural resources demands that the balance thus established be maintained. However, from the advent of civilized man, with his extensive uncontrolled agricultural methods and his removal of timber growth, these natural protective agencies have been destroyed so extensively in many regions that damage from erosion has become a problem of serious public concern. This problem has too long been neglected because of ignorance or willful intent to skim the cream of our natural resources, leaving only the blue milk of depleted soils and eroded slopes for posterity.

Highway engineers and those with greater administrative prerogatives, in determining the methods and policies of highway location, design, construction and maintenance, have been flagrant violators of public interest in aiding and abetting this public enemy erosion. Until recent years highways have been located, designed and constructed almost universally without regard for the rapidity with which steep mathematically accurate and regular slopes, finished with painstaking care, lose their highly artificial shape and "sandpaper finish" through erosion. To the discredit of highway officials the waste and economic futility of this procedure, with its unwarranted desecration of the natural beauty of the landscape, is often rather grudgingly admitted under pressure of popular demand for roadside development and erosion control.

Highway officials and engineers must have the breadth of vision necessary to work wholeheartedly with competent broad-minded landscape architects in realigning policy and procedure relating to highway location, design, construction and maintenance. Suitable provision in highway location and design for avoiding erosion difficulties where possible and for protection against erosion when necessary will fulfill, to a large degree, the major requirements of roadside development in the initial construction. With such landscape design recognized at the outset, roadside development as now applied to existing highway construction is superfluous and unnecessary. The avoidance and prevention of erosion difficulties produced by highway construction, therefore, have an enormous esthetic and economic value.

Apparently the popular press and technical publications have thus far dealt with erosion largely as an isolated problem, without mention of its "Siamese Twin", the problem of "silting". The wastage of farm land and the destruction of expensively prepared highway slopes and ditches by erosion should seem adequate justification for wholehearted cooperation of all private and governmental agencies in meeting this phase of the problem. In addition the economic loss from silting, while generally less spectacular, in many instances justifies a large expenditure of effort and funds by all agencies affected or involved in erosion control.

The eminent Economist and Author Stuart Chase says, "The people of America have been sitting on their porches watching their continent go by. Three billion tons of solid continent are washed into the oceans every year by soil erosion, largely man-made. It would take a freight train 475,000 miles long to cart this continental slice away. Such a train would girdle the equator nineteen times".

The nation, including all public and private agencies, should be alarmed by the additional fact that only a small portion of the material removed by erosion reaches the oceans. Deposition of such materials begins as soon as wind or water velocities decrease, with only the lighter particles remaining in suspension until they reach the ocean. Boulders and stones, gravel and sand, silt and clay are strewn over fertile agricultural areas and choke our water courses.

In common with other private and governmental agencies, highway users, administrative officials, engineers, and all highway industries are vitally concerned in the adequate and early control of this dual menace.

Selfish interest alone demands not only that this Highway Research group promote and foster in every possible way such location, design, construction and maintenance of highways as will reduce to a minimum erosion and silting arising therefrom, but also that they join forces with other agencies in working beyond the highway right-of-way towards the early subjugation and continuous control of this national menace.