
ANNUAL REPORT
OF
EXTENSION WORK IN LAND DRAINAGE.

EXTENSION DIVISION
VIRGINIA AGRICULTURAL AND MECHANICAL
COLLEGE AND POLYTECHNIC INSTITUTE

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The Drainage Work as conducted during the year 1915 has included the actual surveying of farm lands needing drainage; the giving of information to the individual farmers who were not in need of actual surveys but required some sort of information and aid before going ahead with their small drainage projects; the answering of letters of inquiry in regard to drainage of which many have been received during the year; in the exhibiting of drainage work at the State and various county fairs. In fact the drainage work has included the extending and disseminating drainage information all over the State in every way possible.

The demand upon this office for assistance in matters pertaining to drainage continue to increase and have reached a point where only a small part of the requests requiring a survey could be granted.

The policy of this office has been to render service in an advisory or consulting way rather than by engaging extensively in the larger projects which would require the continuous services of the engineer for long periods of time. In other words, the endeavor of the engineer has been to serve the largest possible number of farmers in their less extensive drainage undertakings than to enter in detail into a comparatively few of the larger enterprises.. In general the work of this office along drainage lines has been largely educational in character, with a purpose of helping the individual farmer to help himself most effectively.

It has been the aim of the Engineer to try and make surveys for the leading farmers of the different sections; men who by their success of farming and by their standing in the community are looked upon by the majority of the farmers as leaders. This type of man can be depended upon to go ahead with the construction of the drainage system as planned for in the surveys. When systems are installed on such farms they serve as valuable demonstrations as to the value, benefits, and results of land drainage.

- The work in the State falls into three general sub-divisions:
- (1) The improvement of farm lands now under cultivation.
 - (2) The drainage of swamp lands.
 - (3) The drainage of overflow river or creek bottom lands.

The improvement of farm land by tile drainage is a question of tremendous importance and of growing interest to the farmers.

In fact it has been the policy of the Engineer to give most of his attention to this phase of drainage as it is this line of work that touches the farmer most directly. There are a few better investments that the farmer can make than to drain the wet portions of his farm, but the system must be intelligently designed and properly constructed. The disappointments that occur are invariably due to faulty work either in design or construction. These defects with their consequent failures and disappointments, are in nearly all cases due to the failure on the part of the farmer to appreciate the importance of such detail as density of soil, slope and topography of the ground, rainfall, and the proper amount of drainage water to be provided for. It is the upon the factors that location, depth, spacing, and size of tile depends, details upon the correct determination of which depends the success or failure of the drainage system.

The object of the Engineer is to demonstrate the economy of farm drainage when the work is designed and constructed under competent supervision.

The drainage of swamp lands include the improvement of such lands as are more or less continuously wet and unfit for cultivation, due to their small slope, lack of outlets, or the obstructed conditions of the outlets. The necessity for drainage of such lands is now generally recognized, not only for the purpose of making available for cultivation large tracts of unproductive lands, but for the improving of the healthful conditions of the communities in which the swamps lie. There has been some demand for assistance in drainage of this nature but in the majority of cases only advice of a consulting nature was attempted as a survey of this kind would necessitate too much valuable time which could be more profitable spent in surveys of farm lands.

The overflow of river and creek bottom lands presents drainage problems very different in character from those of the permanent swamps. The overflows are periodic and may be infrequent, but the resulting losses are often extremely heavy, due to the fact that the flooded bottoms are usually very fertile and are under cultivation. The reclamation of such overflow areas usually is accomplished by cleaning out and deepening the channels of the offending stream and in some cases by the construction of levees or dikes to confine the flood flow. All work by the Engineer in regard to this sort of drainage has been of an advisory nature altogether.

Farmers for whom actual surveys were made:

R. E. Kent,	Portsmouth, Va.	75 Acres
D. A. Slaughter,	Mitchells, Va.	200 "
Simon Mahoney,	Mitchells, Va.	65 "
E. L. Tessier,	Chesterfield Co., Va.	25 "
Martin Hall,	Oak Hall Station, Va.	76 "

R. C. Hall,	Oak Hall Station, Va.	50 Acres
Dr. Bowdoin,	Bloxom, Va.	50 "
G. F. Clarke,	Culpeper, Va.	10 "
R. D. Scott,	Culpeper, Va.	30 "
George Goodwin,	Gordonsville, Va.	65 "
F. W. Brown,	Roanoke, Va.	65 "
A. G. Lyon,	Windsor, Va.	50 "
L. Whitehouse,	Hampton, Va.	84 "
E. W. Milstead,	Newport News, Va.	35 "
Jas. M. Cummings,	Hampton, Va.	150 "
J. W. Rowe,	Hampton, Va.	160 "
Paul Tabb,	Hampton, Va.	116 "
Hampton Normal School,	Hampton, Va.	20 "

A Summary of the Work Accomplished.

Number of Surveys made - - - - -	18
Number of Acres Surveyed - - - - -	1346
Number of Farmers aided in small Drainage Projects - -	67
Number of Counties in which Surveys were made - - -	9
Number of County Agents Visited - - - - -	13
Number of Pairs Visited - - - - -	4
Number of Newspaper Articles written - - - - -	3
Number of Letters written - - - - -	270
Number of Talks on Drainage given - - - - -	1
Number of personal Visits to Farmers - - - - -	85
Number of Trips made away from Headquarters - - - - -	32
Number of Systems personally superintended Construc- tion of - - - - -	2
Number of feet of Tile mapped out - - - - -	734730
Number of Miles traveled - - - - - Rail - - - - -	3071
Number of Miles traveled - - - - - Team or Auto. - - - -	727

Demonstration Tile Systems Personally Laid.

I personally laid 500 feet of tile for Ben. T. Hunter of Accomac, Virginia. This tile was laid for the drainage of his stable yards and a small field used for a garden plot. The purpose of laying this tile was for demonstrational purposes in that section. It has proven a big success and has been a valuable aid in demonstrating the results of under-ground drainage.

I have also personally laid 2000 feet of tile for R. D. Cowherd of Gordonsville, Virginia, for demonstrational purposes.

Fairs.

The Land Drainage Exhibit was prepared for the State Fair in which was shown a miniature model drained farm, illustrating the proper way to lay out a drainage system, etc. Conspicuously arranged around the model, were charts, telling just what lands were in need of drainage; what effect the artificial drainage has, and the practical benefits accruing therefrom. Photographs of different steps in the construction of a drainage system were also shown. Tile laying tools and different sizes and kind of tile were displayed.

The Drainage Exhibit was also shown at the Halifax County Fair, South Boston, Virginia; the Peninsular Fair at Newport News and the Accomac School Fair at Parksley, Va.

Results of Fairs.

The Drainage Exhibit at the various fairs attracted a great deal of attention and the Engineer was kept busy at all times answering questions in regard to drainage. It was very gratifying to see how much interest was shown in the question of land drainage. By the Drainage Exhibit the Engineer was enabled to reach and instruct hundreds of farmers that could not have been reached in any other way. The Exhibit at the County Fairs accomplished the most good as more farmers attended these fairs.

Next year it is the intention of the Engineer to have a drainage exhibit at all the important county fairs especially in the Counties where drainage is most needed.

Results of Drainage Work.

A large number of farmers for whom surveys have been made have put in parts of their drainage systems and have had very favorable results.

Mr. Sam Ames of Pungoteague, Virginia, made the statement that he raised enough potatoes this year on the piece of land he had tile drained to pay for the tile drainage five times over, if the market price on potatoes had been normal. This is only one of the many favorable reports on the results obtained from tile drainage.

In the vicinity of Hampton, Virginia, the Engineer have made several surveys for farmers who are all anxious to install drainage systems this winter. The Hampton Normal School farm will put in a tile drainage system on a 20 acre experiment plot under the Engineer's personal supervision. They have consented to use this system for experimental purposes and keep accurate account of cost, results and benefits, etc.

Four prominent farmers and business men of Hampton, Virginia, for whom the Engineer has made surveys have decided to club together and purchase a large traction ditching machine. After doing all the ditching necessary for the drainage of their own farms they will have competent man in charge of this machine and will do contract work for other farmers of that section. This will undoubtedly mean much for that section of the State as the drainage of their lands is their most important problem. The ditching machine will enable them to have their ditching done at a reasonable cost.

Some of the farmers in the section around Hampton are also considering the advisability of starting a clay tile factory in order to solve the question of the high cost of clay tile.

Plans for Drainage Work for 1916.

The early part of the year the Engineer plans to supervise the construction of a few tile drainage systems in Elizabeth City County. The drainage work in this section is of a pioneer nature and therefore it is very important that the first work done be done properly as it will be watched very closely by all farmers in the vicinity.

During the coming year the Engineer will write articles on farm drainage for the Southern Planter and other farm papers.

The Engineer will give talks on the subject of land drainage wherever and whenever possible.

Field demonstrations in land drainage will be hold whenever and wherever it is possible to do so.

The Engineer plans to have an educational tile drainage exhibit at all the important county fairs. In fact it will be the purpose of the Engineer to distribute information along drainage lines throughout the State in every way possible.

Aside from the great change which will be effected in agriculture and agricultural methods by the reclamation of swamp lands, overflowed river and creek bottom lands, and the proper drainage of wet farm lands throughout the State, a great benefit will be derived by changing many unhealthful localities into those suitable for habitation throughout the year. This benefit alone, will without doubt contribute greatly to the prosperity of the State.

Respectfully Submitted.

Drainage Engineer.

