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DRAINAGE PROBLEMS IN SASKATCHEWAN

HOW THE CAPACITIES AND LOCATIONS OF THE DRAINS ARE DETERMINED—GRADES AS LOW AS 0.02 PER CENT. HAVE BEEN USED WITH SUCCESS—EXPLANATION OF THE NEW DRAINAGE AND DITCHES ACTS

By CHARLES S. CAMERON, A.M.Can.Soc.C.E.

Dominion and Saskatchewan Land Surveyor, Regina, Sask.

TO discuss the problems or difficulties in connection with drainage work in this province it will be necessary to refer to the laws governing such work, and also give a synopsis of construction already carried out.

Prior to 1909, all drainage was done under the provisions of a North-West Territories Act which was described as "The Public Works Ordinance." This was in force between 1897 and 1909 and was succeeded by "The Drainage Act" and "The Private Ditches Act" of the latter year. The Public Works Ordinance was designed to permit the construction of drains for the benefit of highways only, and it did not provide for any assessment on private lands which might be improved and therefore an equitable distribution of the cost of such work was the chief object in view when the acts of 1909 were passed in the legislature.

The only works done under the ordinance were in districts where it was impossible to proceed with road construction without drainage. A few of these might be mentioned: The Yankee Swamp drain, near Prince Albert; the Dundurn drain, west of Dundurn; the Birch Hills drain, north of Birch Hills; the Kinistino drain, north of Kinistino; the Melfort drain, near town of Melfort; the Yellow Grass drain, south of Yellow Grass.

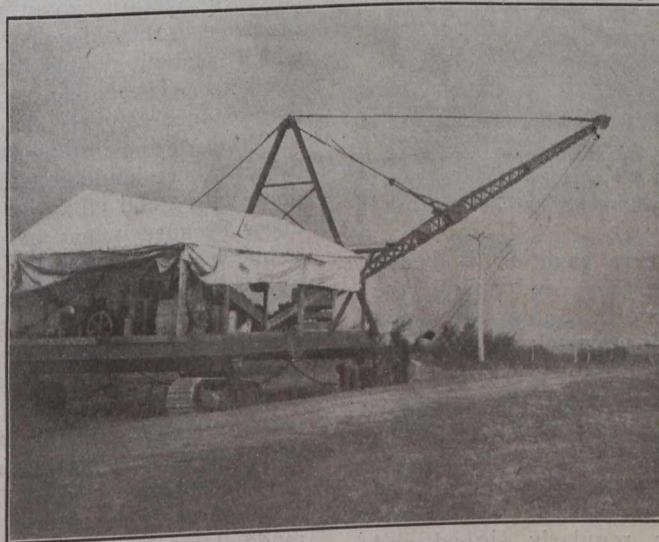
There was no particular difficulty in the construction of any of these; the average size was from 3 to 6 ft. bottom with side slopes of $1\frac{1}{2}$ to 1 and cost approximating 25 cents per yard. All work, with the exception of a part of the Yellow Grass ditch, was done with teams or by hand labor. The Melfort work was peculiar in the fact that it drained a wet plateau in the centre of which was a small lake. The ground for several miles beyond the ridge surrounding the wet land sloped sharply downward and there was therefore no surface inlet to the lake. No investigation was made at the time or since to discover the source of supply of this water. The deepest cut on the constructed drain was 6 ft., as it was not intended to completely drain the lake. However, when inspection

was made in the following spring it was found that the ditch had gouged out to a depth of over 20 ft., and had made a thorough job of drainage.

The Yellow Grass ditch was built in 1915. It is 12 miles long with varying bottom widths of from 7 to 18 ft., according to distance from outlet. For about 3 miles near the outlet a floating dredge was used and on this part the side slopes are $\frac{1}{2}$ to 1. The balance was done by team labor and the slopes are $1\frac{1}{2}$ to 1. The upper end is used as a reservoir at times because there is a scarcity of water in the latter part of summer instead of an excess which occurs in the spring. The water flow is regulated by a gate similar in idea to a canal lock. There was no trouble experienced in construction and the only complaint is a claim that the drain should have followed the meanderings of the old creek channel, instead of taking a direct line and straightening the water flow, as was done in some parts.

In referring to the work carried on under the Drainage and Private Ditches

Acts it may be pointed out that these regulations are very similar to the laws of the older provinces, especially Ontario, where the Municipal Drainage and the Ditches and Watercourses Acts are in effect; the chief difference being that the municipal councils attend to the administration of both Ontario Acts whilst in this province the provisions of the Drainage Act are carried out by the provincial government. The rural municipality councils of Saskatchewan have charge of the reinforcement of the Private Ditches Act. This is designed to deal with the construction of small ditches, such as those to cost not more than \$2,000, and that affect not more than 10 quarter sections of land. The procedure is simple and takes very little time to put into effect. On petition of at least one interested owner the municipal council appoints an engineer to report, and if desirable to proceed, he lays out the work and awards the amount of construction to be done by each land owner or the proportion of cost to be borne by him in the event of the work being done by contract. The chief difficulty with



The Lount Drag Line Excavator at Canora, Saskatchewan.