



Third hole of the Portland course, after clearing through heavy alders and other growth. The green, in the distance, will have guarding traps on either side.

Careful Planning Brings Fine Public Golf to Portland, Me.

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THE CITY of Portland, Maine, during the construction season of 1931 completed 9 holes of an 18-hole layout as the culmination of a long period of discussion of this form of municipal recreation for local use.

In December, 1925, the writer made a general report and recommendation favoring municipal golf for Portland and like the sponsoring of many forward-looking movements the idea was not too well received by our taxpayers. In fact the proposal was treated in some quarters with a reaction bordering on derision of the proponents. After a considerable period of digestion the suggestion of municipal golf was revived in December, 1928, by enthusiastic members of the local Chamber of Commerce. With this background and other local interest that had very slowly accumulated, the city council finally

took action and purchased certain land for the project in late winter of 1931.

It has been a personally happy coincidence that in the main what was suggested in the report of 1925 for land site, capital investment in land, and estimated cost of construction has come remarkably close to these elements of the project of 1930. Especially is this so of land site and cost of the acreage. The land already acquired has an area of 123 acres and has cost the city \$18,359.75 or \$149.26 per acre. The general report of 1925 carried a recommendation for 150 acres of land not to exceed in cost \$150 per acre and an estimated cost of construction for 18-hole layout of \$35,000. The land acquired for the golf course comprises 4 parcels of farm land much of which was considered desirable in 1925 by the writer. It may be advisable to acquire a small amount of

additional land to accommodate the second 9 if we are to avoid quite severe grading in places and get the most economical and best layout on the remaining acreage.

Avoided Political Jams

Portland has hundreds of acres of undeveloped suburban land much of which might be adaptable for golf layout and in view of this situation it is surprising that several committees working quite independently on location of a site have been unanimous in selecting the present site. This point is stressed because it is so very popular to have a matter such as this fraught with selfish and many times out and out political motives. Of this latter we were fortunately spared.

Lady Luck has played into our hands in fitting the pattern to the cloth. The land was purchased before expert opinion on golf design was engaged by the city council. In a general way we felt that the pleasant rolling farm land bounded on the easterly side by a suburban highway and on the west by the deep running Presumpscott river and north and south by bordering farms should adapt itself economically to good golf layout. That our hopes were realized is demonstrated in the partly finished product we now have, a well designed 9-hole layout. While we were fortunate, it is not wise generally speaking to purchase land for golf development without first obtaining advisory opinion on fitting golf layout to certain land and having in advance expert knowledge on the factors which influence construction costs and an assurance of soil elements which are so all-important in turf culture.

To those who may not be particularly interested in what Portland, Maine, has done so far in municipal golf this background of our project is merely offered to encourage others whose responsibility it may be to give this form of recreation to its citizens. It may take several years to realize on the undertaking but it will be worthwhile in the end. To obtain municipal funds for golf construction in these critical days of cost of government is no easy task unless the factor of unemployment relief is emphasized. As contrasted to outlay of funds in other forms of recreation however, golf has the saving grace of being able to pay its way in most communities with the health building features added.

This 9-hole project has presented no unusual construction features. There was

no ledge rock encountered and very few stones which could be classed as sizable boulders. We were very careful about general drainage of the land and the main ditch draining the farm land is broad and was excavated to line and grade and sloped at 3 to 1 with a 3 ft. width of trough. Thirteen lateral drains lead into this intercepting ditch and the side drains are of 6, 8 and 10 in. vitrified pipe covered with coarse gravel. The main ditch is 1900 ft. long and 5192 ft. of laterals were constructed. All ditches and drains were excavated mechanically.

In general, preparation of fairways and green sites followed the usual construction practice for this division of the work. The areas were first plowed with a two way No. 20 Oliver plow and following this, a brush breaker harrow, weighted down, was used to break up the soil and this followed by a light farm harrow. Final levelling was accomplished by a "home made" plank drag (12 ft. by 12 ft.) and a very coarse birch (limbs) drag. Under certain soil conditions the Scotch chain harrow was used to advantage to further "mellow" the soil, this being used in most instances behind the lighter harrows. The motive power for working up the soil and for the small amount of brush clearing was a Caterpillar tractor.

Plan with Soil Analyses

Before commenting on pre-seeding fertilizing it may be interesting to say something of the characteristics of the soil encountered on the project. Tests of soil samples taken to show a typical run of the highland and lowland areas showed analyses as follows: No. 1 fairway soil (lowland) pH 5.8; available phosphoric acid 25 lbs. per acre. No. 3 green site (lowland soil near river) pH 5.4; phosphoric acid 100 lbs. per acre. No. 4 fairway (lowland near river) pH 6.2; phosphoric acid 50 lbs. per acre. No. 8 green site (highland) pH 5.6; phosphoric acid 75 lbs. per acre. Soil in lowland on No. 1 fairway was rather heavy clay and this type of soil was typical of limited low areas on No. 7 and No. 9 fairways. Typical highland soil such as found on No. 8 green site was friable and somewhat on the sandy side. It was necessary to add considerable sand to the lowland clayey soils, the quantity going as high as 40 tons per acre. The sand was well harrowed into the clay sometime after lime had been placed and after tests had shown the

necessity of "breaking down" the heavy soil.

All greens and tees were treated before fertilization with arsenate of lead at the rate of 15 lbs. per 1,000 sq. ft. This was a corrective for white grub and angle worm pests which are apt to show up to destroy turf later. "Deerfield Fertilizer"—a trade article—was used throughout on the greens and at the rate of approximately 100 lbs. per green, the greens averaging about 7000 sq. ft. in area. Fertilizer rated 6-6-4 was applied throughout on fairways, tees and mounds. In connection with "mellowing" and fertilizing clayey soils the writer believes that it is far better to plow under a manure crop in the previous fall and follow with high nitrogen commercial fertilizer or stimulants in the late spring. We could not have done this under our construction plan so we had to correct with sand and commercial fertilizer and we can now anticipate some bothersome conditions to be overcome next year. Fertilizer for fairways was applied at the rate of $\frac{1}{2}$ ton per acre. All fertilizers and correctives were either thoroughly hand-raked into the soil as in the case of greens and tees construction or brush harrowed into the fairways and sufficient time was permitted for assimilation in the several stages of usage of the materials.

Seeding Program

It may be of interest to agronomists who read this matter (and have in mind the acid reaction of the soils as above given) and to others who are especially interested in turf culture and its problems to note the seeding operations on this job. South German mixed bent of 83% purity and 87% germination was used on all greens, applied by hand at the rate of 100 lbs. per green. This is extremely heavy seeding but it is what the advisory golf architects called for. Mixed bent of this grade cost \$84 per 100 lbs. f. o. b. Portland, Me.

Fairway seed mixture per acre for lowland areas was as follows: New Zealand Chewings fescue, 50 lbs. (40%); fancy redtop, 50 lbs. (40%); German mixed bent (70% purity—75% germination), 25 lbs. (20%). Rate of application 125 lbs. per acre. Seed mixture for highland areas was New Zealand Chewings fescue, 83 lbs. (66 $\frac{2}{3}$ %) and fancy redtop, 42 lbs. (33 $\frac{1}{3}$ %)—at the rate of 125 lbs. per acre. A mixture of 70% fescue and 30% redtop (total of 20 lbs.) was used on tees



Raking in fertilizer on No. 1 Green

and sheeps fescue and redtop mixture for mounds at the greens. Seeding was done with Thompson seed spreaders and it was necessary to sow redtop and bent separately from fescue to obtain the quantities desired for these varied size seeds. The fescue was sown transversely of the smaller seed mixture.

A great deal of the excavated material from drainage lines was used in making the foundations of the greens and tees, this material being loaded directly to trucks by gas shovel. Added material to bring the foundations of the greens to the required contour was obtained through excavation of traps in proximity of the several greens and topsoil was reserved from areas in and around greens sites for finished grading.

While we were committed to a close estimate to complete the golf project, the writer is now firmly convinced that it would have been better construction to have taken approved topsoil (from tests) found on the farm area and transported this to the several greens and not endeavor to construct the green surfaces with somewhat inferior soil in proximity to the greens, although this is tempting from the point of costs. In some instances judging from fall germination of seed it will be necessary in the coming spring to aerate and otherwise correct a slightly tightened soil condition due to clay content, and moreover, to overcome bothersome weed growth which has crept in. Cost and other details of the Portland course will appear in May GOLFDOM.