

# PLAN OF WATER LEAD FROM MANOA VALLEY to the City of Honolulu

1878 (?)

### Notes

Distance from the head of the canal to the Reservoir A	13066 Feet
Distance from the same to the Reservoir B	14980
Distance from the same to the Reservoir C	17523
Distance from the same to the Reservoir D	20173
Height of the Reservoir A above the plain, Average pressure	130 Feet
Height of the Reservoir B	120
Height of the Reservoir C	100
Height of the Reservoir D	85

#### Main pipe from the Reservoir to reach the plain

All the pipes are twelve feet long, and eight inches inside diameter

From the Reservoir A 2969 feet	82 pipes 12 feet long, 0.35 tick = Weight	30340
	82 pipes 12 feet long, 0.45 tick = Weight	47000
	84 pipes 12 feet long, 0.49 tick = Weight	45692
	248 pipes = Total	117032
From the Reservoir B 2100 feet	82 pipes 12 feet long, 0.35 tick = Weight	30340
	93 pipes 12 feet long, 0.45 tick = Weight	46500
	175 pipes = Total	76840
From the Reservoir C 2230 feet	82 pipes 12 feet long, 0.35 tick = Weight	30340
	102 pipes 12 feet long, 0.40 tick = Weight	44000
	184 pipes = Total	74340
From the Reservoir D 2000 feet	82 pipes 12 feet long, 0.35 tick = Weight	30340
	85 pipes 12 feet long, 0.40 tick = Weight	36000
	167 pipes = Total	66340

The long pipe shown from A to N is not included in these calculations, and it must be as much tick as the most tick of any size, whereas the Reservoir shall be just. Its length could be 3280 feet, and its most tickness half an inch. Its Weight = 743000 lbs to add with the other weights of ticks, according to the place chosen for the reservoir.

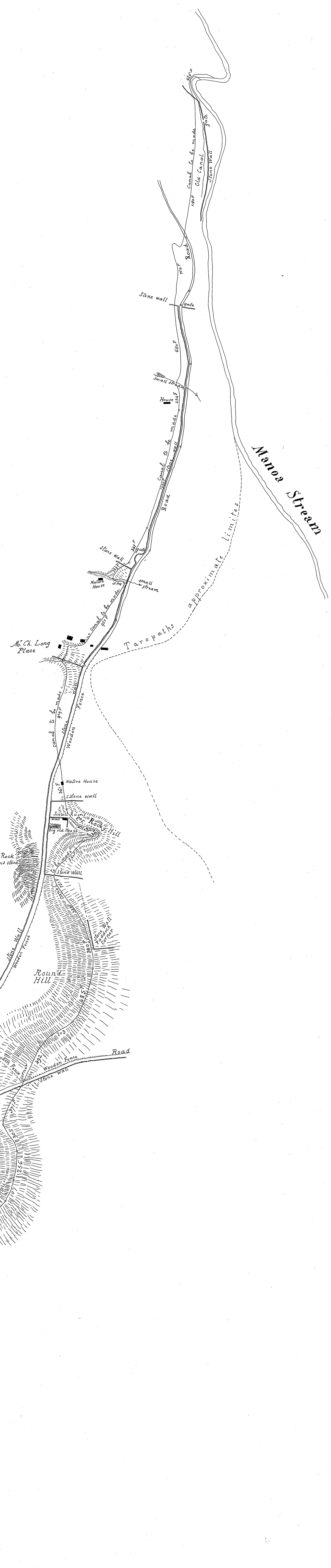
The 13066 feet from the head of the canal to the Reservoir A is to be dug in the earth at a more low depression than the vegetable mould soil. And in about half a part of that length, it shall be necessary to use masonry to prevent filtration. Thus the digging shall take about 1600 days of labor; and 14000 cubic feet of masonry.

The canal must be 19 square inches of cross section in all the cemented part.

If it were wished that the canal may be made more long westward, all the part from the first reservoir A to the others, can be made at first by a single digging more deep than the bed of the fissile sand. Then there is to cut the canal in the hard part of the sandy rock situated more deep. That rock is very easy to be cut, and very good to prevent filtration. Doing so, there shall be a less expend of masonry, and the same way is to be followed concerning the construction of the reservoir. More sandy shall be the place, and more it shall be right to choose this place.

If the canal was continued from A to D, that could be good in the case that the water of Makiki stream should be used, then this part of canal from A to D could be only a square foot of cross section, because the declivity has been growed some little more than the double over the first part included between the head of the canal and the place A. Water running two times more quick, the canal want to be to times more small to contain the same quantity of water.

The best way to be followed could be to make a Reservoir at the place A for the water of Manoa, and an another reservoir at the place D for the water of Makiki stream. Doing so, all the land could be supplied from Punahou school to the foot of Punch Bowl in school street.



Part to be watered

Scale of Feet

Scale of Metres

D. H. [Signature]