The Canadian Engineer

An Engineering Weekly

THE VANCOUVER ISLAND POWER COMPANY, LIMITED JORDAN RIVER DEVELOPMENT.

PART II.

The flume traverses a heavy belt of timber along the entire route, and the clearing necessary for adequate protection of the structure was very extensive.   A wide clearing was made, all trees being taken down along the upper side which would reach the flume in falling, and all leaning and dead trees were cut along the lower side.

The fallen timber was hand-logged down the hill from the zone to be occupied by the flume proper and the flume railway, and the loppings and branches, as far as the season would permit without danger, were piled and burned as the work went forward. About 6,000,000 feet, board measure, of timber were cut in making the clearing.

The flume box, which is designed for an ultimate carrying capacity of 175 cubic feet per second, is 6 x 6 feet in size, and has a grade of one foot to 1,000 feet.   It is supported by bents spaced 15 feet centre to centre, set upon ample footings, either of cedar blocks or concrete, according to the nature of the underlying material, the maximum bearing upon a square foot of the supporting ground surface being not greater than one ton. The sizes and dimensions of the different members of the flume are as follows:—

Junction of "Y" Creek Flume With Main Flume.

2 Bent posts	Cedar	8″ x 8″	battened
1 Cap	Fir	8″ x 8″	gained
2 Stringers	Fir	6″ x 14″	lapped
6 Sills	Fir	4″ x 8″	gained
12 Box posts	Fir	4″ x 6″	
6 Yokes	Fir	4″ x 6″	gained

The box is of fir and spruce planking, 2 inches thick, 12 inches and 18 inches wide, and surfaced on one side, with flat battens, $\frac{1}{2}$″ x $3\frac{1}{2}$″, nailed over the cracks.

Side planks to carry 75 cubic feet of water per second have been installed, and additional planks may be added as greater capacity is required, at which time intermediate bents, or at least supporting posts will be installed at the middle points of the stringers, reducing the span to $7\frac{1}{2}$ feet.

In the construction of the flume 3,500,000 board feet of lumber were used, to supply which, a saw mill was erected at the lower end of the flume and adjacent to the forebay reservoir. The capacity of the mill was about 30,000 board feet per day, and the equipment included machinery for surfacing, sizing, gaining and trimming the flume lumber for erection with a minimum of hand labor.

The total amount of lumber cut in the mill for the entire construction work was about 6,000,000 feet, board measure.

To facilitate the construction of the flume, a 36-inch gauge railway, with 30-lb. rail, was built parallel to the flume along its entire length, and at an elevation about 15 feet above it. Lumber and other material for the flume, as well as for the diverting dams and storage dam, were delivered over this track, which connects directly at its lower end with an inclined tramway of the same gauge. This inclined tramway begins at a landing wharf on the shore, is two miles in length and after overcoming a difference of elevation of 1,200 feet, connects with the flume railway near the saw mill.

The operation of the inclined tramway is accomplished by means of a powerful haulage engine placed at the upper end of the tramway, and a second and lighter haulage engine near the lower end, slight grades at sections preventing the cars from overhauling the cable by their own weight.

In building the flume, all members were sized and cut to true length, including bent posts, and all daps and gains were made at the saw mill by machine. The footings were accurately located and placed to elevation with transit and level, somewhat in advance of the erection; the length of the posts required for each bent was determined, and the information forwarded to the framing yard at the saw mill where the various parts were prepared.   In this way, confusion and crowding was avoided on the work, and a greater rate of progress made possible.

The system worked out quite satisfactorily, very few errors occurring in the process.