

the regulated level. Solid rock underlies the sluiceway section. Its elevation has been assumed at 765.

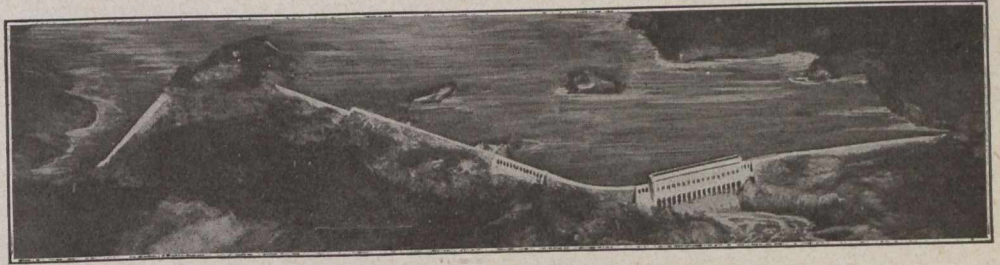
**Spillway Section of Dam.**—The spillway section of the dam, 400 feet in length, has its crest at elevation 808, and is surmounted by a 10-foot platform supported by 3-foot piers, spaced 23 feet centre to centre. The platform will give ready access to the plant from the rail connection on the west bank.

**Discharge Capacity.**—At regulated level the fifteen sluiceways and three ice sluices will discharge 72,000 second-feet. In addition to this the completed power station will pass an additional 20,000 second-feet, which, although not a source to be relied upon at all seasons, may be considered as a safety factor.

A free spillway, 400 feet in length with crest at 808, provides for automatic regulation. Three feet over this crest, with all sluiceways open and the power station in operation, gives a total discharging capacity of 113,000

at all points where any reason for doubt exists, to make the most liberal provision for eventualities.

The estimates include a 13-mile spur line from the present terminal of the Canadian Pacific Railway at Lac du Bonnet. This will bring rail connection to the west bank of the river. An item has been included for the con-



Model of Proposed McArthur Layout.

struction of a ferry for the transport of loaded cars across the river to the power station site.

In addition to the above, 10 per cent. has been added for contingencies, 5 per cent. on this total for engineering and inspection, and 5½ per cent. on the whole for one year for interest during construction. The estimated cost of the Whitemud Falls excavation has been inserted as a unit.

The annual operation costs include capital charges, and represent the cost of operation at the power station. They do not include transforming and transmission.

#### Du Bonnet Site.—(1)—Initial Development. (Seven 10,000-h.p. Units.)

##### Capital Cost of Installation.

Dam and equipment .....	\$ 542,000
Embankment (flood protection) .....	5,000
Ice sluices .....	72,000
Power station and equipment .....	657,000
Hydraulic installation .....	665,000
Electrical installation .....	805,000
Railroad .....	156,000
Ferry .....	50,000
Permanent quarters .....	25,000
Contingencies, 10% .....	298,000
Engineering and inspection, 5% .....	164,000
Interest during construction, 5½% .....	189,000

Total initial cost .....\$3,628,000

Twenty-four-hour power available at 75%

over-all efficiency ..... = 47,000 h.p.

Capital cost per twenty-four-hour h.p. .... = \$77.19

Capital cost per installed h.p. .... = 51.83

##### Annual Cost of Operation.

Interest, sinking fund and depreciation charges:

Interest, 5½% on \$3,628,000 .....\$200,000

Sinking fund, 4% (40-year bonds) ..... 38,000

Depreciation: 1% on permanent works = \$12,000; 4% on machinery, etc., = \$64,000. 76,000

Operation charges: staff = \$21,000; supplies = \$20,000 ..... 41,000

Total annual charge .....\$355,000

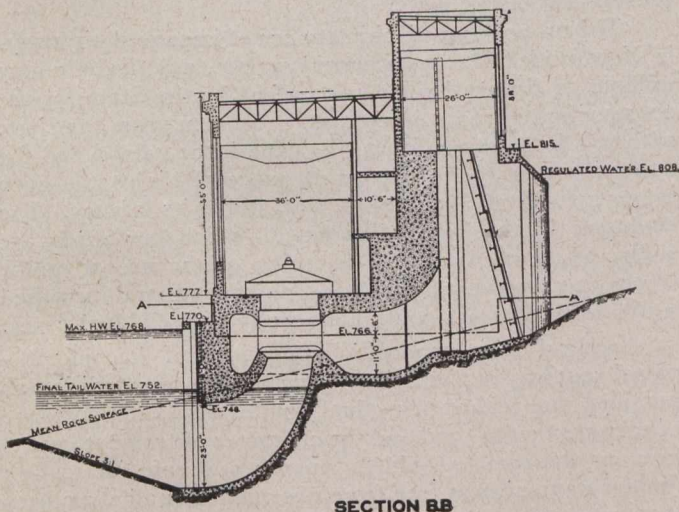
Annual cost per h.p.-year, 24-hour power = \$7.55

Annual cost per h.p.-year, machinery

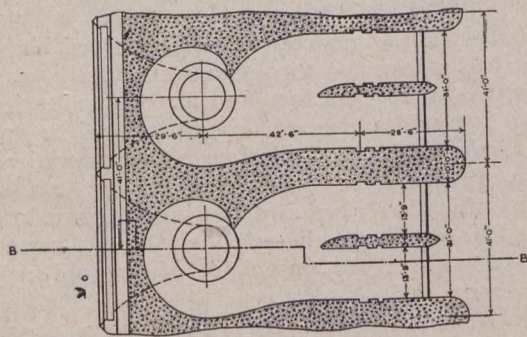
installed ..... = 5.07

Annual cost per kw. hour ..... = 0.115 cent

Annual cost per kw. hour on basis of 50% load factor ..... = 0.230 cent



SECTION BB



PLAN ON LINE A.A

Fig. 2.

second-feet. Five and one-half feet above the spillway crest can be carried by all structures.

**Estimates of Cost.**—The estimates place the power on the switchboard in the power station, and do not include transmission. It is considered that the assumptions which have been necessary are more than warranted. Actual construction will possibly lead to a considerable reduction in the totals submitted, as it has been considered advisable