

CONCRETE DAM AND STEEL SECTOR WEIR, CALGARY

BOW RIVER IRRIGATION BLOCK OF THE CANADIAN PACIFIC RAILWAY, NOW EQUIPPED WITH NOVEL HEADWORKS TO MAIN CANAL, WESTERN SECTION.

By WM. WREN HAY, Jr. Mem. Can. Soc. C.E.

THE permanent headworks for the Canadian Pacific Railway Company's main canal for the western section of the irrigated lands have been completed and were in operation during the past season. The old timber headworks have been replaced by a concrete stop-log dam with an hydraulically operated steel sector weir designed to divert the river without backing the

The section of the main canal varies from the maximum bed-width of 60 ft. at the headgates, with side slopes of 3 to 1, and 0.01 per cent. grade, to a bed-width of 44 ft., 2 to 1 side slopes, and a grade of 0.02 per cent., having a calculated discharge from $n = 0.025$, of 2,050 second-feet at full depth of 10 feet over a distance of 17 miles. The canal terminates at reservoir No. 1, from which three

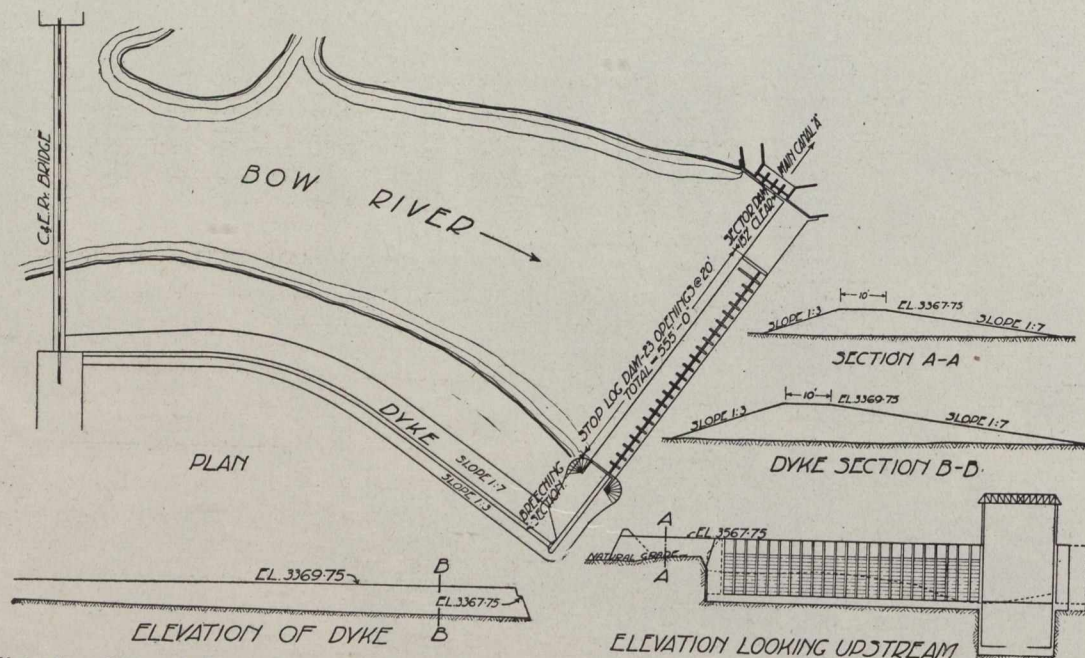


Fig. 1.—General Layout of Headworks on Bow River for the Main Canal, Western Section.

water into the city of Calgary. The western section comprises a total area of over one million acres, water being diverted from the Bow River at a point within the south-eastern limits of the city of Calgary.* The Bow River at this point has an ordinary discharge of from 1,500 to 25,000 second-feet during the spring and summer months.

*For a complete description of the Canadian Pacific Railway Bow River Irrigation Block the reader is referred to *The Canadian Engineer* for September 30th, 1915.

secondary canals take out. In order to supply the main canal with the full depth, it was necessary to construct a diverting weir, or dam, to raise the water surface to the desired elevation, which otherwise only occurs during extreme high water, and the new permanent headworks are designed to maintain the maximum depth of 10 feet required for the calculated discharge at all stages of the river, without creating a backwater which would flood the lower portions of the city of Calgary, one mile up-

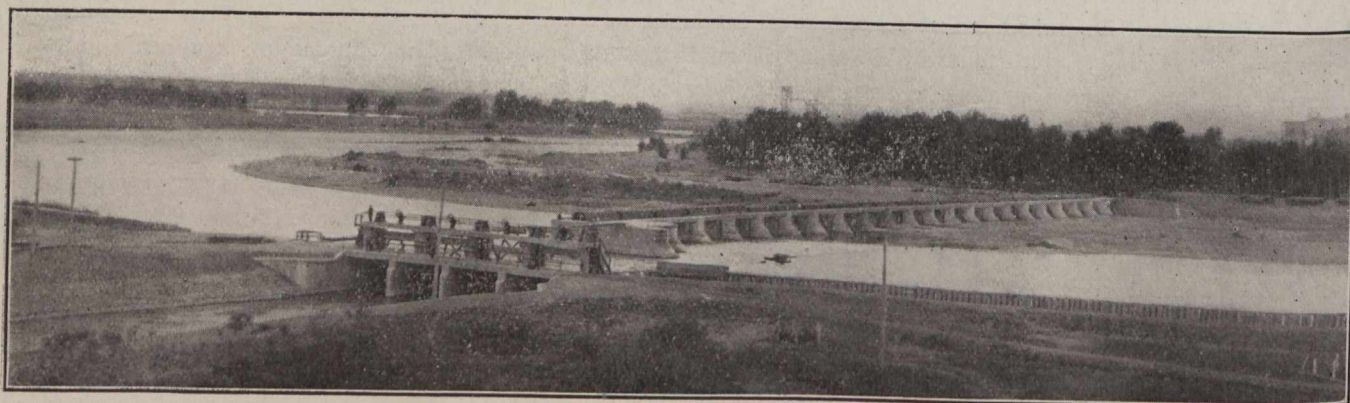


Fig. 2.—View Showing Headgates and Stop-log Section Before Erection of Sector Dam.