

elevations, configuration of the riverbed, and hydraulic measurements extremely difficult. Nevertheless, by ingenious methods including use of helicopters, balloons, echo sounders, and search-lights, together with extraprecautions with normal surveying equipment, thorough field surveys were made and adequate physical data for the design of the remedial works were obtained as described in the accompanying report of the Board.

The major phase of the engineering studies necessary for design of the remedial works was accomplished by means of hydraulic model studies. In order to cover all aspects of the problem and to utilize fully the available technical forces in both countries, two models were built. One model was constructed by the Corps of Engineers at its Waterways Experiment Station at Vicksburg, Mississippi. This model covered the entire upper Niagara River from Lake Erie to and including the Falls. The other model was constructed by the Hydro-Electric Power Commission of Ontario at Islington, near Toronto. This model was built to cover at the largest practicable scale the Falls proper and the cascades and pool area immediately above the Falls.

By use of the two models, complementary in coverage and providing a means of checking various tests, the full range of river conditions and numerous possible variations of remedial works were analysed and tested. The Commission is convinced that use of this important engineering tool made possible the design of the remedial works in a minimum of time and with maximum assurance of their adequacy.

As the model tests and design of remedial works neared completion, the Commission invited representatives of parks commissions and other interested agencies in both Canada and the United States to witness tests at the Islington model under typical conditions to be expected with and without the proposed remedial works. As a result of these demonstrations, representatives of these interests in general expressed their concurrence in the proposals for remedial works to preserve and enhance the scenic beauty of the Falls.

Recommended Plan of Remedial Works

The recommended plan of remedial works was developed as described in Section V of the Board's report. The complete plan consists of three separate works which, in the opinion of the Board, are necessary to ensure that the terms and intent of the 1950 Treaty will be fully met:

- (a) A Chippawa-Grass Island Pool control structure.
- (b) An excavation in the Horseshoe Cascades lying immediately upstream from the Canadian flank, and a crest fill 100 feet long on the Canadian flank extending out from the shore.
- (c) An excavation in the Horseshoe Cascades lying immediately upstream from the Goat Island flank, and a crest fill 300 feet long on that flank extending out from the shore.

The location of the Chippawa-Grass Island Pool structure is shown in general on Plate 3 and in detail on Plate 6 of the Board's report. The structure would extend out from the Canadian shore some 1,500 feet into the river on