

For an actual construction, the outer face should be curved, from near $h = 50$ to the top, as shown by the curved dotted line in Fig. 6.

The subject of the stresses in masonry dams has caused a great deal of discussion among British engineers in the last two or three years. The subject was reopened by Mr. L. W. Atcherly and Professor Karl Pearson,* who gave the results of certain experiments which seemed to indicate considerable tension across vertical planes near the outer toe. The late Sir Benjamin Baker, Hon. M. Am. Soc. C. E., also published† the results of experiments on a model dam of stiff jelly, and very recently, the "Experimental Investigations" of Sir J. W. Ottley and Mr. A. W. Brightmore‡ on elastic dams of "plasticine" (a kind of modeling clay) and the experiments of Messrs. J. S. Wilson and W. Gore§ on "Indian Rubber Models" have been presented.

It is not the object of this paper to discuss these later experiments; but it may be remarked that they show very plainly that no tension exists near the outer toe, but that tension does exist at the inner toe, where the dam is joined to the foundation, and it has become a serious matter how to deal with it. The influence of the foundation in modifying the distribution of the stresses at the base of the dam was found to be very great, causing the shear there to be more uniform than higher up, where the parabolic law, nearly as given by the formulae above, was found to hold. Also, above some undetermined plane, a small distance above the base, the usual "law of the trapezoid" was found to be approximately correct, leading to stresses on the safe side at the outer toe. This law leads to stresses at the outer toe of the base considerably in excess of the true ones.

It was found, from the rubber models particularly, as theory indicates, that the greatest normal pressures are exerted at the down-stream face, for reservoir full, and they act in a direction parallel to that face.

* Minutes of Proceedings, Inst. C. E., Vol. CLXII., p. 456.

† Ibid, Vol. CLXII., p. 123.

‡ Ibid, Vol. CLXII., p. 89.

§ Ibid, Vol. CLXII., p. 107.

ORDERS OF THE RAILWAY COMMISSIONERS OF CANADA.

Copies of these orders may be secured from the Canadian Engineer for a small fee.

7986—September 1—Authorizing the Georgian Bay & Seaboard Railway Company to divert road allowance between concessions 9 and 10, Township of Tay, County of Simcoe, at mile 7.12.

7969—September 1—Ordering the C.P.R. to provide and construct at its expense highway crossings on the line dividing Range 1, N.E., Range 1, S.E., at mileage 2.9 and 3.5 from Megantic.

7970—September 2—Authorizing the Corporation of the Town of Orillia to lay sewer pipe under the track of the G.T.R. at Orillia, Ont.

7971—August 31—Authorizing the C.P.R. to construct branch line in the City of Winnipeg into the premises of McColl Brothers.

7972—August 31—Granting leave to the Pacific Coast Coal Mines, Limited, to cross by means of an undercrossing, the tracks of the Esquimalt & Nanaimo Railway Company in the Cranberry District, B.C.

7973—May 4—Approving plans submitted by Cameron & Co.; Limited, of Ottawa, Ont., for siding to connect with the tracks of the G. T. Ry. near Aylen Lake Station, on its Ottawa Division.

7974—Sept. 2—Authorizing the Town of Arnprior to lay sewer pipe under the G. T. Ry. at Ida St. Arnprior, Ont.

9775—June 1—Granting leave to the Montreal Park & Island Ry. Co. to appeal to the Supreme Court of Canada

upon the following question:—"Whether it is right or proper for the Board in making the said Order to overlook the contract bearing date the 7th day of November, A.D., 1907, and made between the said Montreal Park & Island Ry. Co. and the Municipality of Notre Dame de Grace.

7976—June 8—Granting permission to the Montreal Street Railway Co. to appeal to the Supreme Court of Canada upon the following question:—"Whether upon a true construction of sections 91 and 92 of the British North America Act and of section 8 of the Railway Act of Canada, the Montreal Street Railway Co. is subject in respect of its through traffic with the Montreal Park & Island Ry. Co. to the jurisdiction of the Board of Railway Commissioners of Canada.

7977—Sept. 3—Authorizing the C.P.R. to deviate portion of it line as constructed, between mileage 38 and mileage 39, West of Nelson, B.C.

7978—Sept. 3—Authorizing the C.P.R. to construct industrial spur through lots 37 to 43 inc. of Lot 5 in Parish Lot 47, St John, Winnipeg, Man.

7979 and 7980—Aug. 31—Authorizing the Corporation of the City of Toronto, Ont., to lay water pipe under the C.P.R. at Osler St. and Symington St., Toronto, Ont.

7981—Sept. 3—Authorizing the C.P.R. to construct and operate twelve industrial spurs, each crossing 7th Ave., at Regina, Sask.

7982—Sept. 3—Authorizing the Corporation of the City of Toronto, Ont., to construct a section of the High Level Intercepting Sewer between Tiverton and Carlaw Avenues across the land and under the track of the G.T.R., Toronto, Ont.

7983—Sept. 3—Approving plan submitted by the C.P.R. showing proposed double fifteen-foot one-beam girder of Bridge No. 55.5, Western Div. Sirdar Sec. of its line.

7984 and 7985—Sept. 7—Approving location of the C.N.R. Co.'s line up the North Thompson River, B.C.; mileage 46 to 55; and through Tps. 34-35, and Ranges 1-8; mileage 44.84 to mileage 93.85, Sask.

7986—Sept. 7—Authorizing the Drain Comm. for the Tp. of East Oxford, Ont., to construct drain pipe under the track of the Port Dover & Lk. Huron Ry. Co., near Woodstock, Ont.

7987—Sept. 3—Granting leave to the Coldstream Tel. Co. to place its wires across the track of the C.P.R. at Komoka, Ont.

7988—Sept. 1—Granting leave to the Yellow Grass Rural Tel. Co. to place its wires across the track of the C.P.R. between Sections 13 and 14, Tp. 10, R. 17, West 2nd Mer.

7989—Sept. 7—Granting leave to the Markham and Pickering Tel. Co. to place its wires across the track of the G.T.R. between lots 10 and 11, 5th Con., Tp. Markham, Ont.

7990 to 7998 inc.—Sept. 3—Granting leave to the B. T. Co. to place its wires across the tracks of the G.T.R., M.C.R. R. and C.N.R. at eight points in Ontario and one in Quebec.

7999—Sept. 7—Amending Order No. 5956 dated Dec. 22nd, 1908, directing the Que. Montreal & Southren Ry. to construct stations at Sorel, P.Q., & Pierreville, eight months from Dec. 22nd, 1908, by granting an extension of six months from Sept. 7th, within which to construct said station at Sorel, P.Q.

8000 to 8002 inc.—Sept. 3—Granting leave to the Man. Gov. Telephone Sys. to cross the tracks of the C.N.R. (1) and C.P.R. (2) at three points in the Prov. of Manitoba.

8003 and 8004—Sept. 1—Granting leave to the Alta. Gov. Tel. System to place its telephone wires across the track of the C.N.R. at two points in the Prov. of Alta.

8005 and 8006—Sept. 1—Granting leave to the Gov. of Sask. to cross the tracks of the C.N.R. with its 'phone wires at two points in the Prov. of Sask.

8007—Sept. 7—Exempting the British Yukon Ry. Co. from provisions of Order No. 7473, dated May 4th, as to the construction and maintenance of fences on either side of its right of way and of gates at farm crossings and of cattle guards.