

TRANSACTIONS OF JAPAN SOCIETY OF CIVIL ENGINEERS

NO. 36 (AUGUST 1956)

THE ANALOG CIRCUITS FOR THE RIGID FRAME STRUCTURES

Toshihiko Yamauchi, C.E. Member

Synopsis : In this paper, the author describes the analog circuits and the experimental results for a few typical rigid frame structures.

They are based on the circuits for the beams acted by the bending moment and shearing force at the ends.

By proper combinations of these circuits, the analog circuits of the continuous rigid frame structures, the grillage beams, and the Langer girders are also derived easily.

THE DISCHARGE MEASUREMENTS IN THE CHANNELS OF TRAPEZOIDAL, TRIANGULAR, PARABOLIC AND CIRCULAR SECTIONS

Nobumasa Kasugaya, C.E. Member

Synopsis : In this paper, the author introduces the calculating formulas for the rate of discharge in the channels of the trapezoidal, the triangular, the parabolic and the circular sections. Transforming these sectional forms given on $x-z$ plane to the rectangular ones on $t-u$ plane, and using the calculating formula in the channel of the rectangular section, which was described in the author's latest paper, he determines the coordinates of the observing points for the velocities and the constant coefficients multiplying to the observed velocities. Then the calculating formula for the rate of discharge is expressed by the linear combination of the observed velocities. For the calculating formula at the each sections, the author introduces only the eight points method, which has no errors, supposing that the product with the function of the velocity after the transformation and the Jacobian, $\partial(x, z)/\partial(t, u)$, is the rational integral expression of fifth order at most in regard to t and u . And applying this formula to the experimental data announced by Bazin, it is stated that we can get the satisfactory results.

A STUDY ON HYDRAULIC PRESSURE ACTING ON A SLUICE-GATE

*Dr. Eng., Masashi Hom-ma, C.E. Member, Shin-ichi Senshu, C.E. Member
and Akihiko Tsuchiya, C.E. Assoc. Member*

Synopsis : Uplift force acting on a leaf of sluice-gate becomes fairly large when its opening is very small. In this paper, experimental studies of the effect of the opening on the hydraulic pressure are described. The comparison of the observed results with approximate analyses show that the effect of fluid resistance is dominant in this phenomenon.

A STUDY ON THE FORMULA OF THE MAXIMUM FLOW

Isao Yamaguchi, C.E. Assoc. Member.

Synopsis : This investigation is a fundamental research of calculation formula of the maximum flow with most commonly performed.

Researching on the maximum hourly rainfall in this method, it is found that it is not necessarily adaptable to every watershed of various form.

The writer conclude that, using the value of time division in the formula acquired by this investigation, the maximum average rainfall intensity will be easily found.

FEW PROPERTIES OF BED MATERIAL, AND IT'S APPLICATION.

—Second report on the scouring due to water jet—

Seizō Awazu, C.E. Member

Synopsis : From the observed data of river bed material in our country, the author found out some basic properties these are ; (1) Specific gravity is nearly constant. (2) Sakai's coefficient " β ", an indication of screening curve, is given in eq. (1), or fig. 3. (3) It seems possible that void ratio of sand can be calculated from eq. (3). As the applications, the author treated in this paper (a) quick-sand problem, (b) coefficient of roughness " n " in Manning formula for rest state of movable bed, and (c) critical tractive force problem.

Their results are as follow ; (a) from data of experiment, critical hydraulic gradient are given in eq. (5), (6) roughness " n " are indicated in table 1, (c) critical tractive force are calculated in eq. (20).

ON THE THEORY OF CONSOLIDATION BY SAND DRAINS

Yasuo Yanai, C.E. Member

Dr. Eng., Takaaki Mizuno, C.E. Member

Hiromi Koba, C.E. Member

Synopsis : The theory of consolidation of soils by sand drains was given by Barron and other authors. In this paper, a somewhat simplified solution is introduced, following the Barron's method, and some diagrams necessary to calculation are shown, for the convenience of application of this process.

ON THE LOCAL FAILURE OF THE DOWNSTREAM SLOPE OF EMBANKMENTS DUE TO THE PERCOLATING FLOW

Kōichi Akai, C.E. Member

Synopsis : Throughout the experimental studies of percolating flow using sand models, it has been cleared that the local failure near the upper portion of the surface of seepage is predominant, in the case of the water-retaining embankment which consists of cohesionless materials. Performing the theoretical investigations concerning these experimental results, a proposed equation which gives the critical hydraulic gradient is deduced for this kind of local failure, whereby the mechanism of the actual failure of embankments can be analysed reasonably.

ON THE THEORETICAL CAPACITY OF AN OFF-STREET PARKING SPACE

Dr. Eng., Eiji Kometani, C.E. Member, and Akira Kato, C.E. Assoc. Member

Synopsis : Recently in the business center of large cities the parking demand is increasing rapidly with the striking progress of the automobile traffic. The determination of the size and the site of a parking space which harmonizes with the remarkable increase of the parking demand has been apt to be disregarded. But it is very important hereafter from the standpoint of the City Planning and the urban traffic to deliberate an adequate measure drastically for the more increasing motor traffic and parking demand.

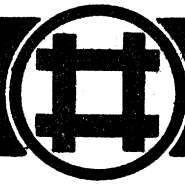
Having seized the reality of parking as a function of the number of vehicles and parked duration, the authors solved the theoretical capacity of an off-street parking space applying the condition of statistical equilibrium based on the probability distribution for the occurrence of parking and the distribution of parking duration. Furthermore an approximate solution was proposed for the practical use.

POPULATION ESTIMATION BY LOGISTIC CURVE.

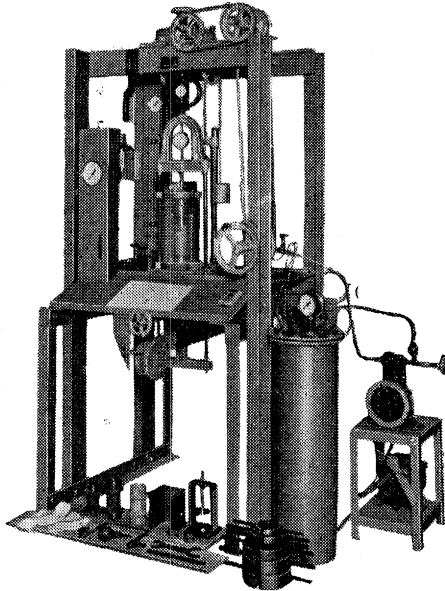
Shigeru Kitago, C.E. Member

Synopsis : The author, a member of the City Planning Committee of Sapporo, estimates in this paper the future population after 30 years of this city and its city planning area under revision. He prefers the estimation by the method of logistic curve to other ordinal ones, and in the course of this calculation, he uses the logistic grid by Velz and Eich which is found to be very useful to easily ascertain the accuracy of tentatively calculated results. He also, compares the final result of this calculation with a lately presented method which takes the sudden change of city population after This War into consideration.

SOIL TESTING



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間隙圧測定装置
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供試体方法径 35m/mφ } 両用
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圧密透水試験機

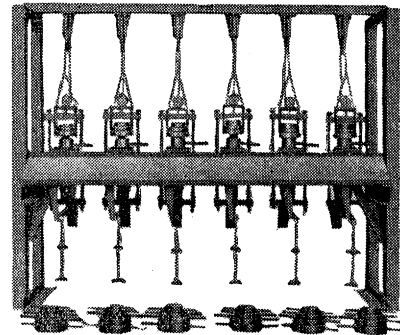
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試料径 60m/mφ

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電 話 城東(33) 4083

出張所 東京都港区芝公園十四号の九
電 話 芝(43) 3097