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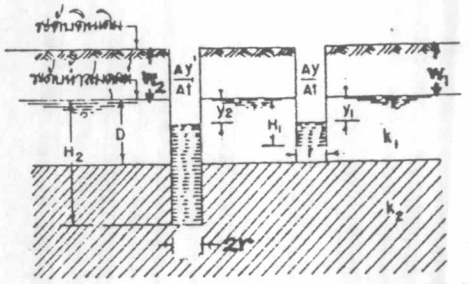
ภาคผนวก

ตัวอย่างที่ 1

การคำนวณ Auger Hole Method



t (sec.)	y_t (cm.)	Boring No : A2	t' (sec.)	y'_t (cm.)	Boring No. : A2
0	32.3	Depth : 0.00-1.00	0	35.4	Depth : 0.00-2.00
10	32.0	Temp. = 28 °C	10	34.9	Temp. = 29 °C
20	31.75	r = 4.13 cm.	20	34.35	r = 4.13 cm.
30	31.55	w = 43.3 cm.	30	33.95	w_2 = 46.1 cm.
40	31.3	H = 56.7 cm.	40	33.6	H_2 = 153.9 cm.
50	31.1	y_o = 32.3 cm.	50	33.25	y'_o = 35.4 cm.
		y_n = 31.3 cm.	60	32.8	y'_n = 32.8 cm.
Δt = 50	Δy = 1.2	$y_1 = y_o - \Delta y/2 = 31.7$ cm.	$\Delta t'$ = 60	$\Delta y'$ = 2.6	$y_2 = y'_o - \frac{\Delta y'}{2} = 34.1$ cm.

$$k_h = \frac{1000r^2}{216(H+20r)(2-\frac{y}{H})y} \cdot \frac{\Delta y}{\Delta t} \quad \text{cm./sec.}$$

$$k_{h1} = \frac{100(4.12)^2}{216(56.7+20x4.13)(2-\frac{31.7}{56.7})31.7} x \frac{1.2}{50}$$

$$k_{h0.00-1.00} = 2.98x10^{-4} \quad \text{cm./sec.}$$

$$k_h = \frac{1000r^2}{216(H+20r)(2-\frac{y}{H})y} \cdot \frac{\Delta y}{\Delta t} \quad \text{cm./sec.}$$

$$k_h = \frac{1000(4.13)^2}{216(153.9+20x4.13)(2-\frac{34.1}{153.9})34.1} x \frac{2.6}{60}$$

$$k_{h0.00-2.00} = 2.39x10^{-4} \quad \text{cm./sec.}$$

Layered soil

$$k_2 = \frac{C_o \frac{y'}{t'} - k_1}{\frac{C_o}{C_2} - 1}$$

$$k_1 = k_{h0.00-1.00} = 2.98x10^{-4} \quad \text{cm./sec.}$$

$$C_o = \frac{100r^2}{24(D+10r)(2-\frac{y_2}{D})y_2} = \frac{100(4.13)^2}{24(53.9+10x4.13)(2-\frac{34.1}{53.9})34.1} = 0.0160$$

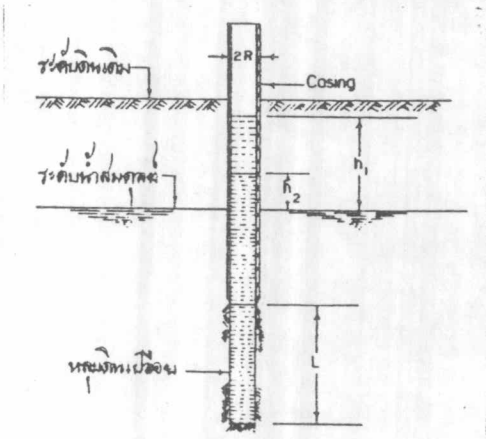
$$C_2 = \frac{1000r^2}{216(H_2+20r)(2-\frac{y_2}{H_2})y_2} \quad \frac{1000(4.13)^2}{216(153.9+20x4.13)(2-\frac{34.1}{153.9})34.1} = 0.0055$$

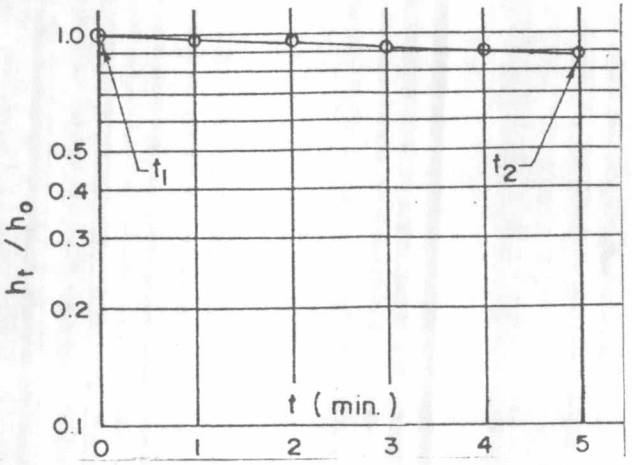
$$k_{h2} = \frac{0.0160(\frac{2.6}{60}) - 2.98x10^{-4}}{\frac{0.0160}{0.0055} - 1} \quad \text{cm./sec.}$$

$$k_{h1.00-2.00} = 2.07x10^{-4} \quad \text{cm./sec.}$$

ตัวอย่างที่ 2 การคำนวณ Modified Auger Hole Method

Boring No : M2	Depth : 0.50 - 1.50	Temp. of Water 28°C





Measurements		t (min)	h_t (cm.)	h_t/h_o
	R = 5.08 cm.	0	49.0=h_o	1.000
	L = 100 cm.	1	46.3	0.945
From graph	t_1= 0 sec.	2	43.9	0.896
	t_2= 5x60 sec.	3	41.5	0.847
	h_1= 49.0 cm.	4	39.7	0.810
	h_2= 38.1 cm.	5	38.1	0.778

$$k_h = \frac{R^2}{2L} \ln\left(\frac{L}{R}\right) \left[\frac{\ln(h_1/h_2)}{(t_2-t_1)}\right]$$

$$k_h = \frac{(5.08)^2}{2x100} \ln\left(\frac{100}{5.08}\right) \left[\frac{\ln(49.0/38.1)}{(300-0)}\right]$$

$$k_{h.} = 3.22x10^{-4} \quad \text{cm./sec.}$$

ตัวอย่างที่ 3 การหาค่า Consolidation Test

Boring No. M2 Depth : 0.50-1.50 Field temp. = $28^{o}C$ Room temp. = $25^{o}C$

Pressure P (kg/cm^2.)	Final height 2H (in)	Void ratio e	t_{90} sec.	$C_v = \frac{0.848H^2}{t_{90}}$ ($10^{-4} cm^2./sec.$)	a_v (cm^2/kg)	γ_w ($10^{-3} kg/cm^3$)	In.Void ratio e_o	k_h $25^{o}C$	$\frac{\mu\ 25^{o}C}{\mu\ 28^{o}C}$	k_h $28^{o}C$
0	1.0157	3.837								
0.1	1.0107	3.813	866	16.21	0.60	0.9971	3.837	2.00×10^{-7}	1.0706	2.14×10^{-7}
0.2	0.9957	3.741	217	63.43	0.85	0.9971	3.813	1.12×10^{-6}	1.0706	1.20×10^{-6}
0.4	0.9442	3.496	505	25.48	1.45	0.9971	3.741	7.77×10^{-7}	1.0706	8.32×10^{-7}
0.8	0.8237	2.922	1750	6.11	1.00	0.9971	3.496	1.36×10^{-7}	1.0706	1.46×10^{-7}
1.6	0.7032	2.349	2196	3.63	0.60	0.9971	2.922	5.54×10^{-8}	1.0706	5.93×10^{-8}
3.2	0.5827	1.775	505	11.20	0.27	0.9971	2.349	9.00×10^{-8}	1.0706	9.64×10^{-8}

$$k_h = \frac{c_v a_v \gamma_w}{1+e_o}$$

ถือว่า Initial void ratio, e_o ของ undisturbed sample มีค่าเท่ากับ e ในสนาม

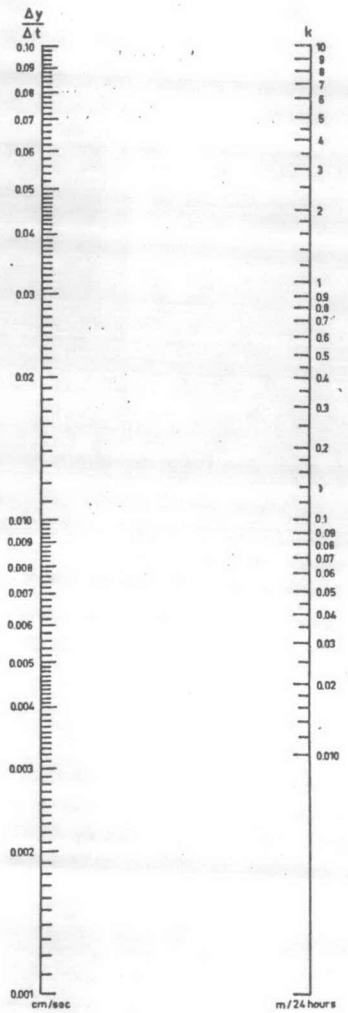
ดังนั้น $c_v = 16.21 \times 10^{-4}$ $cm.^2/sec.$ $a_v = 0.60$ $cm.^2/kg.$

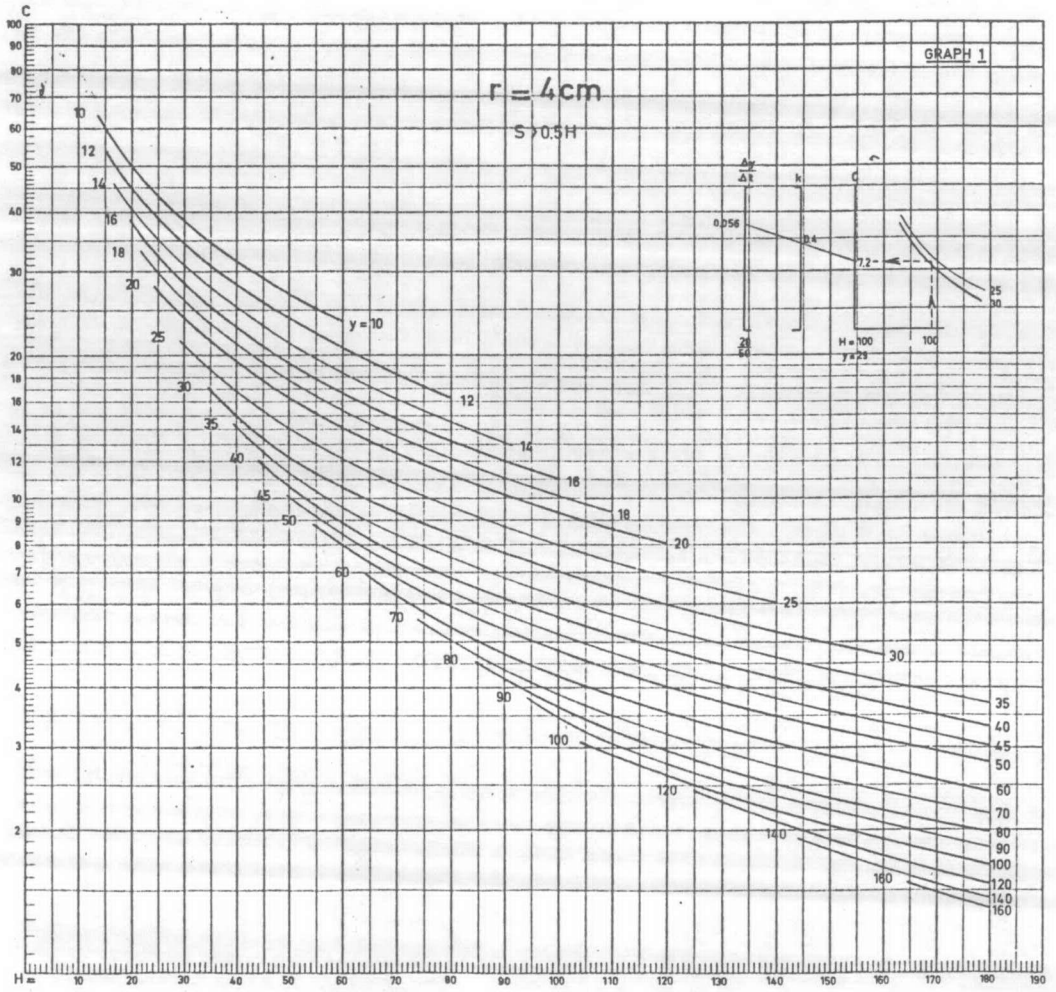
$\gamma_w = 0.9971 \times 10^{-3}$ $kg/cm^2.$ $e_o = 3.837$

$$k_{h_{25^{o}C}} = \frac{(16.21 \times 15^{4})(0.60)(0.9971 \times 10^{-3})}{1+3.837}$$

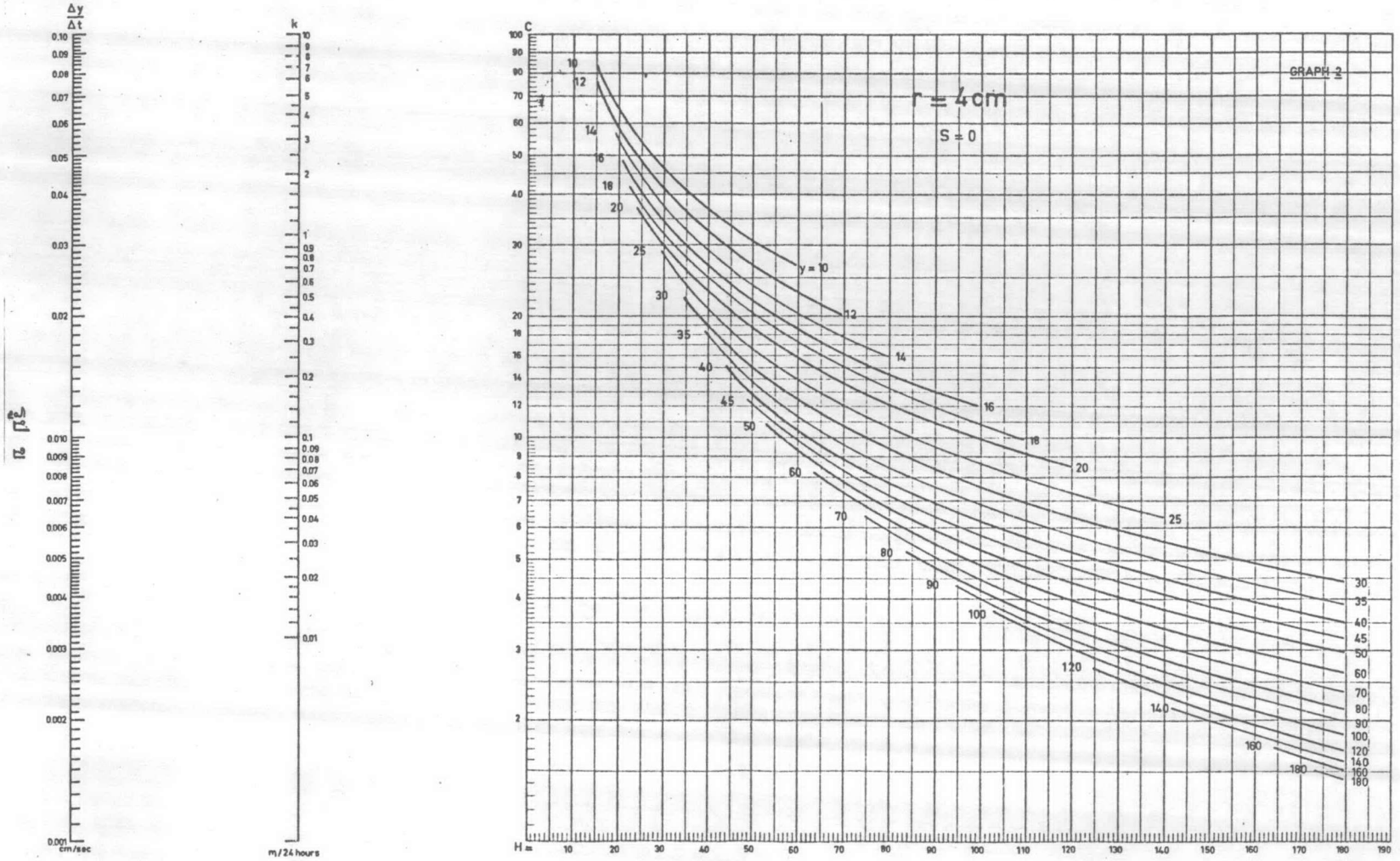
$$= 2.00 \times 10^{-7} \quad cm./sec.$$

ค่าความซึมของน้ำในดินดายอุณหภูมิในสนาม, $k_{h_{28^{o}C}} = \frac{\mu_{25^{o}C}}{\mu_{28^{o}C}} \cdot k_{h_{25^{o}C}} = 1.0706 \times (2.00 \times 10^{-7}) = 2.14 \times 10^{-7}$ $cm./sec.$





Bulletin No 1 THE AUGER HOLE METHOD;
International Institute for Land Reclamation and Improvement, Wageningen, The Netherlands, 1958.



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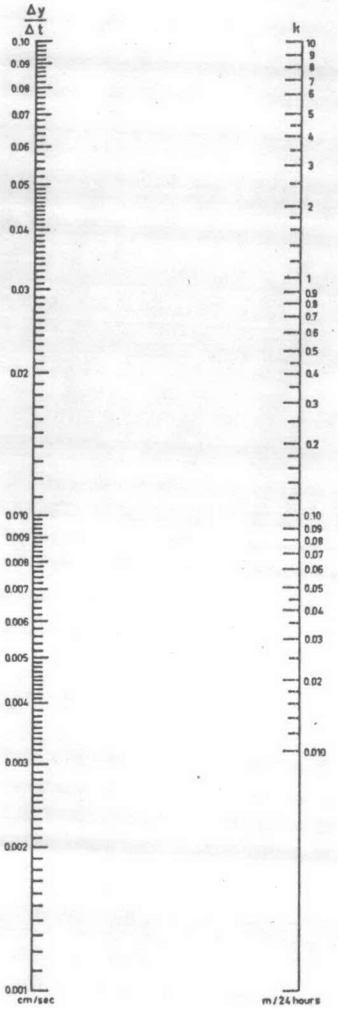

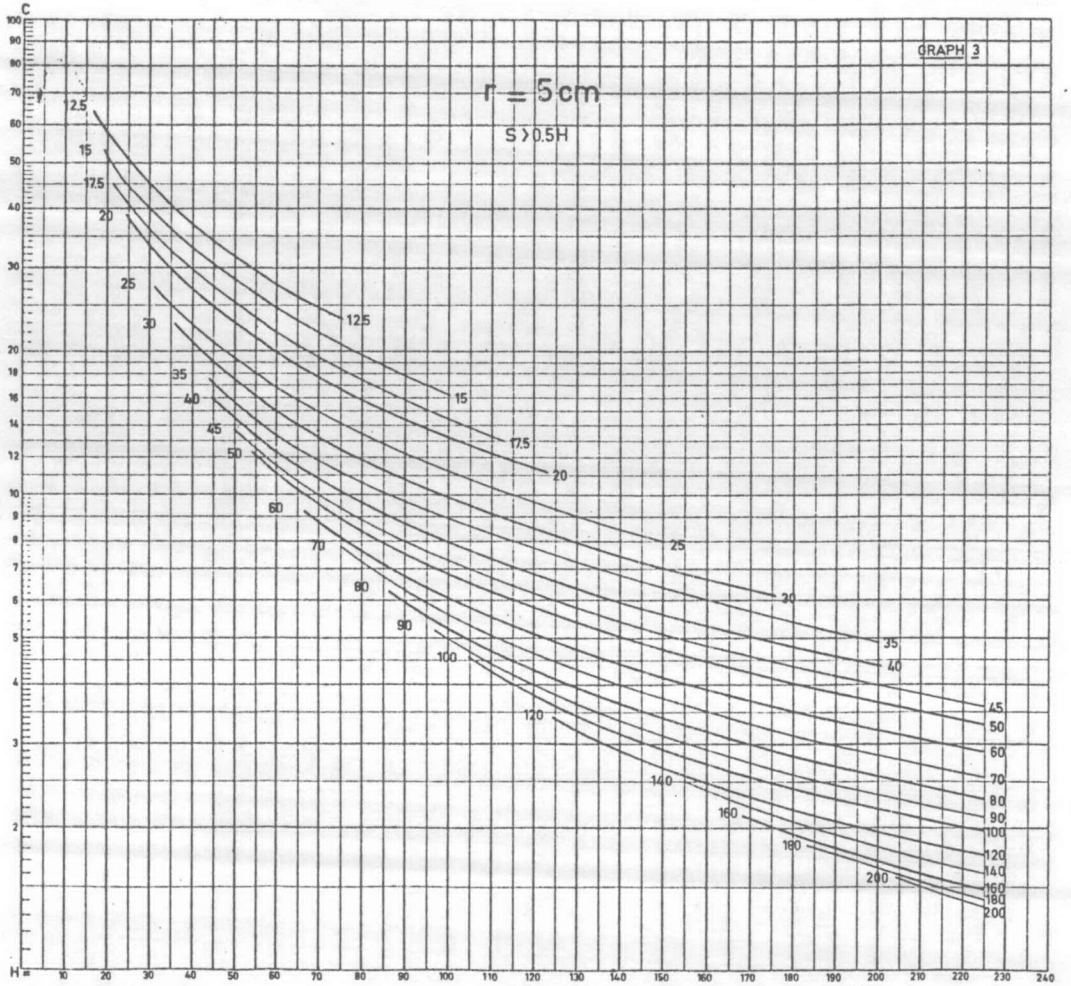

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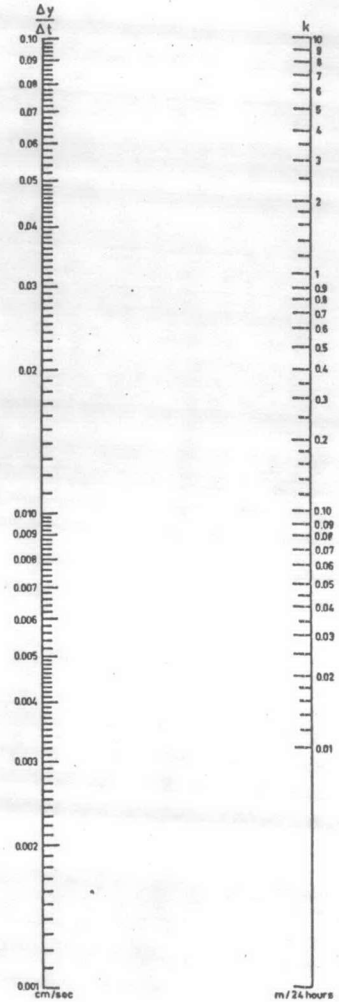

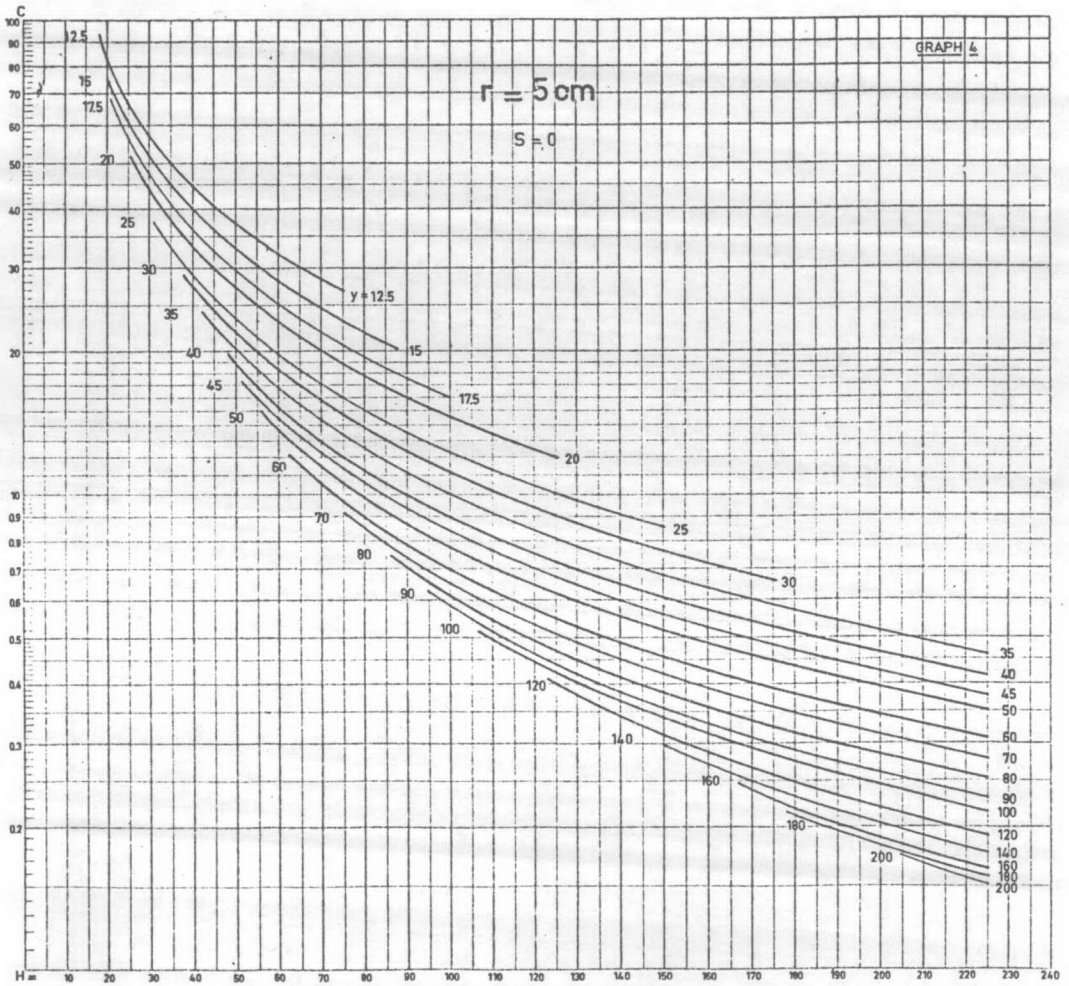

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International Institute for Land Reclamation and Improvement, Wageningen, The Netherlands, 1958.

ประวัติ

นายชนะ จิระเลิศพงษ์ เกิดเมื่อวันที่ 24 พฤษภาคม 2496 ที่กรุงเทพมหานคร สำเร็จการศึกษาชั้นมัธยมศึกษาตอนปลาย (ม.ศ. 5) จากโรงเรียนเตรียมอุดมศึกษา ในเดือนมีนาคม พ.ศ. 2515 สำเร็จการศึกษาวิศวกรรมศาสตรบัณฑิต สาขาวิศวกรรมโยธา จากมหาวิทยาลัยเชียงใหม่ ในเดือนมีนาคม พ.ศ. 2519 ทำงานครั้งแรกทางด้านการออกแบบอาคารชลประทาน กองออกแบบ กรมชลประทาน ปัจจุบันยังคงรับราชการที่กรมชลประทาน