

# 港 灣 技 研 資 料

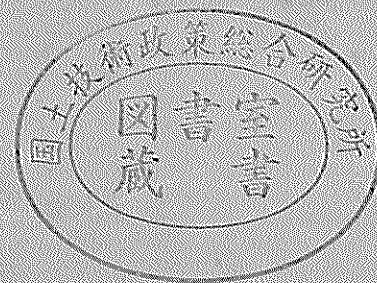
TECHNICAL NOTE OF  
THE PORT AND HARBOUR RESEARCH INSTITUTE  
MINISTRY OF TRANSPORT, JAPAN

No. 357      Sept. 1980

地震時土圧の計算図表

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## The charts for the earth pressures during earthquake

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### Synopsis

In this report we show the charts for the earth pressures of sandy soil and cohesive soil during earthquake. These charts are made by the formulas of the earth pressure during earthquake in consideration of the adhesive force between the wall surface and the soil which has the angle of internal friction and the cohesion. The existing charts of the earth pressures can not sufficiently apply to the cases where the ground surface of the sandy soil has a slope and the cohesive soil has the adhesive force between the wall. The charts presented on this report may be useful for calculating the earth pressures in these cases.

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# 地震時土圧の計算図表

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## 要 旨

従来、土圧計算の煩雑さを解消するためにいくつかの土圧計算図表の作成が行われてきたが、これらの計算図表はかならずしも計算範囲が十分でなかった。そこで、松並が求めた内部摩擦角および粘着力をもった土に対して壁面付着力を考慮した地震時土圧式をもとに砂質土および粘性土の土圧計算図表を作成した。この土圧計算図表は、とくに、従来、計算図表が十分完備されていなかった分野、すなわち、砂質土地盤においては地表面が傾斜している場合、粘性土地盤においては壁面付着力を考慮する場合の土圧を求める際に大いに役立つものと思われる。

## 1. まえがき

控え矢板等のたわみ性控え工については、根入れが短い場合を除いて久保の研究によるくいの横抵抗をもとにくいに発生する曲げモーメント、変位等の計算が行われている。しかしながら、このような弾性計算の場合においても地盤反力は抵抗土圧（受働土圧と主働土圧の差）を越えてはならないという観点から抵抗土圧を指標としてくいの横抵抗を表わそうという試みが行われている。

一方、このような控え矢板等の抵抗土圧を算定する場合には従来の土圧計算図表では計算可能範囲が十分でなく、また煩雑な土圧式をもとにその都度土圧強度を求めるのは大変な労力を必要とする。そこで、上記事項を考慮し、かつ一般の土圧計算にも利用できるように砂質土から粘性土までの広範囲の主働、受働土圧の計算が可能な土圧計算図表を作成した。

ここで作成した計算図表は、松並が求めた内部摩擦角および粘着力をもった土に対して壁面付着力を考慮した地震時土圧式に基づいて計算を行っている。

本計算図表の範囲は、以下のとおりである。

1) 砂質土については、壁面が鉛直の場合について主働、受働の土圧係数および崩壊角を次の範囲で求めている。

地表面傾斜角 ( $\omega$ )

主働土圧について  $0 \sim 30^\circ$

受働土圧について  $0 \sim 30^\circ$   
 土の内部摩擦角 ( $\phi$ )  $20^\circ \sim 45^\circ$   
 壁面摩擦角 ( $\delta$ )

主働土圧について  $0, 15^\circ, 1/3\phi, 2/3\phi, \phi$

受働土圧について  $-15^\circ, 0, 15^\circ, 1/3\phi, 2/3\phi, \phi$

水平震度 ( $k_h$ )  $0 \sim 0.50$

2) 粘性土については、壁面が鉛直で、かつ地表面が水平の場合について主働、受働の土圧強度および崩壊角を次の範囲で求めている。

粘着力 ( $c$ )  $10 \sim 100 \text{ kN/m}^2$   
 ( $1.02 \sim 10.2 \text{ tf/m}^2$ )

壁面付着力 ( $c_a$ )

i)  $c_a = 0$  の場合

ii)  $c_a = c$  の場合

iii)  $c_a = \lambda c$  の場合 ( $\lambda$  は壁面付着力と粘着力の比で、トムリンソンの実験結果を準用して表-4のように決めた)

鉛直荷重 ( $\sum \gamma h + q$ )  $0 \sim 250 \text{ kN/m}^2$   
 ( $0 \sim 25.5 \text{ tf/m}^2$ )

水平震度 ( $k_h$ )  $0 \sim 0.70$

## 2. 地震時土圧

地震時土圧の基本式として、松並が求めた内部摩擦角および粘着力をもった土に対して壁面付着力を考慮した地震時土圧式<sup>1)</sup>を用いている。

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(2) 受働土圧の基本式

$$p_p = \frac{\left\{ \frac{\gamma y \sin(\beta - \omega)}{\sin \beta} + q \right\} \frac{\sin(\alpha_p + \phi - \varepsilon) \sin(\beta - \alpha_p)}{\cos \varepsilon}}{\sin(\beta - \alpha_p - \phi - \delta) \sin(\alpha_p - \omega)} + \frac{\lambda c \cos(\beta - \alpha_p - \phi) \sin(\alpha_p - \omega) + c \sin(\beta - \omega) \cos \phi}{\sin(\beta - \alpha_p - \phi - \delta) \sin(\alpha_p - \omega)} \quad \dots\dots (3)$$

$$\alpha_p = \frac{1}{2} \left\{ \beta - \phi - \tan^{-1} \left( \frac{-BC - A\sqrt{B^2 - A^2 + C^2}}{B^2 - A^2} \right) \right\} \quad \dots\dots (4) \quad \bar{A} = \frac{\left\{ \frac{\gamma y \sin(\beta - \omega)}{\sin \beta} + q \right\}}{\cos \varepsilon}$$

ここに,

$$A = -\sin(\delta - \omega + \varepsilon) - \frac{\lambda c}{A} \cos \delta$$

$$B = \cos \varepsilon \cos(\beta - \phi - \delta - \omega) - \cos(\delta - \omega) \cos(\beta + \phi - \varepsilon) + \frac{c}{A} \left\{ \lambda \sin(\beta - \phi - 2\omega) \cos \delta + 2 \sin(\beta - \omega) \cos \phi \cos(\delta - \omega) \right\}$$

$$C = \sin \varepsilon \cos(\beta - \phi - \delta - \omega) + \sin(\delta - \omega) \cos(\beta + \phi - \varepsilon) + \frac{c}{A} \left\{ \lambda \cos(\beta - \phi - 2\omega) \cos \delta - 2 \sin(\beta - \omega) \cos \phi \sin(\delta - \omega) \right\}$$

$p_p$ : 受働土圧強度 (kN/m<sup>2</sup>)

$\alpha_p$ : 受働崩壊角 (°)

なお、式(1)~(4)で表わされる松並の基本式は、砂質土については従来から用いられている物部<sup>2)</sup>および岡部<sup>3)</sup>の式と同一の値を与えるが、崩壊角 $\alpha$ の取り方が岡部の式と異なっている〔すなわち、岡部は土圧合力を最大(主働土圧の場合)あるいは最小(受働土圧の場合)とする崩壊角を用いているが、松並は土圧強度を最大あるいは最小とする崩壊角を用いている〕ため、粘性土については同一の深さにおける崩壊角の大きさは松並の式の方が小さい値を与える。従って、粘性土の主働土圧強度は松並の方が大きく、受働土圧強度は松並の方が小さくなる傾向を示す。

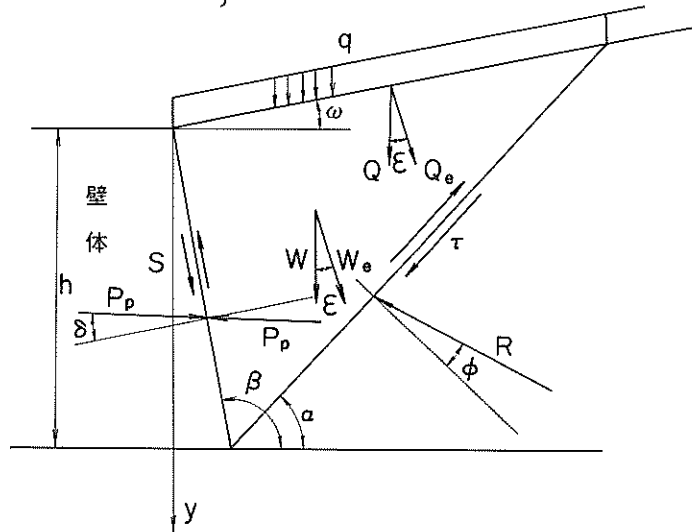


図-2 受働土圧説明図

2.1 砂質土の地震時土圧

(1) 主働土圧

砂質土の地震時主働土圧強度および崩壊角は、式(1)

$$p_a = \frac{\left\{ \frac{\gamma y \sin(\beta - \omega)}{\sin \beta} + q \right\} \sin(\alpha_a - \phi + \varepsilon) \sin(\beta - \alpha_a)}{\cos \varepsilon \sin(\beta - \alpha_a + \phi + \delta) \sin(\alpha_a - \omega)}$$

$$= \left\{ \frac{\gamma y \sin(\beta - \omega)}{\sin \beta} + q \right\} K_a \quad \dots\dots\dots (5)$$

$$K_a = \frac{\sin(\alpha_a - \phi + \varepsilon) \sin(\beta - \alpha_a)}{\cos \varepsilon \sin(\beta - \alpha_a + \phi + \delta) \sin(\alpha_a - \omega)}$$

$$\alpha_a = \frac{1}{2} \left\{ \beta + \phi - \tan^{-1} \left( \frac{BC + A\sqrt{B^2 - A^2 + C^2}}{B^2 - A^2} \right) \right\}$$

\dots\dots\dots (6)

ここに、

$$A = \sin(\delta + \omega + \varepsilon)$$

$$B = \cos \varepsilon \cos(\beta + \phi + \delta - \omega) - \cos(\delta + \omega) \cos(\beta - \phi + \varepsilon)$$

$$C = \sin \varepsilon \cos(\beta + \phi + \delta - \omega) + \sin(\delta + \omega) \cos(\beta - \phi + \varepsilon)$$

$K_a$  : 主働土圧係数

b) 壁面が鉛直の場合 ( $\beta = 90^\circ$ )

$$p_a = \frac{(\gamma y \cos \omega + q) \sin(\alpha_a - \phi + \varepsilon) \cos \alpha_a}{\cos \varepsilon \cos(\alpha_a - \phi - \delta) \sin(\alpha_a - \omega)}$$

$$= (\gamma y \cos \omega + q) K_a \quad \dots\dots\dots (7)$$

$$K_a = \frac{\sin(\alpha_a - \phi + \varepsilon) \cos \alpha_a}{\cos \varepsilon \cos(\alpha_a - \phi - \delta) \sin(\alpha_a - \omega)}$$

$$\alpha_a = \frac{1}{2} \left\{ 90^\circ + \phi - \tan^{-1} \left( \frac{BC + A\sqrt{B^2 - A^2 + C^2}}{B^2 - A^2} \right) \right\}$$

\dots\dots\dots (8)

ここに

$$A = \sin(\delta + \omega + \varepsilon)$$

$$p_p = \frac{\left\{ \frac{\gamma y \sin(\beta - \omega)}{\sin \beta} + q \right\} \sin(\alpha_p + \phi - \varepsilon) \sin(\beta - \alpha_p)}{\cos \varepsilon \sin(\beta - \alpha_p - \phi - \delta) \sin(\alpha_p - \omega)}$$

$$= \left\{ \frac{\gamma y \sin(\beta - \omega)}{\sin \beta} + q \right\} K_p \quad \dots\dots\dots (11)$$

および式(2)の土の粘着力  $c$  を 0 とおいて式(5)~(10)のように表わされる。

a) 一般の場合

$$B = -\cos \varepsilon \sin(\phi + \delta - \omega) - \cos(\delta + \omega) \sin(\phi - \varepsilon)$$

$$C = -\sin \varepsilon \sin(\phi + \delta - \omega) + \sin(\delta + \omega) \sin(\phi - \varepsilon)$$

(c) 壁面が鉛直で、かつ地表面が水平の場合 ( $\beta = 90^\circ$ ,  $\omega = 0$ )

$$p_a = \frac{(\gamma y + q) \sin(\alpha_a - \phi + \varepsilon) \cos \alpha_a}{\cos \varepsilon \cos(\alpha_a - \phi - \delta) \sin \alpha_a}$$

$$= (\gamma y + q) K_a \quad \dots\dots\dots (9)$$

$$K_a = \frac{\sin(\alpha_a - \phi + \varepsilon) \cos \alpha_a}{\cos \varepsilon \cos(\alpha_a - \phi - \delta) \sin \alpha_a}$$

$$\alpha_a = \frac{1}{2} \left\{ 90^\circ + \phi - \tan^{-1} \left( \frac{BC + A\sqrt{B^2 - A^2 + C^2}}{B^2 - A^2} \right) \right\}$$

\dots\dots\dots (10)

ここに、

$$A = \sin(\delta + \varepsilon)$$

$$B = -\cos \varepsilon \sin(\phi + \delta) - \cos \delta \sin(\phi - \varepsilon)$$

$$C = -\sin \varepsilon \sin(\phi + \delta) + \sin \delta \sin(\phi - \varepsilon)$$

(2) 受働土圧

砂質土の地震時受働土圧強度および崩壊角は、式(3)および式(4)の土の粘着力  $c$  を 0 とおいて式(11)~(10)のように表わされる。

a) 一般の場合

$$K_p = \frac{\sin(\alpha_p + \phi - \varepsilon) \sin(\beta - \alpha_p)}{\cos \varepsilon \sin(\beta - \alpha_p - \phi - \delta) \sin(\alpha_p - \omega)}$$

$$\alpha_p = \frac{1}{2} \left\{ \beta - \phi - \tan^{-1} \left( \frac{-BC - A\sqrt{B^2 - A^2 + C^2}}{B^2 - A^2} \right) \right\}$$

..... (12)

ここに,

$$A = -\sin(\delta - \omega + \varepsilon)$$

$$B = \cos \varepsilon \cos(\beta - \phi - \delta - \omega)$$

$$- \cos(\delta - \omega) \cos(\beta + \phi - \varepsilon)$$

$$C = \sin \varepsilon \cos(\beta - \phi - \delta - \omega)$$

$$+ \sin(\delta - \omega) \cos(\beta + \phi - \varepsilon)$$

$K_p$ : 受働土圧係数

b) 壁面が鉛直の場合 ( $\beta = 90^\circ$ )

$$p_p = \frac{(\gamma y \cos \omega + q) \sin(\alpha_p + \phi - \varepsilon) \cos \alpha}{\cos \varepsilon \cos(\alpha_p + \phi + \delta) \sin(\alpha_p - \omega)}$$

$$= (\gamma y \cos \omega + q) K_p \quad \dots\dots\dots (13)$$

$$K_p = \frac{\sin(\alpha_p + \phi - \varepsilon) \cos \alpha}{\cos \varepsilon \cos(\alpha_p + \phi + \delta) \sin(\alpha_p - \omega)}$$

$$\alpha_p = \frac{1}{2} \left\{ 90^\circ - \phi - \tan^{-1} \left( \frac{-BC - A\sqrt{B^2 - A^2 + C^2}}{B^2 - A^2} \right) \right\}$$

..... (14)

ここに,

$$A = -\sin(\delta - \omega + \varepsilon)$$

$$B = \cos \varepsilon \sin(\phi + \delta + \omega)$$

$$+ \cos(\delta - \omega) \sin(\phi - \varepsilon)$$

$$C = \sin \varepsilon \sin(\phi + \delta + \omega)$$

$$- \sin(\delta - \omega) \sin(\phi - \varepsilon)$$

c) 壁面が鉛直で、かつ地表面が水平の場合 ( $\beta = 90^\circ$ ,  $\omega = 0$ )

$$p_p = \frac{(\gamma y + q) \sin(\alpha_p + \phi - \varepsilon) \cos \alpha_p}{\cos \varepsilon \cos(\alpha_p + \phi + \delta) \sin \alpha_p}$$

$$= (\gamma y + q) K_p \quad \dots\dots\dots (15)$$

$$K_p = \frac{\sin(\alpha_p + \phi - \varepsilon) \cos \alpha_p}{\cos \varepsilon \cos(\alpha_p + \phi + \delta) \sin \alpha_p}$$

$$\alpha_p = \frac{1}{2} \left\{ 90^\circ - \phi - \tan^{-1} \left( \frac{-BC - A\sqrt{B^2 - A^2 + C^2}}{B^2 - A^2} \right) \right\}$$

..... (16)

ここに,

$$A = -\sin(\delta + \varepsilon)$$

$$B = \cos \varepsilon \sin(\phi + \delta) + \cos \delta \sin(\phi - \varepsilon)$$

$$C = \sin \varepsilon \sin(\phi + \delta) - \sin \delta \sin(\phi - \varepsilon)$$

## 2.2 粘性土の地震時土圧

(1) 主働土圧

粘性土の地震時主働土圧強度および崩壊角は、式(1)および式(2)の土の内部摩擦角  $\phi$  および壁面摩擦角  $\delta$  を 0 とおいて式(17)~(20)のように表わされる。

a) 一般の場合

$$p_a = \frac{\left\{ \frac{\gamma y \sin(\beta - \omega)}{\sin \beta} + q \right\} \sin(\alpha_a + \varepsilon)}{\cos \varepsilon \sin(\alpha_a - \omega)}$$

$$= \frac{\lambda c \cos(\beta - \alpha_a) \sin(\alpha_a - \omega) + c \sin(\beta - \omega)}{\sin(\beta - \alpha_a) \sin(\alpha_a - \omega)}$$

..... (17)

$$\alpha_a = \frac{1}{2} \left\{ \beta - \tan^{-1} \left( \frac{BC + A\sqrt{B^2 - A^2 + C^2}}{B^2 - A^2} \right) \right\}$$

..... (18)

ここに,

$$A = \sin(\omega + \varepsilon) + \frac{\lambda c}{A}$$

$$B = \cos \varepsilon \cos(\beta - \omega) - \cos \omega \cos(\beta + \varepsilon)$$

$$- \frac{c}{A} \left\{ \lambda \sin(\beta - 2\omega) + 2 \sin(\beta - \omega) \cos \omega \right\}$$

$$C = \sin \varepsilon \cos(\beta - \omega) + \sin \omega \cos(\beta + \varepsilon)$$

$$+ \frac{c}{A} \left\{ \lambda \cos(\beta - 2\omega) + 2 \sin(\beta - \omega) \sin \omega \right\}$$

$$\bar{A} = \frac{\left\{ \frac{\gamma y \sin(\beta - \omega)}{\sin \beta} + q \right\}}{\cos \varepsilon}$$

b) 壁面が鉛直の場合 ( $\beta = 90^\circ$ )

$$p_a = \frac{(\gamma y \cos \omega + q) \sin(\alpha_a + \varepsilon)}{\cos \varepsilon \sin(\alpha_a - \omega)}$$

$$= \frac{\lambda c \sin \alpha_a \sin(\alpha_a - \omega) + c \cos \omega}{\cos \alpha_a \sin(\alpha_a - \omega)} \quad \dots\dots\dots (19)$$

$$\alpha_a = \frac{1}{2} \left\{ 90^\circ - \tan^{-1} \left( \frac{BC + A\sqrt{B^2 - A^2 + C^2}}{B^2 - A^2} \right) \right\}$$

..... (20)



ここに,

$$A = \sin(\omega + \varepsilon) + \frac{\lambda c}{A}$$

$$B = \cos \varepsilon \sin \omega + \cos \omega \sin \varepsilon$$

$$- \frac{c}{A} (\lambda \cos 2\omega + 2 \cos^2 \omega)$$

$$C = \frac{c}{A} (1 + \lambda) \sin 2\omega$$

$$\bar{A} = \frac{\gamma y \cos \omega + q}{\cos \varepsilon}$$

c) 壁面が鉛直で, かつ地表面が水平の場合 ( $\beta = 90^\circ$ ,  $\omega = 0$ )

$$p_a = \frac{(\gamma y + q) \sin(\alpha_a + \varepsilon)}{\cos \varepsilon \sin \alpha_a} - \frac{\lambda c \sin^2 \alpha_a + c}{\cos \alpha_a \sin \alpha_a} \dots \dots \dots (21)$$

$$\alpha_a = \frac{1}{2} \left( 90^\circ - \tan^{-1} \sqrt{\frac{A^2}{B^2 - A^2}} \right) \dots \dots \dots (22)$$

ここに,

$$A = \sin \varepsilon + \frac{\lambda c \cos \varepsilon}{\gamma y + q}$$

$$B = \sin \varepsilon - \frac{(2 + \lambda) c \cos \varepsilon}{\gamma y + q}$$

## (2) 受働土圧

粘性土の地震時受働土圧強度および崩壊角は, 式(3)および式(4)の土の内部摩擦角  $\phi$  および壁面摩擦角  $\delta$  を 0 とおいて式(23)~(28)のように表わされる。

a) 一般の場合

$$p_p = \frac{\left\{ \frac{\gamma y \sin(\beta - \omega)}{\sin \beta} + q \right\} \sin(\alpha_p - \varepsilon)}{\cos \varepsilon \sin(\alpha_p - \omega)} + \frac{\lambda c \cos(\beta - \alpha_p) \sin(\alpha_p - \omega) + c \sin(\beta - \omega)}{\sin(\beta - \alpha_p) \sin(\alpha_p - \omega)} \dots \dots \dots (23)$$

$$\alpha_p = \frac{1}{2} \left\{ \beta - \tan^{-1} \left( \frac{-BC - A \sqrt{B^2 - A^2 + C^2}}{B^2 - A^2} \right) \right\} \dots \dots \dots (24)$$

ここに,

$$A = \sin(\omega - \varepsilon) - \frac{\lambda c}{A}$$

$$B = \cos \varepsilon \cos(\beta - \omega) - \cos \omega \cos(\beta - \varepsilon) + \frac{c}{A} \left\{ \lambda \sin(\beta - 2\omega) + 2 \sin(\beta - \omega) \cos \omega \right\}$$

$$C = \sin \varepsilon \cos(\beta - \omega) - \sin \omega \cos(\beta - \varepsilon) + \frac{c}{A} \left\{ \lambda \cos(\beta - 2\omega) + 2 \sin(\beta - \omega) \sin \omega \right\}$$

$$\bar{A} = \frac{\left\{ \frac{\gamma y \sin(\beta - \omega)}{\sin \beta} + q \right\}}{\cos \varepsilon}$$

b) 壁面が鉛直の場合 ( $\beta = 90^\circ$ )

$$p_p = \frac{(\gamma y \cos \omega + q) \sin(\alpha_p - \varepsilon)}{\cos \varepsilon \sin(\alpha_p - \omega)} + \frac{\lambda c \sin \alpha_p \sin(\alpha_p - \omega) + c \cos \omega}{\cos \alpha_p \sin(\alpha_p - \omega)} \dots (25)$$

$$\alpha_p = \frac{1}{2} \left\{ 90^\circ - \tan^{-1} \left( \frac{-BC - A \sqrt{B^2 - A^2 + C^2}}{B^2 - A^2} \right) \right\} \dots \dots \dots (26)$$

ここに,

$$A = \sin(\omega - \varepsilon) - \frac{\lambda c}{A}$$

$$B = \cos \varepsilon \sin \omega - \cos \omega \sin \varepsilon + \frac{c}{A} (\lambda \cos 2\omega + 2 \cos^2 \omega)$$

$$C = \frac{c}{A} (1 + \lambda) \sin 2\omega$$

$$\bar{A} = \frac{\gamma y \cos \omega + q}{\cos \varepsilon}$$

c) 壁面が鉛直で, かつ地表面が水平の場合 ( $\beta = 90^\circ$ ,  $\omega = 0$ )

$$p_p = \frac{(\gamma y + q) \sin(\alpha_p - \varepsilon)}{\cos \varepsilon \sin \alpha_p} + \frac{\lambda c \sin^2 \alpha_p + c}{\cos \alpha_p \sin \alpha_p} \dots \dots \dots (27)$$

$$\alpha_p = \frac{1}{2} \left( 90^\circ - \tan^{-1} \sqrt{\frac{A^2}{B^2 - A^2}} \right) \dots \dots \dots (28)$$

ここに,

$$A = -\sin \varepsilon - \frac{\lambda c \cos \varepsilon}{\gamma y + q}$$

$$B = -\sin \varepsilon + \frac{(2 + \lambda) c \cos \varepsilon}{\gamma y + q}$$

## 3. 土圧計算図表

本資料に示した土圧計算図表は, 砂質土については壁面が鉛直の場合の土圧係数 ( $K \cos \delta$ ) と崩壊角  $\alpha$  を式(7), (13)および式(8), (14)から求め, 粘性土については壁面

が鉛直で、かつ地表面が水平の場合の土圧強度  $p$  と崩壊角  $\alpha$  を式(21)、(22)および式(23)、(24)で求めたものである。

### 3.1 計算図表の使用法

#### (1) 砂質土の土圧の求め方

砂質土の土圧係数 ( $K \cos \delta$ ) と崩壊角  $\alpha$  の値を表一3および図-4に示したが、これらの図表を用いて土圧強度等を求める場合は、式(29)~(31)による。

##### a) 土圧強度の水平成分 ( $p_h$ )

$$p_h = \left( \sum \gamma_i h_i + \frac{q}{\cos \omega} \right) \cos \omega (K \cos \delta) \dots (29)$$

ここに、

$p_h$ : 土圧強度の水平成分 ( $\text{kN/m}^2$ )

$\gamma_i$ :  $i$  層の土の単位体積重量 ( $\text{kN/m}^3$ )

$h_i$ :  $i$  層の厚さ (m)

$q$ : 地表面単位面積当りの載荷重 ( $\text{kN/m}^2$ )

$\omega$ : 地表面が水平となす角度 ( $^\circ$ )

$K$ : 土圧係数 ( $K \cos \delta$  の値が図表から求められる)

$\delta$ : 壁面摩擦角 ( $^\circ$ )

##### b) 土圧強度の鉛直成分 ( $p_v$ )

$$p_v = p_h \tan \delta \dots (30)$$

##### c) 土圧強度 ( $p$ )

$$p = \frac{p_h}{\cos \delta} \dots (31)$$

##### d) 崩壊角 ( $\alpha$ )

図表より求める。

#### (2) 粘性土の土圧の求め方

粘性土の土圧強度  $p$  と崩壊角  $\alpha$  の値を表一8.1~8.3および図-5.1~5.3、図-6.1~6.3

に示したが、これらの図表を用いて土圧強度等を求める場合は、以下による。

##### a) 土圧強度 ( $p$ )

土圧強度は、図表より求める。

##### b) 崩壊角 ( $\alpha$ )

粘性土の崩壊角  $\alpha$  は、砂質土の崩壊角が同一土層中においては深さに関係なく一定値を与えるのに対して、式(22)および式(23)からもわかるように深さによって値が変化する。したがって、図表からは深さ  $y$  の位置における崩壊角が求められることになるが、これを図-3のように各深さごと求めて連ねたものが粘性土の崩壊面と考えられる。なお、実用上は、地表面(地盤がいくつかの土層に区分される場合はその層の上面)における崩壊角と深さ  $y$  の位置(通常、各土層の下面)における崩壊角の値を平均した崩壊角をもつ直線的崩壊面を考えれば十分である。

##### (3) 単位の取り方について

計算図表における単位は、国際単位系 (SI) を用いている。したがって、これまで使用されてきた重力単位系(例えば、 $\text{tf/m}^2$ )を用いて計算図表を利用する場合は、次の方法による。

##### a) 砂質土の計算図表について

砂質土の場合は、図表の数値がすべて無次元量で表わされているので重力単位系でもそのまま使用できる。

##### b) 粘性土の計算図表について

i)  $c_a = 0$  ( $\lambda = 0$ ) または  $c_a = c$  ( $\lambda = 1$ ) の場合  
主働土圧の式(21)、(22)を  $c_a = c$  の場合について両辺を  $c$  で除して整理したのが式(32)、(33)である。この式か

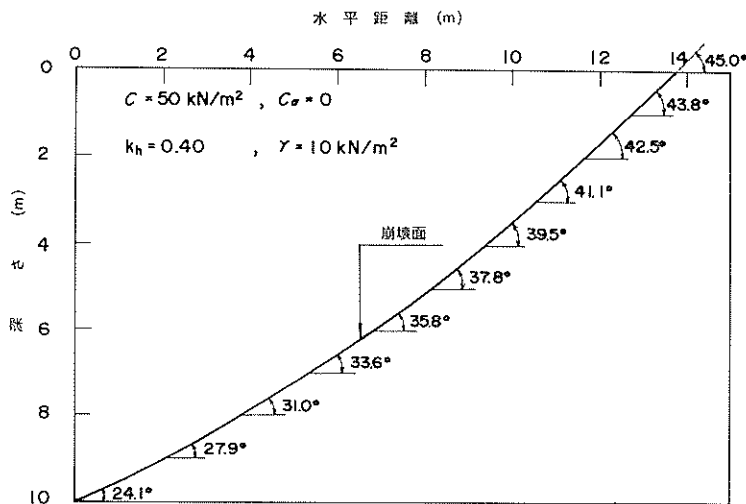


図-3 粘性土崩壊一角の例

らわかるように  $\varepsilon$  ( $\varepsilon = \tan^{-1} k_h$ ) をパラメーターとして考えれば、同一の  $\varepsilon$  に対しては  $(\sum \gamma h + q)/c$  が同じ値なら、 $p_a/c$  の値は同じになる(受働土圧の場合、並びに  $c_a = 0$  の場合も同じことがいえる)。この性質を利用して国際単位系で表わされている表-8. 1~8. 2 および図-5. 1~5. 2, 6. 1~6. 2 は、重力単位系の図表に簡単に変換できる。すなわち、図表中の  $c$ ,  $c_a$ ,  $\sum \gamma h + q$ ,  $p$  の値に 0.1 を掛けて、単位  $\text{kN/m}^2$  を  $\text{tf/m}^2$  と読み換えればよい(0.1 については、他の数値を用いてもよいが、国際単位系から重力単位への換算係数が 0.102 なので、この数値に近い値を用いた方が図表の計算範囲を適切に決めることができる)。

$$\frac{p_a}{c} = \frac{\left(\frac{\sum \gamma h + q}{c}\right) \sin(\alpha_a + \varepsilon)}{\cos \varepsilon \sin \alpha_a} - \frac{\sin^2 \alpha_a + 1}{\cos \alpha_a \sin \alpha_a} \dots\dots\dots 32$$

$$\alpha_a = \frac{1}{2} \left( 90^\circ - \tan^{-1} \sqrt{\frac{A^2}{B^2} - A^2} \right) \dots\dots\dots 33$$

ここに、

$$A = \sin \varepsilon + \left( \frac{c}{\sum \gamma h + q} \right) \cos \varepsilon$$

$$B = -\sin \varepsilon + 3 \left( \frac{c}{\sum \gamma h + q} \right) \cos \varepsilon$$

ii)  $c_a = \lambda c$  の場合 ( $\lambda$  をトムリンソンの土の粘着力と付着力の関係を準用して求める場合)

この場合は、 $\lambda$  の値が表-4 に示したように粘着力  $c$  によって変化するので、i) と同じ方法を用いることはできない。したがって、重力式単位系を用いて計算図表を使用する場合は、重力単位を国際単位に一度換算してから図表を用いる必要がある。

〔計算例-1〕 換算係数 9.8 を用いる場合

① 計算条件

$$C = 4 \text{ tf/m}^2, c_a = \lambda c = 0.92 \times 4 \text{ tf/m}^2 = 3.68 \text{ tf/m}^2$$

$$\sum \gamma h + q = 15 \text{ tf/m}^2$$

$$k_h = 0.05$$

②  $c$ ,  $c_a$ ,  $\sum \gamma h + q$  に重力単位から国際単位への換算係数 9.8 を掛けて国際単位に換算する。

$$c = 9.8 \times 4 = 39.2 \text{ (kN/m}^2)$$

$$c_a = 9.8 \times 3.68 = 36.06 \text{ (kN/m}^2)$$

$$\sum \gamma h + q = 9.8 \times 15 = 147.0 \text{ (kN/m}^2)$$

③ 表-8. 3(3), 8. 3(4) より  $k_h = 0.05$  に対応する  $p_a$ ,  $p_p$ ,  $\alpha$  の値を求める。(図を用いる場合は③を省

略して図-5. 3(3), (4) および図-6. 3(3), (4) より直接④の値を求める)

i)  $c = 30 \text{ kN/m}^2$ ,  $c_a = 28.8 \text{ kN/m}^2$ ,  $\sum \gamma h + q = 140.0 \text{ kN/m}^2$

$$\rightarrow p_a = 66.5 \text{ kN/m}^2, p_p = 213.5 \text{ kN/m}^2,$$

$$\alpha = 32.0^\circ$$

ii)  $c = 30$ ,  $c_a = 28.8$ ,  $\sum \gamma h + q = 150.0$

$$\rightarrow p_a = 77.3, p_p = 222.7, \alpha = 31.7$$

iii)  $c = 40$ ,  $c_a = 36.8$ ,  $\sum \gamma h + q = 140.0$

$$\rightarrow p_a = 39.3, p_p = 240.7, \alpha = 33.2$$

iv)  $c = 40$ ,  $c_a = 36.8$ ,  $\sum \gamma h + q = 150.0$

$$\rightarrow p_a = 50.1, p_p = 249.9, \alpha = 33.0$$

④  $\sum \gamma h + q$  について直線補間することにより、 $\sum \gamma h + q = 147.0$  に対応する値を求める。

i) および ii) より

iii)  $c = 30$ ,  $c_a = 28.8$ ,  $\sum \gamma h + q = 147.0$

$$\rightarrow p_a = 74.06, p_p = 219.94, \alpha = 31.79$$

iv) および v) より

vi)  $c = 40$ ,  $c_a = 36.8$ ,  $\sum \gamma h + q = 147.0$

$$\rightarrow p_a = 46.86, p_p = 247.14, \alpha = 33.06$$

⑤  $c$  について直線補間することにより、 $c = 39.2 \text{ kN/m}^2$ ,  $c_a = 36.06 \text{ kN/m}^2$  に対応する値を求める。

ii)  $c = 39.2 \text{ kN/m}^2$ ,  $c_a = 36.06 \text{ kN/m}^2$ ,

$$\sum \gamma h + q = 147.0 \text{ kN/m}^2$$

$$\rightarrow p_a = 49.04 \text{ kN/m}^2, p_p = 244.96 \text{ kN/m}^2,$$

$$\alpha = 32.96^\circ$$

⑥ 上記で求めた  $p_a$ ,  $p_p$  を換算係数 9.8 で除して国際単位を重力単位へ変換する。

$$p_a = \frac{49.04}{9.8} = 5.00 \text{ (tf/m}^2)$$

$$p_p = \frac{244.96}{9.8} = 25.0 \text{ (tf/m}^2)$$

$$\alpha = 32.96^\circ$$

〔計算例-2〕 換算係数に近似値 10.0 を用いる場合

これは重力単位から国際単位への換算係数 9.8 を近似的に 10.0 として処理する方法である。換算係数をこのように 10.0 と仮定とした場合の  $\lambda$  の値の変化は 1~2% 程度であり、実用上は換算係数として 10.0 を用いて計算してもよい。

① 計算条件

(計算例-1) と同じ

②  $c$ ,  $c_a$ ,  $\sum \gamma h + q$  に近似的に換算係数 10.0 を掛けて重力単位を国際単位に変換する。

$$c = 10.0 \times 4 = 40.0 \text{ (kN/m}^2)$$

$$c_a = 10.0 \times 3.68 = 36.8 \text{ (kN/m}^2\text{)}$$

$$\sum \gamma h + q = 10.0 \times 15 = 150.0 \text{ (kN/m}^2\text{)}$$

③ 表-8.3(4)より  $k_h = 0.05$  に対応する  $p_a, p_p, \alpha$  の値を求める。(図を用いる場合は、図-5.3(4)および図-6.3(4)より求める)

$$\begin{aligned} c &= 40.0 \text{ kN/m}^2, c_a = 36.8 \text{ kN/m}^2, \sum \gamma h + q \\ &= 150.0 \text{ kN/m}^2 \\ \rightarrow p_a &= 50.1 \text{ kN/m}^2, p_p = 249.9 \text{ kN/m}^2, \\ \alpha &= 33.0^\circ \end{aligned}$$

④ 上記で求めた  $p_a, p_p$  を換算係数の近似値 10.0 で除して国際単位を重力単位に換算する。

$$p_a = \frac{50.1}{10.0} = 5.01 \text{ (tf/m}^2\text{)}$$

$$p_p = \frac{249.9}{10.0} = 25.0 \text{ (tf/m}^2\text{)}$$

$$\alpha = 33.0^\circ$$

### 3.2 砂質土の土圧係数と崩壊角

#### (1) 計算条件

##### a) 計算上の仮定と制約条件

表-1および図-4に示した砂質土の土圧係数と崩壊角は、壁面が鉛直の場合について求めたもので、主働土圧については式(7)、(8)、受働土圧については式(13)、(14)を用いて計算した。

ただし、土圧式が成立しないか、あるいは成立しても土圧係数または崩壊角が通常の範囲からはずれる場合は、これを土圧式の制約条件と考慮して値を求めていない。

砂質土に対する土圧式の制約条件としては、以下の事項を取り上げた。

- ① 主働土圧係数が 1.0 より大きい場合
- ② 土圧係数が負になる場合
- ③ 崩壊角  $\alpha$  が  $0 \sim 90^\circ$  の範囲にない場合
- ④ 式(8)および式(14)において  $\sqrt{\quad}$  の中が負になる場合
- ⑤ 主働土圧の式(7)において、 $\alpha - \phi - \delta = 90^\circ$  または  $\alpha - \omega = 0$  の場合、受働土圧の式(13)において、 $\alpha + \phi + \delta = 90^\circ$  または  $\alpha - \omega = 0$  の場合、これらの場合は土圧式の分母が 0 となり有限の値が得られない。
- ⑥ 受働土圧の計算において、 $(\phi - \varepsilon) - |\omega| < 0$  の場合、この場合は地震時における直線すべり面の検討から斜面の安定が保てないことが知られている<sup>4)</sup>。ただし、主働土圧については、この制約条件を設けない方が一般に構造物にとって安全側の土圧を与えるので、とくに制約条件とはしなかった。

##### b) 計算範囲

砂質土については、壁面が鉛直の場合について主働、受働の土圧係数 ( $K \cos \delta$ ) および崩壊角  $\alpha$  を次の範囲

で求めている。

地表面傾斜角 ( $\omega$ )

主働土圧について  $0 \sim 30^\circ$

受働土圧について  $0 \sim -30^\circ$

土の内部摩擦角 ( $\phi$ )  $20^\circ \sim 45^\circ$

壁面摩擦角 ( $\delta$ )

主働土圧について  $0, 15^\circ, 1/3\phi, 2/3\phi, \phi$

受働土圧について  $-15^\circ, 0, 15^\circ, 1/3\phi, 2/3\phi, \phi$

( $\delta$  の符号は主働土圧については図-1、受働土圧については図-2に示した方向を正とする)

水平震度 ( $k_h$ )  $0 \sim 0.50$

(2) 計算図表

##### a) 計算図表一覧表

砂質土の土圧計算図表のうち表については、表-1に示した地表面傾斜角  $\omega$  と土の内部摩擦角  $\phi$  の組合せごとに壁面付着力  $\delta$  を  $-15^\circ, 0, 15^\circ, 1/3\phi, 2/3\phi, \phi$ 、水平震度  $k_h$  を  $0 \sim 0.50$  まで変化させて土圧係数 ( $K \cos \delta$ ) および崩壊角  $\alpha$  を求めている。

また、図については、表-2に示した地表面傾斜角  $\omega$  と壁面摩擦角  $\delta$  の組合せごとに土の内部摩擦角  $\phi$  をパラメーターとして横軸に水平震度  $k_h$ 、縦軸に土圧係数 ( $K \cos \delta$ ) と崩壊角  $\alpha$  をとってプロットしている。

表-1 砂質土の計算図表(表)一覧表

表番	$\omega$		$\phi$	ページ
	主働	受働		
表-3(1)	0°	0°	20°, 25°	13
(2)			30, 35	14
(3)			40, 45	15
(4)	5	-5	20, 25	16
(5)			30, 35	17
(6)			40, 45	18
(7)	10	-10	20, 25	19
(8)			30, 35	20
(9)			40, 45	21
(10)	15	-15	20, 25, 30, 35	22
(11)			40, 45	23
(12)	20	-20	25, 30, 35, 40	24
(13)			45	25
(14)	25	-25	30, 35, 40, 45	26
(15)	30	-30	35, 40, 45	27

表一 2 砂質土の計算図表(図)一覧表

図 番	$\omega$		$\delta$	ページ	図 番	$\omega$		$\delta$	ページ
	主働	受働				主働	受働		
図-4 (1)	0°	0°	-15°	28	図-4 (25)	20°	-20°	-15°	52
(2)	"	"	0	29	(26)	"	"	0	53
(3)	"	"	15	30	(27)	"	"	15	54
(4)	"	"	1/3φ	31	(28)	"	"	1/3φ	55
(5)	"	"	2/3φ	32	(29)	"	"	2/3φ	56
(6)	"	"	φ	33	(30)	"	"	φ	57
(7)	5	-5	-15	34	(31)	25	-25	-15	58
(8)	"	"	0	35	(32)	"	"	0	59
(9)	"	"	15	36	(33)	"	"	15	60
(10)	"	"	1/3φ	37	(34)	"	"	1/3φ	61
(11)	"	"	2/3φ	38	(35)	"	"	2/3φ	62
(12)	"	"	φ	39	(36)	"	"	φ	63
(13)	10	-10	-15	40	(37)	30	-30	-15	64
(14)	"	"	0	41	(38)	"	"	0	65
(15)	"	"	15	42	(39)	"	"	15	66
(16)	"	"	1/3φ	43	(40)	"	"	1/3φ	67
(17)	"	"	2/3φ	44	(41)	"	"	2/3φ	68
(18)	"	"	φ	45	(42)	"	"	φ	69
(19)	15	-15	-15	46	注) $\omega$ および $\delta$ の符号は、主働土圧の場合は図-1、受働土圧の場合は図-2に示す方向を正とする。				
(20)	"	"	0	47					
(21)	"	"	15	48					
(22)	"	"	1/3φ	49					
(23)	"	"	2/3φ	50					
(24)	"	"	φ	51					

b) 表

表中の記号は、主働土圧については図-1、受働土圧については図-2に示した方向を正とする。

c) 図

図中の記号は、主働土圧については図-1、受働土圧については図-2に示した方向を正とする。

表-3(1) 砂質土の土圧係数と崩壊角

$\omega = 0^\circ, \phi = 20^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.2995		59.7
	0.05		1.2866		57.9
	0.10		1.2714		55.8
	0.15		1.2533		53.1
	0.20		1.2312		49.7
	0.25		1.2031		44.8
	0.30		1.1648		37.1
	0.35		1.0971		20.0
	0.40				
	0.45				
0.50					
0°	0.	0.4903	2.0396	55.0	35.0
	0.05	0.5273	1.9662	52.0	33.5
	0.10	0.5688	1.8883	48.5	31.8
	0.15	0.6164	1.8043	44.3	29.7
	0.20	0.6722	1.7121	39.3	27.2
	0.25	0.7405	1.6074	33.0	23.8
	0.30	0.8310	1.4805	24.7	19.0
	0.35	0.9858	1.2893	11.2	9.8
	0.40				
	0.45				
0.50					
15°	0.	0.4196	2.9261	49.5	23.9
	0.05	0.4593	2.7716	46.1	22.9
	0.10	0.5051	2.6109	42.3	21.8
	0.15	0.5592	2.4420	37.9	20.4
	0.20	0.6248	2.2615	32.8	18.7
	0.25	0.7083	2.0631	26.8	16.5
	0.30	0.8245	1.8321	19.3	13.2
	0.35				
	0.40				
	0.45				
0.50					
1/3φ	0.	0.4550	2.3975	52.2	29.3
	0.05	0.4934	2.2923	49.0	28.1
	0.10	0.5371	2.1817	45.3	26.6
	0.15	0.5878	2.0641	41.0	24.9
	0.20	0.6482	1.9367	36.0	22.8
	0.25	0.7235	1.7945	29.8	20.0
	0.30	0.8256	1.6256	21.9	16.0
	0.35				
	0.40				
	0.45				
0.50					
2/3φ	0.	0.4261	2.8106	50.0	24.9
	0.05	0.4656	2.6670	46.6	23.9
	0.10	0.5110	2.5175	42.8	22.7
	0.15	0.5645	2.3599	38.5	21.2
	0.20	0.6291	2.1911	33.4	19.4
	0.25	0.7110	2.0051	27.3	17.1
	0.30	0.8243	1.7877	19.8	13.7
	0.35				
	0.40				
	0.45				
0.50					
φ	0.	0.4011	3.3124	48.1	21.2
	0.05	0.4414	3.1206	44.7	20.4
	0.10	0.4884	2.9222	40.8	19.4
	0.15	0.5443	2.7147	36.3	18.2
	0.20	0.6130	2.4946	31.2	16.7
	0.25	0.7014	2.2547	25.3	14.8
	0.30	0.8263	1.9783	18.1	11.9
	0.35				
	0.40				
	0.45				
0.50					

$\omega = 0^\circ, \phi = 25^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.5654		50.8
	0.05		1.5446		49.4
	0.10		1.5215		47.8
	0.15		1.4957		45.9
	0.20		1.4667		43.7
	0.25		1.4335		41.1
	0.30		1.3946		37.8
	0.35		1.3475		33.4
	0.40		1.2859		27.0
	0.45		1.1856		14.8
0.50					
0°	0.	0.4059	2.4639	57.5	32.5
	0.05	0.4393	2.3839	55.0	31.5
	0.10	0.4762	2.3003	52.1	30.3
	0.15	0.5174	2.2124	48.9	29.0
	0.20	0.5640	2.1193	45.2	27.4
	0.25	0.6175	2.0191	40.9	25.6
	0.30	0.6805	1.9095	35.9	23.4
	0.35	0.7578	1.7856	29.8	20.5
	0.40	0.8603	1.6364	22.1	16.4
	0.45				
0.50					
15°	0.	0.3507	3.7234	53.4	22.4
	0.05	0.3852	3.5505	50.5	21.8
	0.10	0.4241	3.3730	47.3	21.0
	0.15	0.4687	3.1900	43.8	20.2
	0.20	0.5203	2.9998	39.9	19.2
	0.25	0.5815	2.8002	35.4	18.0
	0.30	0.6558	2.5873	30.4	16.5
	0.35	0.7506	2.3541	24.7	14.5
	0.40	0.8823	2.0839	17.7	11.8
	0.45				
0.50					
1/3φ	0.	0.3727	3.0906	55.0	26.4
	0.05	0.4068	2.9654	52.3	25.6
	0.10	0.4450	2.8361	49.2	24.7
	0.15	0.4881	2.7018	45.8	23.6
	0.20	0.5376	2.5612	42.0	22.4
	0.25	0.5954	2.4122	37.6	20.9
	0.30	0.6647	2.2518	32.6	19.1
	0.35	0.7516	2.0737	26.7	16.8
	0.40	0.8699	1.8643	19.4	13.5
	0.45				
0.50					
2/3φ	0.	0.3457	3.9081	53.0	21.5
	0.05	0.3802	3.7209	50.1	20.9
	0.10	0.4193	3.5291	46.9	20.2
	0.15	0.4642	3.3316	43.3	19.4
	0.20	0.5164	3.1267	39.4	18.4
	0.25	0.5783	2.9121	34.9	17.3
	0.30	0.6540	2.6837	30.0	15.9
	0.35	0.7509	2.4342	24.2	14.0
	0.40	0.8860	2.1464	17.4	11.4
	0.45				
0.50					
φ	0.	0.3218	5.0744	51.3	17.4
	0.05	0.3566	4.7946	48.2	17.0
	0.10	0.3967	4.5096	44.9	16.4
	0.15	0.4432	4.2181	41.2	15.8
	0.20	0.4981	3.9181	37.1	15.1
	0.25	0.5644	3.6068	32.7	14.2
	0.30	0.6470	3.2793	27.7	13.1
	0.35	0.7550	2.9263	22.1	11.7
	0.40		2.5263		9.5
	0.45				
0.50					

表-3(2) 砂質土の土圧係数と崩壊角

$\omega = 0^\circ, \phi = 30^\circ$

$\delta$	$k_k$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_x$ (度)	$\alpha_y$ (度)
-15°	0.		1.8660		45.0
	0.05		1.8401		43.9
	0.10		1.8121		42.7
	0.15		1.7817		41.4
	0.20		1.7486		39.9
	0.25		1.7123		38.2
	0.30		1.6721		36.2
	0.35		1.6270		33.9
	0.40		1.5752		31.1
	0.45		1.5141		27.5
0.50		1.4372		22.6	
0°	0.	0.3333	3.0000	60.0	30.0
	0.05	0.3635	2.9121	57.8	29.3
	0.10	0.3966	2.8213	55.3	28.4
	0.15	0.4329	2.7272	52.6	27.5
	0.20	0.4733	2.6291	49.6	26.5
	0.25	0.5184	2.5263	46.3	25.3
	0.30	0.5693	2.4176	42.6	24.0
	0.35	0.6279	2.3013	38.4	22.5
	0.40	0.6967	2.1747	33.6	20.6
	0.45	0.7807	2.0330	28.0	18.2
0.50	0.8900	1.8660	21.2	15.0	
15°	0.	0.2911	4.8069	56.9	20.7
	0.05	0.3215	4.6082	54.3	20.2
	0.10	0.3554	4.4061	51.6	19.7
	0.15	0.3935	4.1997	48.6	19.1
	0.20	0.4366	3.9882	45.3	18.5
	0.25	0.4861	3.7705	41.8	17.8
	0.30	0.5434	3.5448	37.8	16.9
	0.35	0.6112	3.3087	33.6	15.9
	0.40	0.6934	3.0582	28.8	14.7
	0.45	0.7972	2.7861	23.5	13.1
0.50	0.9384	2.4766	17.3	10.9	
1/3φ	0.	0.3038	4.0803	57.8	23.4
	0.05	0.3341	3.9274	55.4	22.9
	0.10	0.3677	3.7713	52.7	22.3
	0.15	0.4053	3.6111	49.8	21.6
	0.20	0.4475	3.4463	46.6	20.9
	0.25	0.4955	3.2758	43.1	20.0
	0.30	0.5507	3.0980	39.3	19.0
	0.35	0.6153	2.9109	35.0	17.8
	0.40	0.6928	2.7108	30.2	16.4
	0.45	0.7896	2.4914	24.8	14.6
0.50	0.9193	2.2392	18.5	12.1	
2/3φ	0.	0.2794	5.7371	56.0	18.1
	0.05	0.3097	5.4781	53.4	17.7
	0.10	0.3439	5.2153	50.5	17.3
	0.15	0.3825	4.9480	47.5	16.9
	0.20	0.4266	4.6752	44.1	16.3
	0.25	0.4775	4.3956	40.5	15.7
	0.30	0.5371	4.1074	36.5	15.0
	0.35	0.6083	3.8075	32.2	14.1
	0.40	0.6956	3.4916	27.5	13.1
	0.45	0.8073	3.1512	22.3	11.7
0.50		2.7683		9.8	
φ	0.	0.2574	8.7425	54.3	13.4
	0.05	0.2877	8.2791	51.6	13.2
	0.10	0.3222	7.8116	48.6	13.0
	0.15	0.3620	7.3388	45.3	12.7
	0.20	0.4081	6.8597	41.8	12.3
	0.25	0.4624	6.3725	38.1	11.9
	0.30	0.5272	5.8746	34.0	11.4
	0.35	0.6063	5.3625	29.7	10.8
	0.40	0.7058	4.8300	25.0	10.1
	0.45	0.8371	4.2657	19.9	9.1

$\omega = 0^\circ, \phi = 35^\circ$

$\delta$	$k_k$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_x$ (度)	$\alpha_y$ (度)
-15°	0.		2.2235		40.5
	0.05		2.1939		39.6
	0.10		2.1623		38.7
	0.15		2.1287		37.7
	0.20		2.0927		36.6
	0.25		2.0542		35.5
	0.30		2.0126		34.1
	0.35		1.9674		32.7
	0.40		1.9180		31.0
	0.45		1.8633		29.1
0.50		1.8018		26.9	
0°	0.	0.2710	3.6901	62.5	27.5
	0.05	0.2982	3.5930	60.5	26.9
	0.10	0.3277	3.4933	58.3	26.4
	0.15	0.3601	3.3910	55.9	25.7
	0.20	0.3956	3.2855	53.3	25.0
	0.25	0.4347	3.1763	50.6	24.2
	0.30	0.4780	3.0630	47.6	23.4
	0.35	0.5265	2.9445	44.3	22.4
	0.40	0.5811	2.8199	40.7	21.3
	0.45	0.6435	2.6874	36.7	20.0
0.50	0.7163	2.5466	32.3	18.5	
15°	0.	0.2393	6.3313	60.1	18.7
	0.05	0.2662	6.0972	57.8	18.4
	0.10	0.2960	5.8602	55.4	18.0
	0.15	0.3292	5.6198	52.7	17.6
	0.20	0.3664	5.3754	49.9	17.2
	0.25	0.4081	5.1265	46.9	16.8
	0.30	0.4554	4.8720	43.6	16.2
	0.35	0.5094	4.6107	40.1	15.6
	0.40	0.5720	4.3410	36.4	15.0
	0.45	0.6454	4.0604	32.3	14.2
0.50	0.7336	3.7650	28.0	13.2	
1/3φ	0.	0.2457	5.5628	60.6	20.4
	0.05	0.2726	5.3699	58.3	20.1
	0.10	0.3024	5.1741	55.9	19.7
	0.15	0.3354	4.9751	53.4	19.3
	0.20	0.3722	4.7724	50.6	18.8
	0.25	0.4133	4.5653	47.6	18.3
	0.30	0.4597	4.3530	44.4	17.7
	0.35	0.5124	4.1343	41.0	17.0
	0.40	0.5731	3.9077	37.2	16.2
	0.45	0.6438	3.6710	33.2	15.3
0.50	0.7282	3.4206	28.8	14.3	
2/3φ	0.	0.2244	9.1468	58.9	14.6
	0.05	0.2511	8.7558	56.5	14.4
	0.10	0.2811	8.3616	53.9	14.1
	0.15	0.3148	7.9637	51.2	13.9
	0.20	0.3528	7.5614	48.2	13.6
	0.25	0.3962	7.1538	45.1	13.3
	0.30	0.4460	6.7398	41.7	12.9
	0.35	0.5037	6.3178	38.1	12.5
	0.40	0.5715	5.8856	34.3	12.0
	0.45	0.6525	5.4405	30.2	11.4
0.50	0.7518	4.9770	25.9	10.7	
φ	0.	0.2046	18.8158	57.4	9.3
	0.05	0.2310	17.8488	54.8	9.2
	0.10	0.2611	16.8780	52.0	9.1
	0.15	0.2955	15.9029	49.1	8.9
	0.20	0.3352	14.9226	45.9	8.8
	0.25	0.3814	13.9358	42.6	8.6
	0.30	0.4355	12.9410	39.0	8.5
	0.35	0.4999	11.9360	35.3	8.2
	0.40	0.5777	10.9175	31.3	8.0
	0.45	0.6737	9.8809	27.2	7.7
0.50	0.7956	8.8183	23.0	7.3	

表-3(3) 砂質土の土圧係数と崩壊角

$\omega = 0^\circ, \phi = 40^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		2.6601		36.6
	0.05		2.6276		35.9
	0.10		2.5934		35.2
	0.15		2.5574		34.5
	0.20		2.5193		33.7
	0.25		2.4790		32.8
	0.30		2.4362		31.9
	0.35		2.3906		30.9
	0.40		2.3418		29.8
	0.45		2.2894		28.6
	0.50		2.2327		27.3
0°	0.	0.2174	4.5989	65.0	25.0
	0.05	0.2418	4.4906	63.1	24.6
	0.10	0.2682	4.3803	61.1	24.2
	0.15	0.2970	4.2676	59.0	23.7
	0.20	0.3285	4.1522	56.7	23.2
	0.25	0.3628	4.0340	54.3	22.6
	0.30	0.4005	3.9124	51.7	22.1
	0.35	0.4419	3.7870	49.0	21.4
	0.40	0.4878	3.6573	46.0	20.7
	0.45	0.5388	3.5223	42.9	19.9
	0.50	0.5960	3.3813	39.5	19.1
15°	0.	0.1942	8.5995	63.2	16.6
	0.05	0.2181	8.2854	61.1	16.3
	0.10	0.2444	7.9988	58.8	16.1
	0.15	0.2736	7.7094	56.5	15.9
	0.20	0.3060	7.4168	53.9	15.6
	0.25	0.3421	7.1205	51.3	15.3
	0.30	0.3823	6.8200	48.5	15.0
	0.35	0.4275	6.5146	45.5	14.6
	0.40	0.4786	6.2033	42.3	14.2
	0.45	0.5367	5.8850	39.0	13.7
	0.50	0.6034	5.5581	35.5	13.2
1/3φ	0.	0.1965	7.9274	63.3	17.4
	0.05	0.2205	7.6729	61.3	17.2
	0.10	0.2468	7.4159	59.1	16.9
	0.15	0.2760	7.1562	56.7	16.7
	0.20	0.3083	6.8933	54.2	16.4
	0.25	0.3441	6.6269	51.6	16.0
	0.30	0.3841	6.3563	48.8	15.7
	0.35	0.4288	6.0810	45.8	15.3
	0.40	0.4792	5.8000	42.7	14.9
	0.45	0.5364	5.5122	39.4	14.4
	0.50	0.6019	5.2161	35.9	13.8
2/3φ	0.	0.1786	16.7259	61.9	10.9
	0.05	0.2021	16.0460	59.6	10.8
	0.10	0.2284	15.3634	57.2	10.7
	0.15	0.2580	14.6776	54.7	10.6
	0.20	0.2912	13.9880	52.0	10.5
	0.25	0.3289	13.2941	49.1	10.3
	0.30	0.3716	12.5950	46.1	10.1
	0.35	0.4205	11.8898	43.0	9.9
	0.40	0.4768	11.1772	39.6	9.7
	0.45	0.5422	10.4555	36.2	9.5
	0.50	0.6191	9.7223	32.6	9.2
φ	0.	0.1610	70.9188	60.4	4.8
	0.05	0.1841	67.3465	58.0	4.8
	0.10	0.2104	63.7710	55.3	4.8
	0.15	0.2405	60.1916	52.6	4.7
	0.20	0.2751	56.6078	49.6	4.7
	0.25	0.3152	53.0184	46.5	4.7
	0.30	0.3620	49.4224	43.3	4.6
	0.35	0.4171	45.8181	39.9	4.6
	0.40	0.4827	42.2033	36.4	4.5
	0.45	0.5618	38.5749	32.7	4.4
	0.50	0.6588	34.9287	29.0	4.3

$\omega = 0^\circ, \phi = 45^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		3.2046		33.1
	0.05		3.1702		32.6
	0.10		3.1342		32.1
	0.15		3.0964		31.5
	0.20		3.0569		30.9
	0.25		3.0154		30.2
	0.30		2.9718		29.6
	0.35		2.9258		28.8
	0.40		2.8774		28.1
	0.45		2.8262		27.3
	0.50		2.7718		26.4
0°	0.	0.1716	5.8284	67.5	22.5
	0.05	0.1932	5.7067	65.7	22.2
	0.10	0.2167	5.5832	63.9	21.9
	0.15	0.2423	5.4576	61.9	21.5
	0.20	0.2702	5.3298	59.8	21.2
	0.25	0.3005	5.1994	57.7	20.8
	0.30	0.3336	5.0664	55.4	20.4
	0.35	0.3697	4.9303	53.0	20.4
	0.40	0.4091	4.7908	50.5	19.5
	0.45	0.4524	4.6476	47.8	19.0
	0.50	0.5000	4.4999	45.0	18.4
15°	0.	0.1550	12.0409	66.1	14.4
	0.05	0.1761	11.6832	64.1	14.2
	0.10	0.1994	11.3233	62.1	14.1
	0.15	0.2251	10.9610	59.9	13.9
	0.20	0.2536	10.5959	57.6	13.7
	0.25	0.2851	10.2278	55.2	13.5
	0.30	0.3199	9.8564	52.7	13.3
	0.35	0.3587	9.4810	50.1	13.1
	0.40	0.4019	9.1013	47.3	12.8
	0.45	0.4501	8.7164	44.5	12.6
	0.50	0.5043	8.3256	41.5	12.3
1/3φ	0.	0.1550	12.0409	66.1	14.4
	0.05	0.1761	11.6832	64.1	14.2
	0.10	0.1994	11.3233	62.1	14.1
	0.15	0.2251	10.9610	59.9	13.9
	0.20	0.2536	10.5959	57.6	13.7
	0.25	0.2851	10.2278	55.2	13.5
	0.30	0.3199	9.8564	52.7	13.3
	0.35	0.3587	9.4810	50.1	13.1
	0.40	0.4019	9.1013	47.3	12.8
	0.45	0.4501	8.7164	44.5	12.6
	0.50	0.5043	8.3256	41.5	12.3
2/3φ	0.	0.1403	39.9102	64.8	7.2
	0.05	0.1609	38.3602	62.7	7.1
	0.10	0.1840	36.8078	60.4	7.1
	0.15	0.2100	35.2524	58.0	7.0
	0.20	0.2392	33.6939	55.5	7.0
	0.25	0.2722	32.1315	52.9	6.9
	0.30	0.3095	30.5649	50.1	6.9
	0.35	0.3519	28.9932	47.3	6.8
	0.40	0.4002	27.4155	44.3	6.7
	0.45	0.4556	25.8307	41.2	6.6
	0.50	0.5197	24.2374	38.0	6.5
φ	0.	0.1250		63.4	
	0.05	0.1451		61.1	
	0.10	0.1681		58.6	
	0.15	0.1945		55.9	
	0.20	0.2250		53.1	
	0.25	0.2604		50.2	
	0.30	0.3018		47.1	
	0.35	0.3505		43.9	
	0.40	0.4083		40.6	
	0.45	0.4778		37.2	
	0.50	0.5625		33.7	



表-3(4) 砂質土の土圧係数と崩壊角

$\omega = 5^\circ$ (主働),  $-5^\circ$ (受働),  $\phi = 20^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.2359		55.3
	0.05		1.2180		52.5
	0.10		1.1964		48.8
	0.15		1.1690		43.7
	0.20		1.1319		35.6
	0.25		1.0693		18.7
	0.30				
	0.35				
	0.40				
	0.45				
0.50					
0°	0.	0.5260	1.7991	52.2	29.4
	0.05	0.5708	1.7190	48.5	27.2
	0.10	0.6232	1.6311	43.9	24.4
	0.15	0.6871	1.5318	38.2	20.8
	0.20	0.7712	1.4123	30.5	15.8
	0.25	0.9093	1.2388	18.0	6.6
	0.30				
	0.35				
	0.40				
	0.45				
0.50					
15°	0.	0.4569	2.4040	46.9	18.8
	0.05	0.5061	2.2503	42.9	17.3
	0.10	0.5656	2.0863	38.1	15.4
	0.15	0.6408	1.9064	32.5	13.0
	0.20	0.7444	1.6983	25.4	9.6
	0.25	0.9257	1.4124	14.9	3.3
	0.30				
	0.35				
	0.40				
	0.45				
0.50					
1/3φ	0.	0.4917	2.0512	49.5	23.9
	0.05	0.5387	1.9411	45.6	22.0
	0.10	0.5946	1.8220	40.9	19.7
	0.15	0.6640	1.6895	35.2	16.7
	0.20	0.7571	1.5332	27.8	12.5
	0.25	0.9147	1.3124	16.3	4.8
	0.30				
	0.35				
	0.40				
	0.45				
0.50					
2/3φ	0.	0.4634	2.3287	47.4	19.7
	0.05	0.5121	2.1844	43.3	18.1
	0.10	0.5710	2.0301	38.6	16.2
	0.15	0.6451	1.8605	33.0	13.7
	0.20	0.7466	1.6634	25.8	10.1
	0.25	0.9231	1.3914	15.1	3.5
	0.30				
	0.35				
	0.40				
	0.45				
0.50					
φ	0.	0.4386	2.6492	45.6	16.3
	0.05	0.4889	2.4643	41.5	15.0
	0.10	0.5503	2.2683	36.7	13.3
	0.15	0.6289	2.0550	31.1	11.2
	0.20	0.7386	1.8106	24.2	8.2
	0.25	0.9345	1.4800	14.2	2.5
	0.30				
	0.35				
	0.40				
	0.45				
0.50					

$\omega = 5^\circ$ (主働),  $-5^\circ$ (受働),  $\phi = 25^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.4597		46.6
	0.05		1.4341		44.6
	0.10		1.4052		42.2
	0.15		1.3721		39.3
	0.20		1.3334		35.7
	0.25		1.2864		30.8
	0.30		1.2248		23.6
	0.35		1.1220		9.6
	0.40				
	0.45				
0.50					
0°	0.	0.4324	2.1513	55.6	27.8
	0.05	0.4711	2.0676	52.6	26.4
	0.10	0.5149	1.9788	49.2	24.7
	0.15	0.5654	1.8834	45.2	22.6
	0.20	0.6250	1.7788	40.5	20.2
	0.25	0.6985	1.6604	34.7	16.9
	0.30	0.7966	1.5172	27.1	12.4
	0.35	0.9661	1.3028	15.0	3.9
	0.40				
	0.45				
0.50					
15°	0.	0.3775	3.0258	51.5	18.1
	0.05	0.4180	2.8612	48.3	17.1
	0.10	0.4651	2.6900	44.6	16.0
	0.15	0.5209	2.5102	40.4	14.6
	0.20	0.5889	2.3181	35.6	12.9
	0.25	0.6757	2.1072	30.0	10.8
	0.30	0.7971	1.8618	23.0	7.6
	0.35		1.5143		1.6
	0.40				
	0.45				
0.50					
1/3φ	0.	0.3995	2.5982	53.1	21.9
	0.05	0.4393	2.4739	50.0	20.7
	0.10	0.4851	2.3438	46.4	19.3
	0.15	0.5387	2.2058	42.3	17.7
	0.20	0.6031	2.0570	37.5	15.7
	0.25	0.6841	1.8917	31.8	13.1
	0.30	0.7950	1.6963	24.6	9.4
	0.35		1.4133		2.4
	0.40				
	0.45				
0.50					
2/3φ	0.	0.3723	3.1467	51.2	17.2
	0.05	0.4130	2.9704	47.9	16.3
	0.10	0.4604	2.7875	44.2	15.2
	0.15	0.5167	2.5956	40.0	13.9
	0.20	0.5856	2.3911	35.2	12.3
	0.25	0.6740	2.1672	29.6	10.2
	0.30	0.7980	1.9076	22.7	7.2
	0.35		1.5422		1.4
	0.40				
	0.45				
0.50					
φ	0.	0.3483	3.8746	49.5	13.3
	0.05	0.3896	3.6264	46.1	12.6
	0.10	0.4385	3.3708	42.3	11.8
	0.15	0.4975	3.1050	38.0	10.8
	0.20	0.5710	2.8247	33.2	9.5
	0.25	0.6671	2.5218	27.7	7.8
	0.30	0.8055	2.1766	21.1	5.4
	0.35				
	0.40				
	0.45				
0.50					

表-3(5) 砂質土の土圧係数と崩壊角

$\omega = 5^\circ$ (主動),  $-5^\circ$ (受働),  $\phi = 30^\circ$

$\delta$	$k_1$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.7135		41.2
	0.05		1.6831		39.7
	0.10		1.6500		38.0
	0.15		1.6136		36.1
	0.20		1.5732		33.9
	0.25		1.5277		31.3
	0.30		1.4754		28.0
	0.35		1.4129		23.9
	0.40		1.3330		18.0
	0.45		1.2056		7.2
0.50					
0°	0.	0.3529	2.5872	58.6	25.9
	0.05	0.3869	2.4980	56.1	24.9
	0.10	0.4248	2.4050	53.3	23.7
	0.15	0.4672	2.3074	50.2	22.4
	0.20	0.5155	2.2040	46.6	20.9
	0.25	0.5713	2.0930	42.6	19.1
	0.30	0.6374	1.9717	37.9	17.0
	0.35	0.7191	1.8349	32.3	14.2
	0.40	0.8281	1.6706	25.2	10.3
	0.45				
0.50					
15°	0.	0.3104	3.8411	55.5	16.8
	0.05	0.3450	3.6586	52.7	16.1
	0.10	0.3843	3.4714	49.7	15.4
	0.15	0.4295	3.2783	46.3	14.5
	0.20	0.4821	3.0777	42.5	13.6
	0.25	0.5446	2.8673	38.4	12.4
	0.30	0.6210	2.6430	33.6	10.9
	0.35	0.7188	2.3973	28.2	9.0
	0.40	0.8551	2.1130	21.7	6.3
	0.45				
0.50					
1/3φ	0.	0.3232	3.3539	56.5	19.5
	0.05	0.3576	3.2085	53.7	18.7
	0.10	0.3965	3.0588	50.8	17.8
	0.15	0.4408	2.9036	47.5	16.9
	0.20	0.4920	2.7415	43.8	15.7
	0.25	0.5523	2.5704	39.6	14.3
	0.30	0.6252	2.3866	34.9	12.7
	0.35	0.7174	2.1835	29.4	10.5
	0.40	0.8441	1.9459	22.7	7.5
	0.45				
0.50					
2/3φ	0.	0.2985	4.4370	54.7	14.3
	0.05	0.3332	4.2078	51.8	13.8
	0.10	0.3729	3.9735	48.7	13.2
	0.15	0.4189	3.7330	45.2	12.4
	0.20	0.4730	3.4845	41.4	11.6
	0.25	0.5378	3.2251	37.2	10.6
	0.30	0.6179	2.9505	32.5	9.3
	0.35	0.7216	2.6523	27.1	7.6
	0.40	0.8685	2.3109	20.8	5.2
	0.45				
0.50					
φ	0.	0.2761	6.1928	53.0	9.9
	0.05	0.3110	5.8202	50.0	9.5
	0.10	0.3515	5.4419	46.8	9.1
	0.15	0.3992	5.0564	43.2	8.6
	0.20	0.4564	4.6616	39.3	8.0
	0.25	0.5263	4.2539	35.0	7.3
	0.30	0.6148	3.8277	30.3	6.4
	0.35	0.7326	3.3722	25.1	5.1
	0.40		2.8618		3.3
	0.45				
0.50					

$\omega = 5^\circ$ (主動),  $-5^\circ$ (受働),  $\phi = 35^\circ$

$\delta$	$k_1$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		2.0132		37.0
	0.05		1.9793		35.9
	0.10		1.9432		34.6
	0.15		1.9043		33.3
	0.20		1.8623		31.8
	0.25		1.8166		30.1
	0.30		1.7664		28.1
	0.35		1.7106		25.9
	0.40		1.6472		23.2
	0.45		1.5729		19.8
0.50		1.4807		15.2	
0°	0.	0.2853	3.1360	61.5	23.8
	0.05	0.3153	3.0397	59.3	23.1
	0.10	0.3484	2.9404	56.9	22.3
	0.15	0.3850	2.8376	54.2	21.4
	0.20	0.4259	2.7305	51.3	20.4
	0.25	0.4718	2.6183	48.1	19.2
	0.30	0.5240	2.4998	44.6	17.9
	0.35	0.5844	2.3733	40.6	16.4
	0.40	0.6557	2.2357	36.1	14.6
	0.45	0.7432	2.0820	30.9	12.3
0.50	0.8578	1.9012	24.6	9.2	
15°	0.	0.2532	4.9444	59.1	15.2
	0.05	0.2832	4.7365	56.6	14.7
	0.10	0.3168	4.5249	54.0	14.2
	0.15	0.3548	4.3089	51.1	13.7
	0.20	0.3981	4.0877	48.0	13.0
	0.25	0.4479	3.8599	44.5	12.3
	0.30	0.5059	3.6239	40.8	11.5
	0.35	0.5748	3.3771	36.8	10.5
	0.40	0.6586	3.1153	32.3	9.2
	0.45	0.7649	2.8310	27.3	7.7
0.50	0.9100	2.5079	21.5	5.5	
1/3φ	0.	0.2597	4.4411	59.6	16.9
	0.05	0.2897	4.2652	57.2	16.4
	0.10	0.3232	4.0858	54.6	15.8
	0.15	0.3609	3.9022	51.7	15.2
	0.20	0.4036	3.7135	48.6	14.5
	0.25	0.4525	3.5187	45.3	13.7
	0.30	0.5092	3.3161	41.6	12.7
	0.35	0.5761	3.1034	37.5	11.6
	0.40	0.6569	2.8766	33.1	10.3
	0.45	0.7587	2.6290	28.0	8.6
0.50	0.8962	2.3455	22.1	6.2	
2/3φ	0.	0.2381	6.6641	58.0	11.2
	0.05	0.2679	6.3428	55.4	10.9
	0.10	0.3019	6.0175	52.6	10.5
	0.15	0.3406	5.6874	49.6	10.1
	0.20	0.3853	5.3513	46.3	9.7
	0.25	0.4374	5.0078	42.8	9.1
	0.30	0.4991	4.6548	39.0	8.5
	0.35	0.5734	4.2890	34.9	7.7
	0.40	0.6657	3.9054	30.5	6.8
	0.45	0.7852	3.4945	25.6	5.6
0.50		3.0356		3.9	
φ	0.	0.2178	11.5770	56.4	6.1
	0.05	0.2475	10.9120	53.7	6.0
	0.10	0.2818	10.2424	50.7	5.8
	0.15	0.3218	9.5671	47.5	5.5
	0.20	0.3688	8.8848	44.1	5.3
	0.25	0.4248	8.1935	40.5	5.0
	0.30	0.4928	7.4902	36.6	4.6
	0.35	0.5772	6.7706	32.4	4.1
	0.40	0.6854	6.0271	28.0	3.6
	0.45		5.2461		2.8
0.50		4.3968		1.6	

表-3(6) 砂質土の土圧係数と崩壊角

$\omega = 5^\circ$  (主働),  $-5^\circ$  (受働),  $\phi = 40^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		2.3744		33.4
	0.05		2.3379		32.5
	0.10		2.2994		31.6
	0.15		2.2585		30.6
	0.20		2.2151		29.5
	0.25		2.1687		28.3
	0.30		2.1190		27.0
	0.35		2.0654		25.6
	0.40		2.0071		23.9
	0.45		1.9429		22.1
0.50		1.8711		19.9	
0°	0.	0.2277	3.8404	64.3	21.6
	0.05	0.2542	3.7355	62.2	21.1
	0.10	0.2832	3.6280	60.1	20.5
	0.15	0.3151	3.5176	57.7	19.8
	0.20	0.3504	3.4038	55.2	19.1
	0.25	0.3895	3.2863	52.6	18.4
	0.30	0.4330	3.1643	49.6	17.5
	0.35	0.4820	3.0369	46.5	16.6
	0.40	0.5374	2.9029	43.1	15.5
	0.45	0.6012	2.7607	39.3	14.2
0.50	0.6758	2.6076	35.2	12.8	
15°	0.	0.2041	6.4917	62.4	13.3
	0.05	0.2302	6.2485	60.2	13.0
	0.10	0.2594	6.0022	57.8	12.7
	0.15	0.2920	5.7524	55.3	12.3
	0.20	0.3287	5.4986	52.5	11.9
	0.25	0.3701	5.2400	49.6	11.4
	0.30	0.4173	4.9757	46.5	10.9
	0.35	0.4714	4.7044	43.2	10.3
	0.40	0.5343	4.4244	39.6	9.6
	0.45	0.6084	4.1331	35.8	8.8
0.50	0.6978	3.8266	31.6	7.9	
1/3φ	0.	0.2065	6.0877	62.6	14.1
	0.05	0.2327	5.8663	60.4	13.8
	0.10	0.2618	5.6419	58.0	13.4
	0.15	0.2943	5.4141	55.5	13.0
	0.20	0.3308	5.1824	52.8	12.6
	0.25	0.3720	4.9460	49.9	12.1
	0.30	0.4187	4.7040	46.8	11.6
	0.35	0.4723	4.4552	43.5	10.9
	0.40	0.5342	4.1980	39.9	10.2
	0.45	0.6071	3.9299	36.1	9.4
0.50	0.6946	3.6472	32.0	8.4	
2/3φ	0.	0.1882	11.0543	61.2	7.9
	0.05	0.2140	10.5527	58.8	7.7
	0.10	0.2433	10.0477	56.2	7.5
	0.15	0.2765	9.5387	53.5	7.3
	0.20	0.3144	9.0250	50.6	7.0
	0.25	0.3580	8.5056	47.5	6.8
	0.30	0.4085	7.9793	44.3	6.5
	0.35	0.4677	7.4443	40.8	6.1
	0.40	0.5380	6.8982	37.1	5.7
	0.45	0.6230	6.3375	33.2	5.2
0.50	0.7283	5.7564	29.1	4.6	
φ	0.	0.1702	30.2012	59.7	2.0
	0.05	0.1957	28.5211	57.1	1.9
	0.10	0.2250	26.8370	54.4	1.9
	0.15	0.2591	25.1482	51.5	1.8
	0.20	0.2989	23.4537	48.3	1.7
	0.25	0.3459	21.7520	45.0	1.6
	0.30	0.4019	20.0413	41.6	1.5
	0.35	0.4696	18.3188	37.9	1.3
	0.40	0.5531	16.5807	34.1	1.2
	0.45	0.6582	14.8208	30.2	1.0
0.50		13.0293		0.7	

$\omega = 5^\circ$  (主働),  $-5^\circ$  (受働),  $\phi = 45^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		2.8174		30.1
	0.05		2.7790		29.4
	0.10		2.7386		28.7
	0.15		2.6963		27.9
	0.20		2.6517		27.1
	0.25		2.6047		26.3
	0.30		2.5550		25.3
	0.35		2.5023		24.3
	0.40		2.4462		23.3
	0.45		2.3861		22.1
0.50		2.3213		20.8	
0°	0.	0.1788	4.7654	67.0	19.3
	0.05	0.2020	4.6499	65.1	18.9
	0.10		4.5322	63.1	18.5
	0.15	0.2554	4.4119	61.0	18.0
	0.20	0.2861	4.2890	58.8	17.5
	0.25	0.3198	4.1629	56.4	17.0
	0.30	0.3570	4.0334	53.9	16.4
	0.35	0.3982	3.8999	51.2	15.8
	0.40	0.4439	3.7619	48.4	15.1
	0.45	0.4951	3.6184	45.4	14.3
0.50	0.5527	3.4685	42.2	13.5	
15°	0.	0.1619	8.7571	65.6	11.3
	0.05	0.1847	8.4639	63.5	11.1
	0.10	0.2101	8.1680	61.3	10.8
	0.15	0.2383	7.8693	59.0	10.6
	0.20	0.2698	7.5673	56.6	10.3
	0.25	0.3051	7.2616	54.0	10.0
	0.30	0.3447	6.9515	51.3	9.7
	0.35	0.3894	6.6363	48.4	9.3
	0.40	0.4401	6.3151	45.4	8.9
	0.45	0.4980	5.9868	42.2	8.5
0.50	0.5647	5.6496	38.9	8.0	
1/3φ	0.	0.1619	8.7571	65.6	11.3
	0.05	0.1847	8.4639	63.5	11.1
	0.10	0.2101	8.1680	61.3	10.8
	0.15	0.2383	7.8693	59.0	10.6
	0.20	0.2698	7.5673	56.6	10.3
	0.25	0.3051	7.2616	54.0	10.0
	0.30	0.3447	6.9515	51.3	9.7
	0.35	0.3894	6.6363	48.4	9.3
	0.40	0.4401	6.3151	45.4	8.9
	0.45	0.4980	5.9868	42.2	8.5
0.50	0.5647	5.6496	38.9	8.0	
2/3φ	0.	0.1469	21.8197	64.3	4.3
	0.05	0.1693	20.8808	62.0	4.2
	0.10	0.1945	19.9390	59.7	4.2
	0.15	0.2232	18.9938	57.2	4.1
	0.20	0.2558	18.0447	54.5	4.0
	0.25	0.2931	17.0909	51.7	3.8
	0.30	0.3358	16.1316	48.8	3.7
	0.35	0.3852	15.1657	45.7	3.5
	0.40	0.4427	14.1916	42.5	3.4
	0.45	0.5103	13.2075	39.1	3.2
0.50	0.5907	12.2106	35.7	2.9	
φ	0.	0.1313		62.9	
	0.05	0.1531		60.5	
	0.10	0.6784		57.9	
	0.15	0.2077		55.1	
	0.20	0.2420		52.2	
	0.25	0.2824		49.1	
	0.30	0.3304		45.9	
	0.35	0.3880		42.5	
	0.40	0.4580		39.0	
	0.45	0.5445		35.5	
0.50	0.6537		31.8		

表-3(7) 砂質土の土圧係数と崩壊角

$\omega = 10^\circ$ (主働),  $-10^\circ$ (受働),  $\phi = 20^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.1742		48.3
	0.05		1.1478		43.1
	0.10		1.1128		35.1
	0.15		1.0573		19.4
	0.20				
	0.25				
	0.30				
	0.35				
	0.40				
	0.45				
0.50					
0°	0.	0.5779	1.5754	48.4	21.8
	0.05	0.6372	1.4814	43.3	18.1
	0.10	0.7138	1.3701	36.5	13.0
	0.15	0.8319	1.2173	25.8	4.4
	0.20				
	0.25				
	0.30				
	0.35				
	0.40				
	0.45				
0.50					
15°	0.	0.5118	1.9597	43.3	12.2
	0.05	0.5789	1.7962	38.2	9.7
	0.10	0.6695	1.6092	31.7	6.2
	0.15	0.8171	1.3652	22.3	0.3
	0.20				
	0.25				
	0.30				
	0.35				
	0.40				
	0.45				
0.50					
1/3φ	0.	0.5453	1.7406	45.8	16.7
	0.05	0.6085	1.6172	40.7	13.6
	0.10	0.6919	1.4736	34.0	9.4
	0.15	0.8238	1.2815	24.0	2.2
	0.20				
	0.25				
	0.30				
	0.35				
	0.40				
	0.45				
0.50					
2/3φ	0.	0.5181	1.9140	43.8	13.0
	0.05	0.5845	1.7590	38.7	10.4
	0.10	0.6736	1.5811	32.1	6.7
	0.15	0.8182	1.3479	22.6	0.6
	0.20				
	0.25				
	0.30				
	0.35				
	0.40				
	0.45				
0.50					
φ	0.	0.4940	2.1047	42.1	10.0
	0.05	0.5631	1.9140	37.0	7.8
	0.10	0.6577	1.6979	30.6	4.7
	0.15	0.8145		21.6	
	0.20				
	0.25				
	0.30				
	0.35				
	0.40				
	0.45				
0.50					

$\omega = 10^\circ$ (主働),  $-10^\circ$ (受働),  $\phi = 25^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.3617		41.0
	0.05		1.3291		37.8
	0.10		1.2911		33.9
	0.15		1.2452		28.7
	0.20		1.1856		21.2
	0.25		1.0901		7.2
	0.30				
	0.35				
	0.40				
	0.45				
0.50					
0°	0.	0.4692	1.8763	53.2	22.0
	0.05	0.5164	1.7854	49.6	19.8
	0.10	0.5720	1.6860	45.2	17.1
	0.15	0.6403	1.5739	39.9	13.7
	0.20	0.7310	1.4395	32.8	8.9
	0.25	0.8813	1.2454	21.6	0.5
	0.30				
	0.35				
	0.40				
	0.45				
0.50					
15°	0.	0.4147	2.4641	49.2	12.8
	0.05	0.4650	2.3009	45.4	11.3
	0.10	0.5263	2.1269	40.9	9.5
	0.15	0.6041	1.9362	35.6	7.2
	0.20	0.7118	1.7158	29.0	3.8
	0.25	0.9012		19.2	
	0.30				
	0.35				
	0.40				
	0.45				
0.50					
1/3φ	0.	0.4367	2.1842	50.8	16.3
	0.05	0.4858	2.0560	47.0	14.6
	0.10	0.5447	1.9180	42.6	12.4
	0.15	0.6186	1.7652	37.3	9.6
	0.20	0.7188	1.5858	30.5	5.8
	0.25	0.8909		20.1	
	0.30				
	0.35				
	0.40				
	0.45				
0.50					
2/3φ	0.	0.4096	2.5408	48.9	12.0
	0.05	0.4602	2.3679	45.0	10.6
	0.10	0.5220	2.1839	40.6	8.9
	0.15	0.6008	1.9827	35.3	6.6
	0.20	0.7103	1.7510	28.7	3.4
	0.25	0.9042		19.0	
	0.30				
	0.35				
	0.40				
	0.45				
0.50					
φ	0.	0.3853	2.9840	47.2	8.5
	0.05	0.4372	2.7535	43.3	7.4
	0.10	0.5017	2.5105	38.8	6.0
	0.15	0.5854	2.2482	33.6	4.1
	0.20	0.7045	1.9506	27.2	1.5
	0.25				
	0.30				
	0.35				
	0.40				
	0.45				
0.50					

表-3(8) 砂質土の土圧係数と崩壊角

$\omega = 10^\circ$ (主働), $-10^\circ$ (受働), $\phi = 30^\circ$						$\omega = 10^\circ$ (主働), $-10^\circ$ (受働), $\phi = 35^\circ$					
$\delta$	$k_h$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)	$\delta$	$k_h$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.5769		36.4	-15°	0.		1.8300		32.8
	0.05		1.5407		34.3		0.05		1.7912		31.3
	0.10		1.5006		31.8		0.10		1.7492		29.6
	0.15		1.4555		28.9		0.15		1.7036		27.6
	0.20		1.4035		25.3		0.20		1.6533		25.4
	0.25		1.3414		20.7		0.25		1.5973		22.9
	0.30		1.2616		14.1		0.30		1.5334		19.7
	0.35		1.1317		2.0		0.35		1.4579		15.8
	0.40						0.40		1.3625		10.3
	0.45						0.45		1.2129		0.7
0.50					0.50						
0°	0.	0.3794	2.2384	57.0	21.1	0°	0.	0.3044	2.6837	60.3	19.6
	0.05	0.4190	2.1456	54.1	19.6		0.05	0.3383	2.5865	57.9	18.6
	0.10	0.4642	2.0473	50.8	17.9		0.10	0.3764	2.4852	55.1	17.4
	0.15	0.5165	1.9418	47.0	15.9		0.15	0.4193	2.3789	52.1	16.1
	0.20	0.5786	1.8264	42.5	13.5		0.20	0.4684	2.2665	48.7	14.6
	0.25	0.6558	1.6960	37.1	10.5		0.25	0.5256	2.1461	44.9	12.9
	0.30	0.7596	1.5390	30.1	6.1		0.30	0.5937	2.0147	40.4	10.8
	0.35	0.9406		19.1			0.35	0.6784	1.8667	35.2	8.1
	0.40						0.40	0.7923	1.6895	28.6	4.4
	0.45						0.45	0.9868		18.8	
0.50					0.50						
15°	0.	0.3366	3.0983	53.9	12.3	15°	0.	0.2718	3.9255	58.0	11.2
	0.05	0.3774	2.9252	50.8	11.3		0.05	0.3060	3.7351	55.3	10.5
	0.10	0.4250	2.7452	47.3	10.2		0.10	0.3451	3.5398	52.3	9.8
	0.15	0.4817	2.5562	43.3	8.9		0.15	0.3902	3.3384	49.1	9.0
	0.20	0.5511	2.3544	38.8	7.3		0.20	0.4431	3.1293	45.5	8.0
	0.25	0.6402	2.1330	33.5	5.1		0.25	0.5062	2.9099	41.5	6.8
	0.30	0.7653	1.8756	27.0	2.1		0.30	0.5837	2.6762	37.1	5.4
	0.35						0.35	0.6833	2.4204	32.0	3.5
	0.40						0.40	0.8228	2.1247	25.8	0.9
	0.45						0.45				
0.50					0.50						
1/3φ	0.	0.3495	2.7748	54.8	14.8	1/3φ	0.	0.2784	3.5935	58.4	12.8
	0.05	0.3900	2.6326	51.8	13.7		0.05	0.3125	3.4287	55.8	12.1
	0.10	0.4368	2.4839	48.3	12.5		0.10	0.3514	3.2592	52.9	11.3
	0.15	0.4921	2.3269	44.4	10.9		0.15	0.3961	3.0838	49.7	10.4
	0.20	0.5592	2.1580	39.9	9.1		0.20	0.4481	2.9011	46.2	9.3
	0.25	0.6443	1.9712	34.6	6.7		0.25	0.5099	2.7087	42.2	8.0
	0.30	0.7621	1.7516	27.9	3.2		0.30	0.5852	2.5027	37.7	6.4
	0.35	0.9759		17.9			0.35	0.6813	2.2760	32.6	4.4
	0.40						0.40	0.8146	2.0120	26.4	1.6
	0.45						0.45				
0.50					0.50						
2/3φ	0.	0.3244	3.4784	53.1	10.0	2/3φ	0.	0.2562	4.9958	56.8	7.4
	0.05	0.3656	3.2681	49.9	9.2		0.05	0.2905	4.7202	54.0	6.9
	0.10	0.4139	3.0505	46.3	8.2		0.10	0.3301	4.4393	51.0	6.4
	0.15	0.4720	2.8233	42.3	7.1		0.15	0.3765	4.1516	47.6	5.8
	0.20	0.5438	2.5822	37.8	5.6		0.20	0.4315	3.8553	44.0	5.0
	0.25	0.6371	2.3197	32.5	3.7		0.25	0.4983	3.5473	40.0	4.1
	0.30	0.7698	2.0178	26.1	1.0		0.30	0.5816	3.2226	35.5	3.0
	0.35						0.35	0.6909	2.8720	30.5	1.5
	0.40						0.40	0.8480		24.6	
	0.45						0.45				
0.50					0.50						
φ	0.	0.3015	4.5154	51.5	5.9	φ	0.	0.2353	7.6536	55.3	2.7
	0.05	0.3431	4.2000	48.2	5.3		0.05	0.2696	7.1551	52.4	2.4
	0.10	0.3929	3.8764	44.5	4.6		0.10	0.3101	6.6506	49.2	2.0
	0.15	0.4539	3.5417	40.4	3.8		0.15	0.3583	6.1382	45.7	1.6
	0.20	0.5309	3.1909	35.9	2.7		0.20	0.4168	5.6155	41.9	1.2
	0.25	0.6334	2.8146	30.7	1.2		0.25	0.4896	5.0786	37.8	0.6
	0.30	0.7839		24.6			0.30	0.5833		33.4	
	0.35						0.35	0.7105		28.4	
	0.40						0.40				
	0.45						0.45				
0.50					0.50						

表-3(9) 砂質土の土圧係数と崩壊角

$\omega = 10^\circ$ (主動),  $-10^\circ$ (受働),  $\phi = 40^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		2.1319		29.6
	0.05		2.0909		28.4
	0.10		2.0474		27.2
	0.15		2.0009		25.8
	0.20		1.9509		24.3
	0.25		1.8968		22.6
	0.30		1.8378		20.7
	0.35		1.7725		18.5
	0.40		1.6989		15.9
	0.45		1.6133		12.7
0.50		1.5079		8.4	
0°	0.	0.2414	3.2418	63.4	17.8
	0.05	0.2707	3.1383	61.2	17.1
	0.10	0.3032	3.0315	58.9	16.2
	0.15	0.3395	2.9210	56.3	15.3
	0.20	0.3803	2.8060	53.5	14.4
	0.25	0.4264	2.6857	50.4	13.2
	0.30	0.4791	2.5587	47.0	12.0
	0.35	0.5404	2.4232	43.3	10.5
	0.40	0.6132	2.2762	39.0	8.7
	0.45	0.7030	2.1122	34.1	6.5
0.50	0.8214	1.9196	28.3	3.4	
15°	0.	0.2172	5.0405	61.6	9.7
	0.05	0.2464	4.8251	59.2	9.3
	0.10	0.2793	4.6059	56.6	8.8
	0.15	0.3167	4.3822	53.8	8.2
	0.20	0.3596	4.1530	50.8	7.6
	0.25	0.4091	3.9172	47.6	6.9
	0.30	0.4671	3.6729	44.0	6.0
	0.35	0.5363	3.4175	40.2	5.0
	0.40	0.6208	3.1467	35.9	3.8
	0.45	0.7285	2.8528	31.2	2.3
0.50	0.8760	2.5189	25.7	0.2	
1/3φ	0.	0.2197	4.7803	61.8	10.5
	0.05	0.2489	4.5816	59.4	10.0
	0.10	0.2817	4.3792	56.8	9.5
	0.15	0.3190	4.1723	54.1	8.9
	0.20	0.3617	3.9602	51.1	8.2
	0.25	0.4108	3.7415	47.9	7.5
	0.30	0.4682	3.5146	44.3	6.6
	0.35	0.5363	3.2769	40.5	5.6
	0.40	0.6195	3.0243	36.2	4.3
	0.45	0.7249	2.7493	31.5	2.7
0.50	0.8687	2.4360	26.0	0.5	
2/3φ	0.	0.2009	7.7253	60.3	4.5
	0.05	0.2299	7.3302	57.8	4.2
	0.10	0.2631	6.9309	55.1	3.9
	0.15	0.3014	6.5264	52.1	3.6
	0.20	0.3461	6.1156	49.0	3.2
	0.25	0.3987	5.6969	45.6	2.7
	0.30	0.4616	5.2679	42.0	2.2
	0.35	0.5383	4.8250	38.0	1.5
	0.40	0.6346	4.3626	33.8	0.7
	0.50	0.7610		29.1	
φ	0.	0.1823		58.9	
	0.05	0.2110		56.2	
	0.10	0.2446		53.3	
	0.15	0.2843		50.2	
	0.20	0.3316		46.8	
	0.25	0.3890		43.3	
	0.30	0.4598		39.5	
	0.35	0.5493		35.5	
	0.40	0.6666		31.2	
	0.45				
0.50					

$\omega = 10^\circ$ (主動),  $-10^\circ$ (受働),  $\phi = 45^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		2.4970		26.6
	0.05		2.4543		25.7
	0.10		2.4094		24.8
	0.15		2.3620		23.8
	0.20		2.3118		22.7
	0.25		2.2584		21.5
	0.30		2.2014		20.2
	0.35		2.1402		18.8
	0.40		2.0739		17.2
	0.45		2.0012		15.4
0.50		1.9203		13.3	
0°	0.	0.1884	3.9558	66.4	15.8
	0.05	0.2137	3.8441	64.4	15.3
	0.10	0.2417	3.7298	62.2	14.7
	0.15	0.2728	3.6124	59.9	14.0
	0.20	0.3073	3.4915	57.5	13.4
	0.25	0.3458	3.3667	54.9	12.6
	0.30	0.3890	3.2372	52.1	11.7
	0.35	0.4378	3.1021	49.1	10.8
	0.40	0.4934	2.9602	45.8	9.7
	0.45	0.5576	2.8096	42.3	8.5
0.50	0.6332	2.6477	38.3	7.1	
15°	0.	0.1711	6.5990	65.0	8.0
	0.05	0.1961	6.3486	62.8	7.6
	0.10	0.2241	6.0951	60.5	7.3
	0.15	0.2558	5.8381	58.0	6.9
	0.20	0.2915	5.5769	55.4	6.5
	0.25	0.3322	5.3108	52.6	6.1
	0.30	0.3787	5.0389	49.6	5.6
	0.35	0.4323	4.7598	46.4	5.0
	0.40	0.4949	4.4718	43.0	4.3
	0.45	0.5690	4.1723	39.4	3.5
0.50	0.6586	3.8572	35.4	2.6	
1/3φ	0.	0.1711	6.5990	65.0	8.0
	0.05	0.1961	6.3486	62.8	7.6
	0.10	0.2241	6.0951	60.5	7.3
	0.15	0.2558	5.8381	58.0	6.9
	0.20	0.2915	5.5769	55.4	6.5
	0.25	0.3322	5.3108	52.6	6.1
	0.30	0.3787	5.0389	49.6	5.6
	0.35	0.4323	4.7598	46.4	5.0
	0.40	0.4949	4.4718	43.0	4.3
	0.45	0.5690	4.1723	39.4	3.5
0.50	0.6586	3.8572	35.4	2.6	
2/3φ	0.	0.1557	13.4875	63.7	1.3
	0.05	0.1803	12.8405	61.3	1.1
	0.10	0.2084	12.1900	58.8	1.0
	0.15	0.2407	11.5353	56.2	0.8
	0.20	0.2780	10.8756	53.3	0.6
	0.25	0.3213	10.2099	50.3	0.4
	0.30	0.3721	9.5368	47.2	0.1
	0.35	0.4322		43.8	
	0.40	0.5043		40.3	
	0.45	0.5926		36.6	
0.50	0.7034		32.6		
φ	0.	0.1395		62.3	
	0.05	0.1637		59.8	
	0.10	0.1920		57.1	
	0.15	0.2253		54.2	
	0.20	0.2648		51.1	
	0.25	0.3123		47.8	
	0.30	0.3700		44.4	
	0.35	0.4413		40.9	
	0.40	0.5311		37.1	
	0.45	0.6473		33.3	
0.50					

表-3(四) 砂質土の土圧係数と崩壊角

$\omega = 15^\circ$ (主働),  $-15^\circ$ (受働),  $\phi = 20^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.1045		35.0
	0.05		1.0554		20.8
	0.10				
	0.15				
0°	0.	0.6614	1.3453	42.3	10.3
	0.05	0.7623	1.2100	33.4	2.5
	0.10				
	0.15				
15°	0.	0.6028	1.5478	37.9	2.9
	0.05	0.7232		29.8	
	0.10				
	0.15				
1/3 $\phi$	0.	0.6328	1.4353	40.0	6.4
	0.05	0.7432		31.5	
	0.10				
	0.15				
2/3 $\phi$	0.	0.6085	1.5249	38.3	3.5
	0.05	0.7269		30.1	
	0.10				
	0.15				
$\phi$	0.	0.5865	1.6184	36.9	1.3
	0.05	0.7123		29.0	
	0.10				
	0.15				

$\omega = 15^\circ$ (主働),  $-15^\circ$ (受働),  $\phi = 25^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.2640		32.5
	0.05		1.2195		27.1
	0.10		1.1628		19.4
	0.15		1.0777		6.3
0°	0.	0.5226	1.6207	49.9	14.2
	0.05	0.5854	1.5149	45.1	10.7
	0.10	0.6675	1.3899	38.7	5.8
	0.15	0.7951		29.1	
15°	0.	0.4695	1.9874	46.1	6.1
	0.05	0.5384	1.8146	41.3	3.7
	0.10	0.6320	1.6172	35.2	0.3
	0.15	0.7854		26.5	
1/3 $\phi$	0.	0.4910	1.8175	47.6	9.2
	0.05	0.5576	1.6761	42.7	6.3
	0.10	0.6463	1.5126	36.6	2.4
	0.15	0.7886		27.5	
2/3 $\phi$	0.	0.4644	2.0327	45.8	5.4
	0.05	0.5339	1.8514	41.0	3.1
	0.10	0.6286		34.9	
	0.15	0.7848		26.3	
$\phi$	0.	0.4402	2.2839	44.3	2.4
	0.05	0.5125	2.0547	39.4	0.5
	0.10	0.6129		33.5	
	0.15	0.7830		25.3	

$\omega = 15^\circ$ (主働),  $-15^\circ$ (受働),  $\phi = 30^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.4489		30.0
	0.05		1.4044		26.9
	0.10		1.3534		23.0
	0.15		1.2927		18.0
	0.20		1.2156		11.1
	0.25				
	0.30				
0°	0.	0.4161	1.9318	54.9	15.0
	0.05	0.4646	1.8316	51.4	12.9
	0.10	0.5222	1.7222	47.3	10.3
	0.15	0.5935	1.5992	42.3	7.0
	0.20	0.6888	1.4521	35.7	2.5
	0.25	0.8484		25.5	
	0.30				
15°	0.	0.3730	2.5017	51.9	6.9
	0.05	0.4238	2.3307	48.3	5.5
	0.10	0.4859	2.1485	44.0	3.7
	0.15	0.5652	1.9489	39.0	1.4
	0.20	0.6756		32.8	
	0.25	0.8708		23.7	
	0.30				
1/3 $\phi$	0.	0.3861	2.2939	52.8	9.2
	0.05	0.4362	2.1492	49.2	7.6
	0.10	0.4969	1.9939	45.0	5.6
	0.15	0.5737	1.8226	40.0	3.0
	0.20	0.6790		33.7	
	0.25	0.8622		24.2	
	0.30				
2/3 $\phi$	0.	0.3606	2.7369	51.1	4.8
	0.05	0.4120	2.5356	47.4	3.6
	0.10	0.4755	2.3223	43.2	2.0
	0.15	0.5575		38.2	
	0.20	0.6729		32.0	
	0.25	0.8809		23.2	
	0.30				
$\phi$	0.	0.3371	3.3371	49.6	1.2
	0.05	0.3897	3.0560	45.8	0.2
	0.10	0.4558		41.5	
	0.15	0.5432		36.6	
	0.20	0.6696		30.6	
	0.25				
	0.30				

$\omega = 15^\circ$ (主働),  $-15^\circ$ (受働),  $\phi = 35^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.6651		27.5
	0.05		1.6198		25.4
	0.10		1.5700		23.0
	0.15		1.5144		20.1
	0.20		1.4511		16.6
	0.25		1.3763		12.3
	0.30		1.2814		6.2
0°	0.	0.3301	2.3020	58.9	14.5
	0.05	0.3698	2.2012	56.1	13.1
	0.10	0.4154	2.0946	52.9	11.4
	0.15	0.4685	1.9804	49.3	9.5
	0.20	0.5322	1.8557	45.1	7.2
	0.25	0.6117	1.7152	40.0	4.2
	0.30	0.7196	1.5463	33.5	0.1
15°	0.	0.2968	3.1437	56.6	6.6
	0.05	0.3373	2.9636	53.6	5.6
	0.10	0.3847	2.7765	50.2	4.5
	0.15	0.4416	2.5800	46.5	3.2
	0.20	0.5116	2.3705	42.2	1.6
	0.25	0.6018		37.2	
	0.30	0.7291		31.0	
1/3 $\phi$	0.	0.3035	2.9269	57.1	8.1
	0.05	0.3439	2.7678	54.1	7.1
	0.10	0.3909	2.6018	50.8	5.9
	0.15	0.4470	2.4270	47.0	4.4
	0.20	0.5156	2.2396	42.8	2.7
	0.25	0.6034	2.0330	37.7	0.4
	0.30	0.7262		31.5	
2/3 $\phi$	0.	0.2808	3.8082	55.5	3.1
	0.05	0.3216	3.5622	52.4	2.4
	0.10	0.3700	3.3085	48.9	1.5
	0.15	0.4289	3.0445	45.1	0.5
	0.20	0.5025		40.8	
	0.25	0.5993		35.8	
	0.30	0.7390		29.9	
$\phi$	0.	0.2591		54.0	
	0.05	0.3003		50.8	
	0.10	0.3502		47.2	
	0.15	0.4121		43.3	
	0.20	0.4917		39.0	
	0.25	0.5995		34.1	
	0.30	0.7612		28.3	

表-3(III) 砂質土の土圧係数と崩壊角

$\omega = 15^\circ$  (主働),  $-15^\circ$  (受働),  $\phi = 40^\circ$

$\delta$	$k_h$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.9203		25.0
	0.05		1.8739		23.5
	0.10		1.8242		21.8
	0.15		1.7703		19.9
	0.20		1.7114		17.7
	0.25		1.6461		15.2
	0.30		1.5721		12.2
	0.35		1.4855		8.5
	0.40		1.3768		3.4
	0.50				
0°	0.	0.2594	2.7539	62.4	13.4
	0.05	0.2927	2.6497	60.0	12.4
	0.10	0.3303	2.5412	57.4	11.2
	0.15	0.3730	2.4275	54.5	10.0
	0.20	0.4223	2.3074	51.2	8.5
	0.25	0.4799	2.1788	47.6	6.8
	0.30	0.5490	2.0388	43.4	4.8
	0.35	0.6355	1.8813	38.4	2.2
	0.40	0.7527		32.3	
	0.50	0.9543		23.2	
15°	0.	0.2346	3.9765	60.6	5.6
	0.05	0.2680	3.7798	58.0	5.0
	0.10	0.3064	3.5781	55.2	4.3
	0.15	0.3509	3.3702	52.1	3.4
	0.20	0.4034	3.1544	48.7	2.5
	0.25	0.4664	2.9280	44.9	1.3
	0.30	0.5441		40.7	
	0.35	0.6444		35.9	
	0.40	0.7856		30.1	
	0.50				
1/3 $\phi$	0.	0.2372	3.8077	60.8	6.4
	0.05	0.2705	3.6241	58.2	5.7
	0.10	0.3088	3.4356	55.4	4.9
	0.15	0.3532	3.2411	52.3	4.1
	0.20	0.4053	3.0388	48.9	3.0
	0.25	0.4676	2.8263	45.2	1.9
	0.30	0.5443	2.5994	41.0	0.4
	0.35	0.6429		36.1	
	0.40	0.7812		30.3	
	0.50				
2/3 $\phi$	0.	0.2177	5.5954	59.4	0.7
	0.05	0.2510	5.2681	56.7	0.3
	0.10	0.2900		53.7	
	0.15	0.3360		50.5	
	0.20	0.3913		46.9	
	0.25	0.4590		43.1	
	0.30	0.5447		38.8	
	0.35	0.6584		34.1	
	0.40	0.8241		28.5	
	0.50				
$\phi$	0.	0.1984		58.0	
	0.05	0.2316		55.1	
	0.10	0.2714		52.0	
	0.15	0.3194		48.6	
	0.20	0.3788		44.9	
	0.25	0.4538		41.0	
	0.30	0.5522		36.7	
	0.35	0.6888		32.0	
	0.40				
	0.50				

$\omega = 15^\circ$  (主働),  $-15^\circ$  (受働),  $\phi = 45^\circ$

$\delta$	$k_h$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		2.2247		22.5
	0.05		2.1774		21.4
	0.10		2.1272		20.1
	0.15		2.0738		18.8
	0.20		2.0167		17.3
	0.25		1.9552		15.6
	0.30		1.8883		13.8
	0.35		1.8147		11.6
	0.40		1.7321		9.1
	0.50		1.6366		6.0
0°	0.	0.2009	3.3176	65.7	11.9
	0.05	0.2291	3.2078	63.5	11.1
	0.10	0.2607	3.0946	61.2	10.3
	0.15	0.2961	2.9775	58.7	9.4
	0.20	0.3362	2.8558	56.0	8.4
	0.25	0.3818	2.7286	53.0	7.3
	0.30	0.4343	2.5944	49.8	6.1
	0.35	0.4956	2.4514	46.2	4.6
	0.40	0.5690	2.2964	42.2	2.9
	0.50	0.6600	2.1238	37.6	0.7
15°	0.	0.1831	5.0947	64.3	4.3
	0.05	0.2111	4.8736	61.9	3.8
	0.10	0.2429	4.6486	59.5	3.3
	0.15	0.2792	4.4191	56.8	2.8
	0.20	0.3211	4.1840	53.9	2.2
	0.25	0.3698	3.9421	50.8	1.4
	0.30	0.4271	3.6916	47.4	0.6
	0.35	0.4958		43.7	
	0.40	0.5801		39.7	
	0.50	0.6880		35.2	
1/3 $\phi$	0.	0.1831	5.0947	64.3	4.3
	0.05	0.2111	4.8736	61.9	3.8
	0.10	0.2429	4.6486	59.5	3.3
	0.15	0.2792	4.4191	56.8	2.8
	0.20	0.3211	4.1840	53.9	2.2
	0.25	0.3698	3.9421	50.8	1.4
	0.30	0.4271	3.6916	47.4	0.6
	0.35	0.4958		43.7	
	0.40	0.5801		39.7	
	0.50	0.6880		35.2	
2/3 $\phi$	0.	0.1671		63.0	
	0.05	0.1948		60.5	
	0.10	0.2269		57.9	
	0.15	0.2643		55.0	
	0.20	0.3084		51.9	
	0.25	0.3608		48.7	
	0.30	0.4243		45.2	
	0.35	0.5026		41.4	
	0.40	0.6021		37.3	
	0.50	0.7346		32.9	
$\phi$	0.	0.1503		61.7	
	0.05	0.1776		59.0	
	0.10	0.2101		56.1	
	0.15	0.2490		53.0	
	0.20	0.2963		49.8	
	0.25	0.3546		46.3	
	0.30	0.4280		42.6	
	0.35	0.5229		38.7	
	0.40	0.6506		34.6	
	0.50				



表-3(2) 砂質土の土圧係数と崩壊角

$\omega = 20^\circ$ (主働),  $-20^\circ$ (受働),  $\phi = 25^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.1525		18.1
	0.05		1.0764		5.9
	0.10				
	0.15				
0°	0.	0.6091	1.3589	44.5	2.9
	0.05	0.7174		36.4	
	0.10				
	0.15				
15°	0.	0.5608		41.3	
	0.05	0.6851		33.8	
	0.10				
	0.15				
1/3φ	0.	0.5806		42.5	
	0.05	0.6983		34.8	
	0.10				
	0.15				
2/3φ	0.	0.5561		41.0	
	0.05	0.6819		33.5	
	0.10				
	0.15				
φ	0.	0.5335		39.8	
	0.05	0.6669		32.5	
	0.10				
	0.15				

$\omega = 20^\circ$ (主働),  $-20^\circ$ (受働),  $\phi = 30^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.3204		20.9
	0.05		1.2616		15.7
	0.10		1.1882		8.7
	0.15				
0°	0.	0.4694	1.6475	52.0	7.1
	0.05	0.5345	1.5316	47.5	3.7
	0.10	0.6201		41.6	
	0.15	0.7547		32.7	
15°	0.	0.4266	1.9969	49.2	0.2
	0.05	0.4964		44.6	
	0.10	0.5917		38.9	
	0.15	0.7488		30.8	
1/3φ	0.	0.4397	1.8734	50.0	2.1
	0.05	0.5081		45.4	
	0.10	0.6003		39.7	
	0.15	0.7501		31.3	
2/3φ	0.	0.4142		48.4	
	0.05	0.4854		43.9	
	0.10	0.5836		38.2	
	0.15	0.7482		30.3	
φ	0.	0.3904		47.0	
	0.05	0.4641		42.5	
	0.10	0.5683		36.9	
	0.15	0.7488		29.3	

$\omega = 20^\circ$ (主働),  $-20^\circ$ (受働),  $\phi = 35^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.5098		20.6
	0.05		1.4552		17.5
	0.10		1.3931		13.8
	0.15		1.3202		9.2
	0.20		1.2285		2.8
	0.25				
	0.30				
0°	0.	0.3656	1.9669	57.1	8.3
	0.05	0.4145	1.8586	53.8	6.2
	0.10	0.4730	1.7407	49.9	3.7
	0.15	0.5460	1.6084	45.2	0.6
	0.20	0.6443		39.1	
	0.25	0.8106		29.7	
	0.30				
15°	0.	0.3316	2.5170	54.8	1.1
	0.05	0.3822		51.4	
	0.10	0.4443		47.4	
	0.15	0.5242		42.6	
	0.20	0.6358		36.8	
	0.25	0.8346		28.2	
	0.30				
1/3φ	0.	0.3386	2.3803	55.3	2.5
	0.05	0.3888	2.2207	51.8	0.9
	0.10	0.4501		47.9	
	0.15	0.5285		43.1	
	0.20	0.6372		37.2	
	0.25	0.8285		28.5	
	0.30				
2/3φ	0.	0.3151		53.8	
	0.05	0.3664		50.2	
	0.10	0.4304		46.2	
	0.15	0.5141		41.5	
	0.20	0.6335		35.7	
	0.25	0.8527		27.5	
	0.30				
φ	0.	0.2926		52.4	
	0.05	0.3449		48.7	
	0.10	0.4116		44.6	
	0.15	0.5012		40.0	
	0.20	0.6335		34.4	
	0.25				
	0.30				

$\omega = 20^\circ$ (主働),  $-20^\circ$ (受働),  $\phi = 40^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.7292		19.4
	0.05		1.6759		17.3
	0.10		1.6176		14.9
	0.15		1.5530		12.1
	0.20		1.4800		8.8
	0.25		1.3942		4.7
	0.30				
0°	0.	0.2837	2.3426	61.2	8.1
	0.05	0.3228	2.2351	58.5	6.7
	0.10	0.3680	2.1214	55.5	5.1
	0.15	0.4212	1.9999	52.0	3.3
	0.20	0.4854	1.8673	48.0	1.0
	0.25	0.5661		43.3	
	0.30	0.6764		37.2	
15°	0.	0.2581	3.1617	59.5	0.9
	0.05	0.2976		56.6	
	0.10	0.3444		53.4	
	0.15	0.4006		49.8	
	0.20	0.4703		45.7	
	0.25	0.5606		41.0	
	0.30	0.6888		35.2	
1/3φ	0.	0.2607	3.0533	59.6	1.6
	0.05	0.3002	2.8785	56.8	0.6
	0.10	0.3468		53.6	
	0.15	0.4027		50.0	
	0.20	0.4717		46.0	
	0.25	0.5610		41.2	
	0.30	0.6870		35.4	
2/3φ	0.	0.2405		58.3	
	0.05	0.2803		55.2	
	0.10	0.3281		51.9	
	0.15	0.3868		48.3	
	0.20	0.4612		44.2	
	0.25	0.5602		39.5	
	0.30	0.7051		33.8	
φ	0.	0.2202		56.9	
	0.05	0.2602		53.7	
	0.10	0.3095		50.3	
	0.15	0.3716		46.5	
	0.20	0.4529		42.3	
	0.25	0.5651		37.7	
	0.30	0.7376		32.3	

表一 3(13) 砂質土の土圧係数と崩壊角

$\omega = 20^\circ$  (主動),  $-20^\circ$  (受動),  $\phi = 45^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.9868		17.7
	0.05		1.9338		16.1
	0.10		1.8770		14.5
	0.15		1.8159		12.6
	0.20		1.7493		10.5
	0.25		1.6759		8.1
	0.30		1.5932		5.2
	0.35		1.4969		1.6
	0.40				
	0.45				
	0.50				
0°	0.	0.2175	2.7981	64.8	7.3
	0.05	0.2497	2.6880	62.5	6.3
	0.10	0.2862	2.5734	59.9	5.2
	0.15	0.3281	2.4535	57.1	3.9
	0.20	0.3767	2.3269	54.0	2.5
	0.25	0.4340	2.1916	50.5	0.8
	0.30	0.5032		46.6	
	0.35	0.5904		41.9	
	0.40	0.7092		36.2	
	0.45	0.9155		27.7	
	0.50				
15°	0.	0.1990	3.9939	63.5	0.1
	0.05	0.2311		60.9	
	0.10	0.2682		58.2	
	0.15	0.3116		55.3	
	0.20	0.3631		52.0	
	0.25	0.4251		48.4	
	0.30	0.5022		44.4	
	0.35	0.6021		39.8	
	0.40	0.7435		34.4	
	0.45				
	0.50				
1/3φ	0.	0.1990	3.9939	63.5	0.1
	0.05	0.2311		60.9	
	0.10	0.2682		58.2	
	0.15	0.3116		55.3	
	0.20	0.3631		52.0	
	0.25	0.4251		48.4	
	0.30	0.5022		44.4	
	0.35	0.6021		39.8	
	0.40	0.7435		34.4	
	0.45				
	0.50				
2/3φ	0.	0.1823		62.2	
	0.05	0.2143		59.6	
	0.10	0.2520		56.7	
	0.15	0.2971		53.5	
	0.20	0.3518		50.2	
	0.25	0.4197		46.5	
	0.30	0.5066		42.4	
	0.35	0.6236		37.9	
	0.40	0.7968		32.6	
	0.45				
	0.50				
φ	0.	0.1647		60.9	
	0.05	0.1964		58.1	
	0.10	0.2349		55.0	
	0.15	0.2823		51.7	
	0.20	0.3419		48.1	
	0.25	0.4187		44.3	
	0.30	0.5217		40.2	
	0.35	0.6684		35.7	
	0.40				
	0.50				

表一 3 (14) 砂質土の土圧係数と崩壊角

$\omega = 25^\circ$  (主動),  $-25^\circ$  (受働),  $\phi = 30^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.1743		6.5
	0.05				
	0.10				
	0.15				
0°	0.	0.5566		47.3	
	0.05	0.6699		39.9	
	0.10				
	0.15				
15°	0.	0.5169		44.9	
	0.05	0.6433		37.8	
	0.10				
	0.15				
1/3 $\phi$	0.	0.5292		45.6	
	0.05	0.6515		38.4	
	0.10				
	0.15				
2/3 $\phi$	0.	0.5051		44.2	
	0.05	0.6354		37.3	
	0.10				
	0.15				
$\phi$	0.	0.4821		43.1	
	0.05				
	0.10				
	0.15				

$\omega = 25^\circ$  (主動),  $-25^\circ$  (受働),  $\phi = 35^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.3537		11.2
	0.05				6.3
	0.10				
	0.15				
0°	0.	0.4176	1.6568	54.6	0.3
	0.05	0.4836		50.3	
	0.10	0.5713		44.8	
	0.15	0.7104		36.7	
15°	0.	0.3833		52.4	
	0.05	0.4530		48.1	
	0.10	0.5487		42.8	
	0.15	0.7076		35.1	
1/3 $\phi$	0.	0.3903		52.9	
	0.05	0.4593		48.6	
	0.10	0.5533		43.2	
	0.15	0.7078		35.4	
2/3 $\phi$	0.	0.3664		51.5	
	0.05	0.4379		47.1	
	0.10	0.5378		41.8	
	0.15	0.7081		34.4	
$\phi$	0.	0.3432		50.2	
	0.05	0.4170		45.8	
	0.10	0.5233		40.6	
	0.15				

$\omega = 25^\circ$  (主動),  $-25^\circ$  (受働),  $\phi = 40^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.5490		12.2
	0.05		1.4856		9.2
	0.10		1.4141		5.6
	0.15		1.3306		1.2
	0.20				
	0.25				
	0.30				
0°	0.	0.3173	1.9820	59.7	1.8
	0.05	0.3657		56.5	
	0.10	0.4242		52.8	
	0.15	0.4976		48.4	
	0.20	0.5974		42.7	
	0.25	0.7679		33.9	
	0.30				
15°	0.	0.2908		57.9	
	0.05	0.3404		54.6	
	0.10	0.4017		50.8	
	0.15	0.4810		46.4	
	0.20	0.5927		40.9	
	0.25	0.7928		32.8	
	0.30				
1/3 $\phi$	0.	0.2935		58.1	
	0.05	0.3430		54.8	
	0.10	0.4040		51.0	
	0.15	0.4827		46.6	
	0.20	0.5930		41.0	
	0.25	0.7896		32.9	
	0.30				
2/3 $\phi$	0.	0.2724		56.8	
	0.05	0.3227		53.4	
	0.10	0.3862		49.5	
	0.15	0.4703		45.1	
	0.20	0.5921		39.6	
	0.25	0.8195		32.0	
	0.30				
$\phi$	0.	0.2511		55.5	
	0.05	0.3022		52.0	
	0.10	0.3685		48.0	
	0.15	0.4592		43.6	
	0.20	0.5959		38.3	
	0.25				
	0.30				

$\omega = 25^\circ$  (主動),  $-25^\circ$  (受働),  $\phi = 45^\circ$

$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$\alpha_a$ (度)	$\alpha_p$ (度)
-15°	0.		1.7717		11.7
	0.05		1.7113		9.7
	0.10		1.6456		7.4
	0.15		1.5732		4.7
	0.20		1.4916		1.5
	0.25				
	0.30				
0°	0.	0.2399	2.3606	63.8	1.9
	0.05	0.2778	2.2475	61.2	0.5
	0.10	0.3220		58.3	
	0.15	0.3744		55.0	
	0.20	0.4380		51.2	
	0.25	0.5188		46.7	
	0.30	0.6300		41.1	
15°	0.	0.2205		62.5	
	0.05	0.2586		59.7	
	0.10	0.3040		56.6	
	0.15	0.3590		53.2	
	0.20	0.4275		49.4	
	0.25	0.5169		44.9	
	0.30	0.6444		39.4	
1/3 $\phi$	0.	0.2205		62.5	
	0.05	0.2586		59.7	
	0.10	0.3040		56.6	
	0.15	0.3590		53.2	
	0.20	0.4275		49.4	
	0.25	0.5169		44.9	
	0.30	0.6444		39.4	
2/3 $\phi$	0.	0.2029		61.2	
	0.05	0.2412		58.3	
	0.10	0.2877		55.2	
	0.15	0.3455		51.6	
	0.20	0.4196		47.7	
	0.25	0.5196		43.2	
	0.30	0.6682		37.9	
$\phi$	0.	0.1842		60.0	
	0.05	0.2226		56.9	
	0.10	0.2705		53.6	
	0.15	0.3322		49.9	
	0.20	0.4143		45.9	
	0.25	0.5304		41.5	
	0.30				

表-3(15) 砂質土の土圧係数と崩壊角

$\omega = 30^\circ$ (主動),  $-30^\circ$ (受働),  $\phi = 35^\circ$

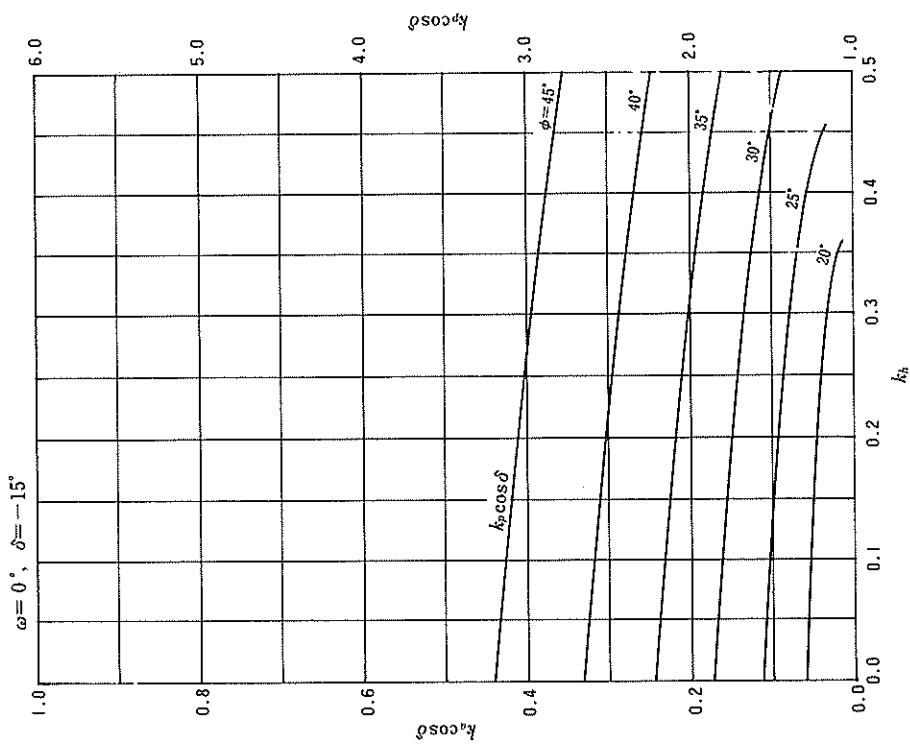
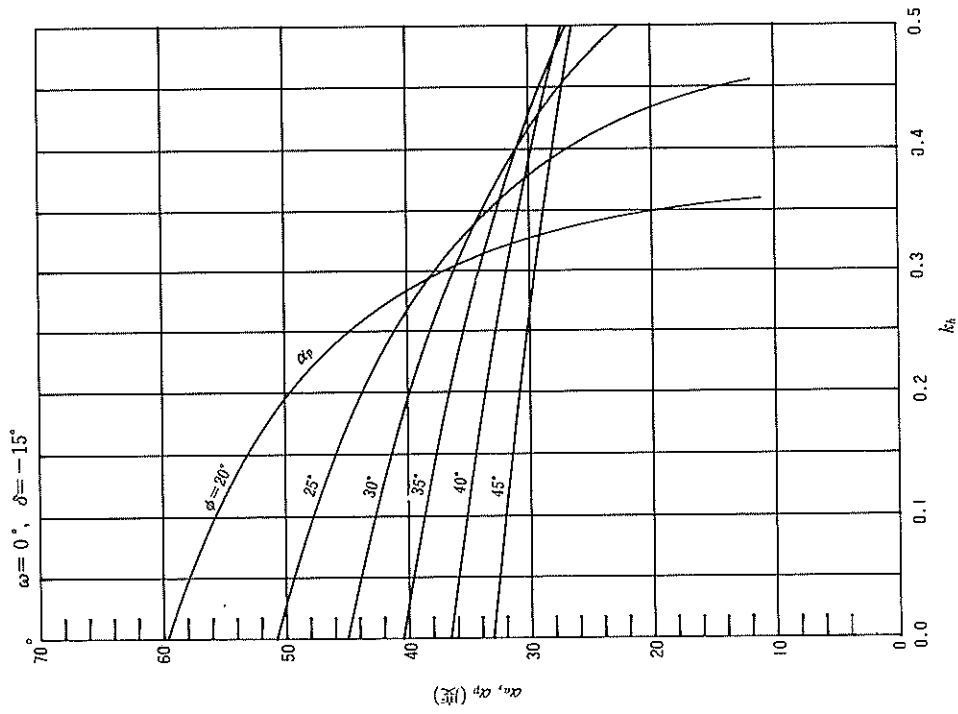
$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$a_a$ (度)	$a_p$ (度)
-15°	0.				
	0.05				
	0.10				
0°	0.	0.5037		50.5	
	0.05	0.6198		43.6	
	0.10				
15°	0.	0.4711		48.6	
	0.05				
	0.10				
1/3φ	0.	0.4778		49.0	
	0.05				
	0.10				
2/3φ	0.	0.4547		47.8	
	0.05				
	0.10				
φ	0.				
	0.05				
	0.10				

$\omega = 30^\circ$ (主動),  $-30^\circ$ (受働),  $\phi = 40^\circ$

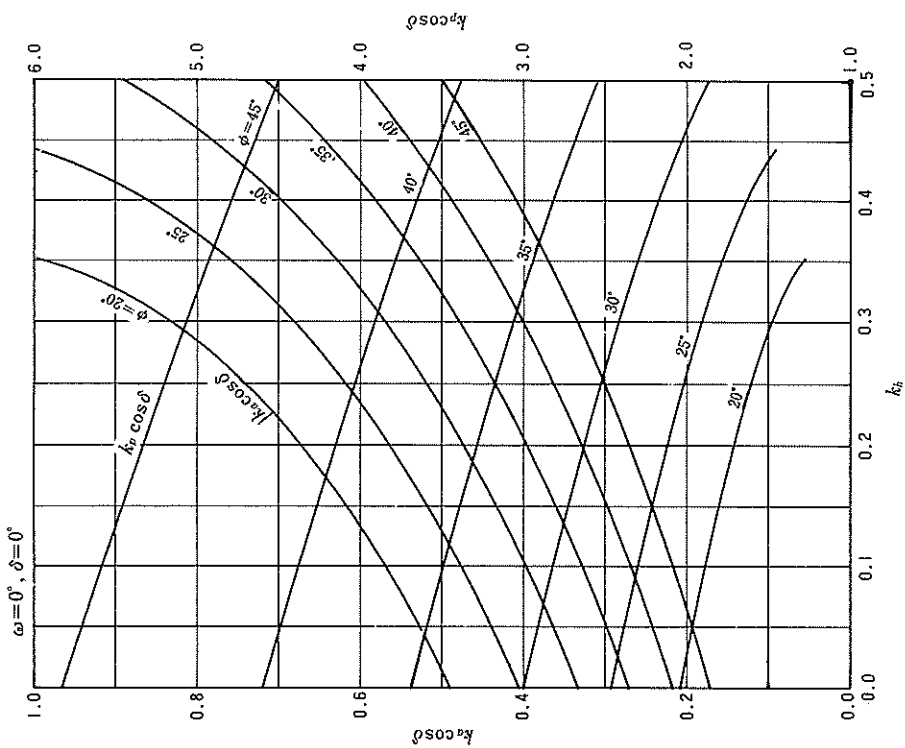
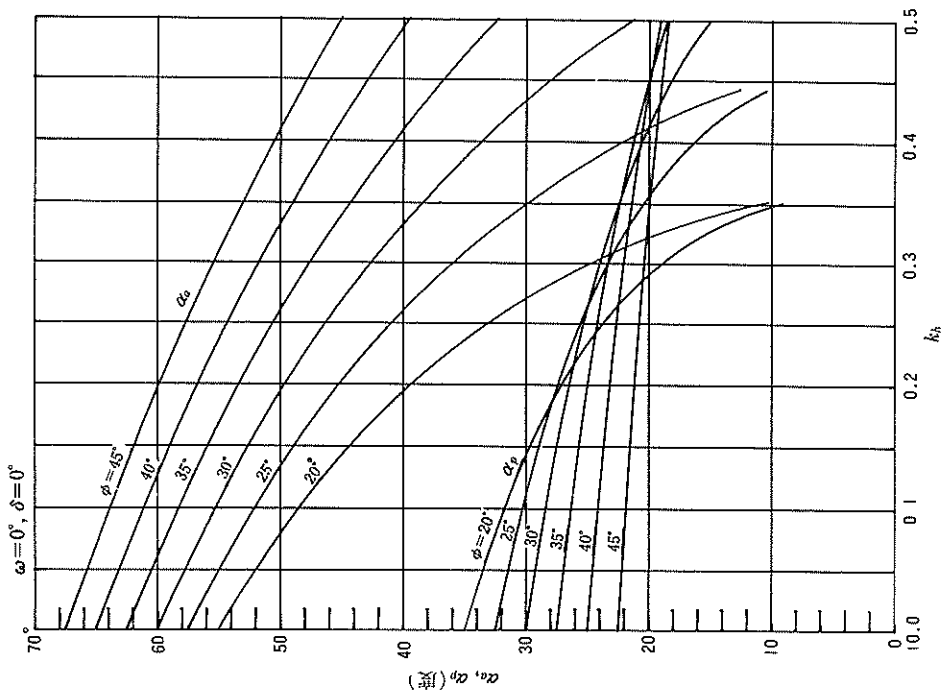
$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$a_a$ (度)	$a_p$ (度)
-15°	0.		1.3679		2.6
	0.05				
	0.10				
0°	0.	0.3669		57.5	
	0.05	0.4327		53.5	
	0.10	0.5209		48.4	
15°	0.	0.6624		40.8	
	0.05	0.3397		55.8	
	0.10	0.4083		51.8	
1/3φ	0.	0.5032		46.7	
	0.05	0.3425		56.0	
	0.10	0.4108		51.9	
2/3φ	0.	0.5050		46.9	
	0.05	0.3206		54.8	
	0.10	0.3911		50.7	
φ	0.	0.4911		45.7	
	0.05	0.2981		53.6	
	0.10	0.3708		49.4	

$\omega = 30^\circ$ (主動),  $-30^\circ$ (受働),  $\phi = 45^\circ$

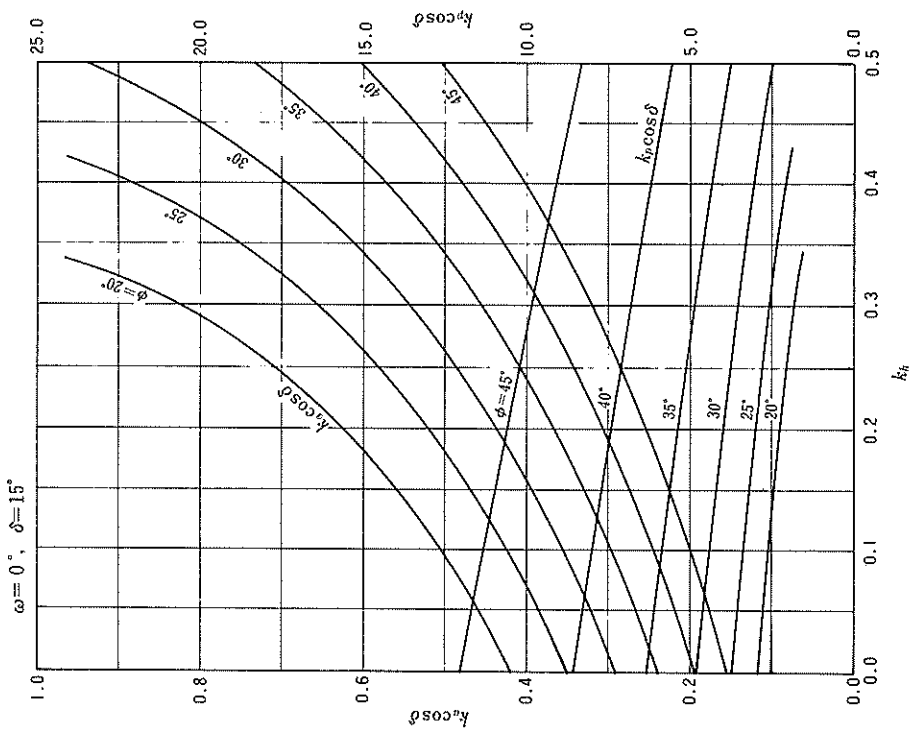
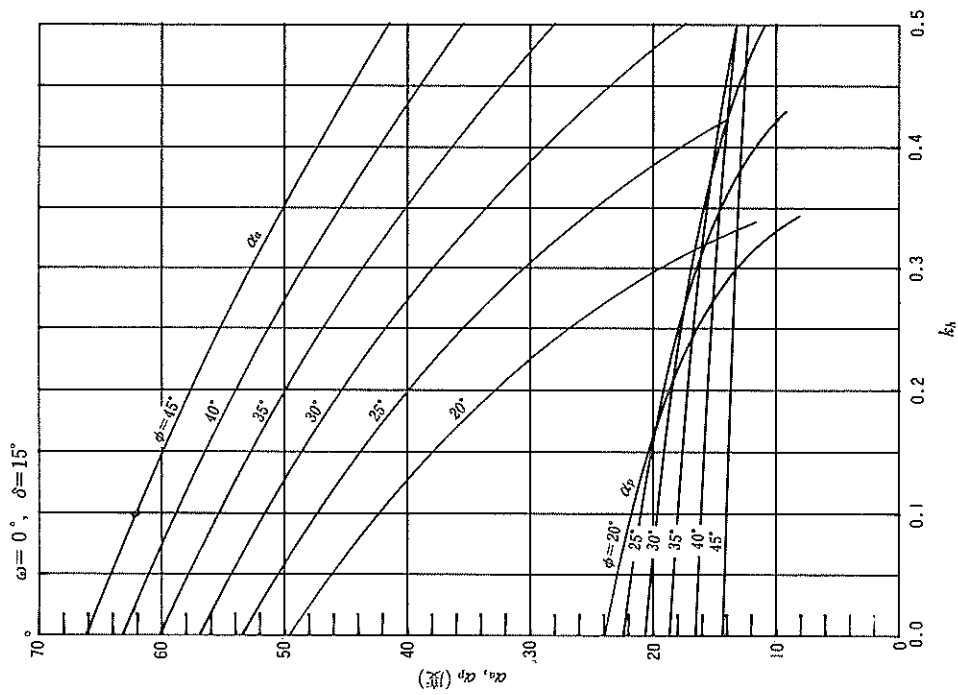
$\delta$	$k_a$	$K_a \cos \delta$	$K_p \cos \delta$	$a_a$ (度)	$a_p$ (度)
-15°	0.		1.5686		4.3
	0.05		1.4976		1.4
	0.10				
	0.15				
	0.20				
	0.25				
0°	0.	0.2710		62.5	
	0.05	0.3181		59.5	
	0.10	0.3755		56.0	
	0.15	0.4484		51.8	
	0.20	0.5482		46.5	
	0.25	0.7205		38.3	
15°	0.	0.2507		61.2	
	0.05	0.2986		58.0	
	0.10	0.3583		54.4	
	0.15	0.4361		50.2	
	0.20	0.5464		45.0	
	0.25				
1/3φ	0.	0.2507		61.2	
	0.05	0.2986		58.0	
	0.10	0.3583		54.4	
	0.15	0.4361		50.2	
	0.20	0.5464		45.0	
	0.25				
2/3φ	0.	0.2321		60.0	
	0.05	0.2806		56.7	
	0.10	0.3427		53.1	
	0.15	0.4260		48.8	
	0.20	0.5484		43.7	
	0.25				
φ	0.	0.2120		58.8	
	0.05	0.2612		55.4	
	0.10	0.3262		51.6	
	0.15	0.4169		47.3	
	0.20				
	0.25				



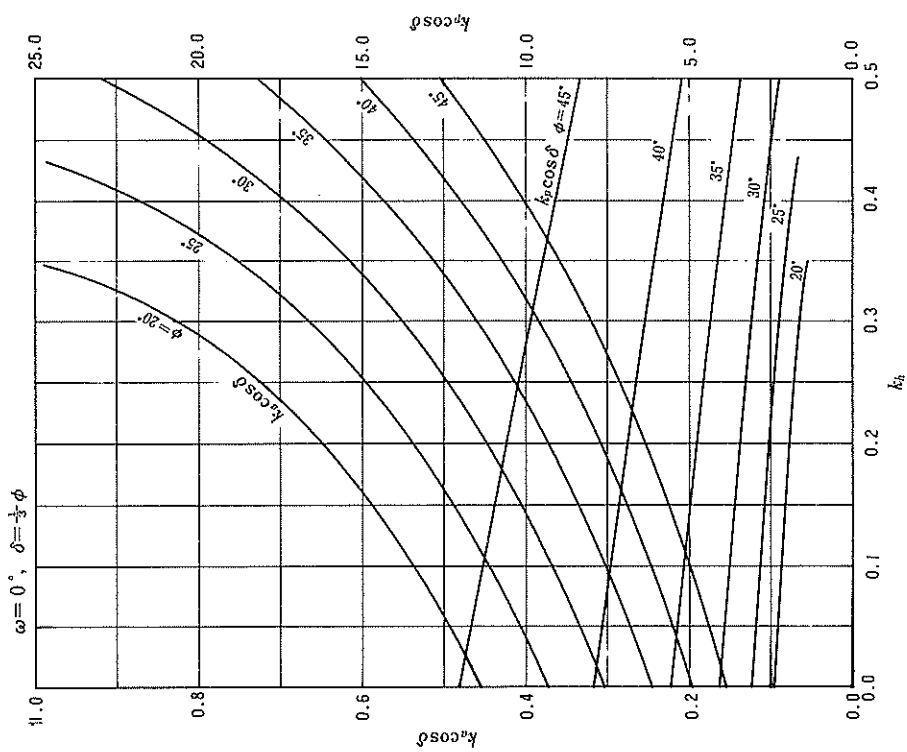
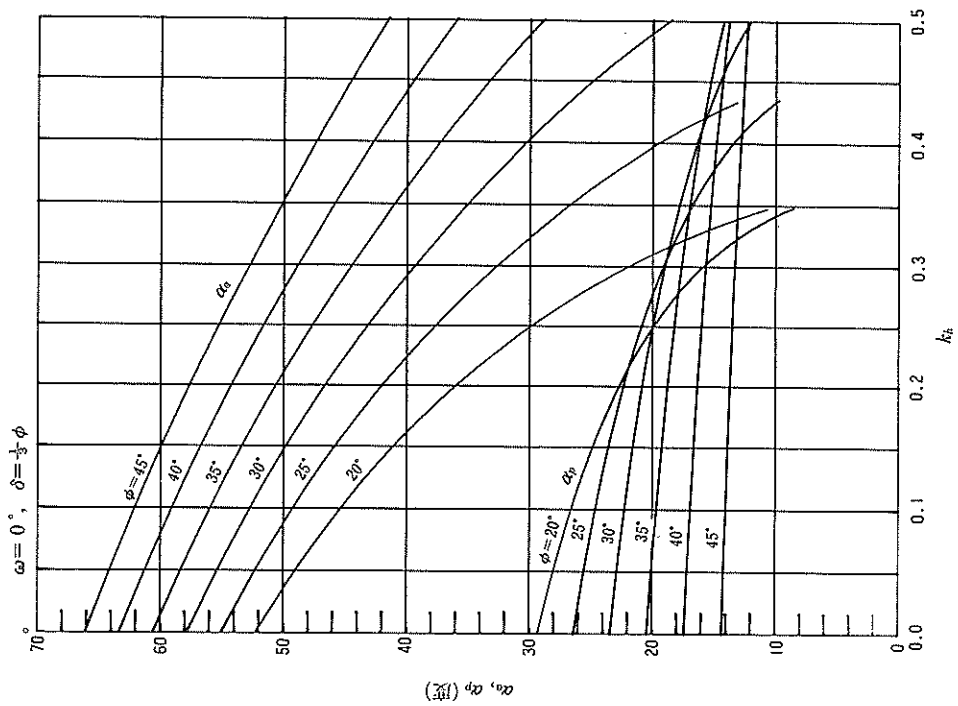
図一 4(1) 砂質土の土圧係数と崩壊角



図一(4)(2) 砂質土の土圧係数と崩壊角



図一4(3) 砂質土の土圧係数と崩壊角



図一4(4) 砂質土の土圧係数と崩壊角



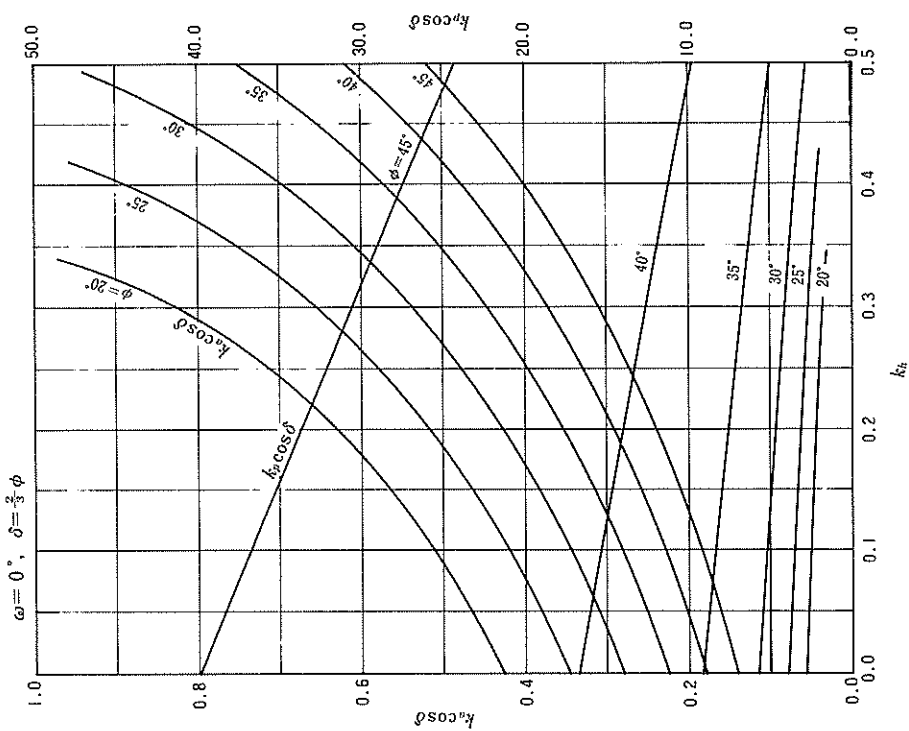
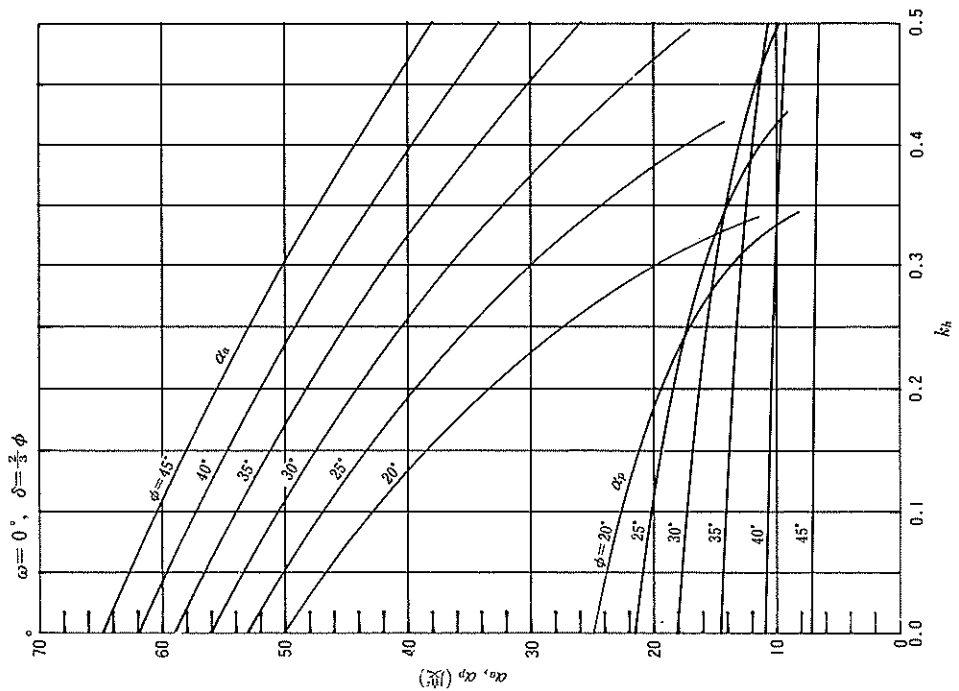
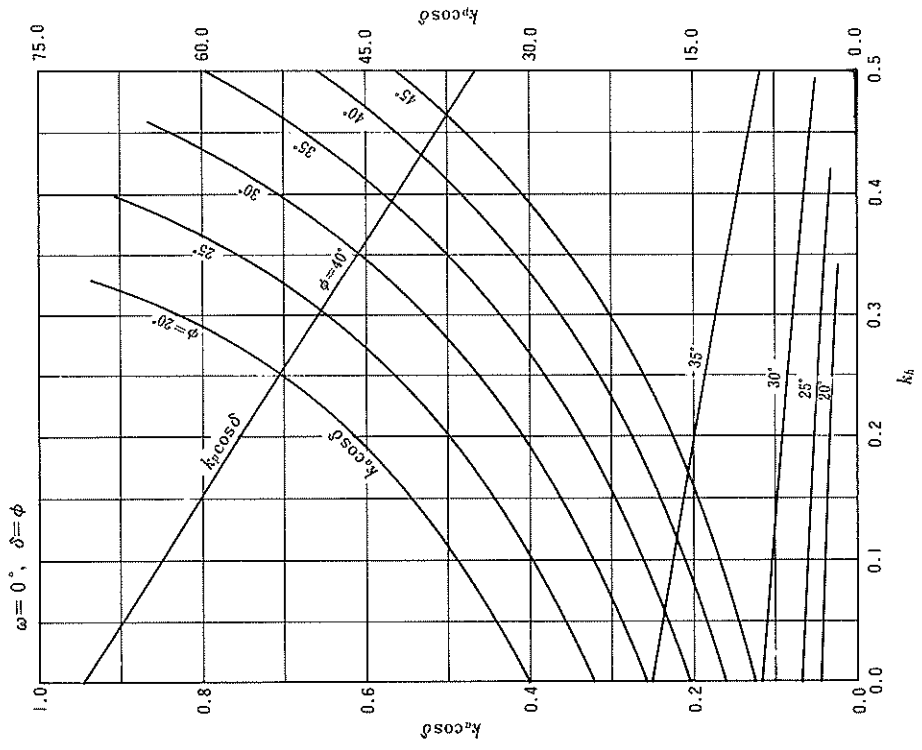
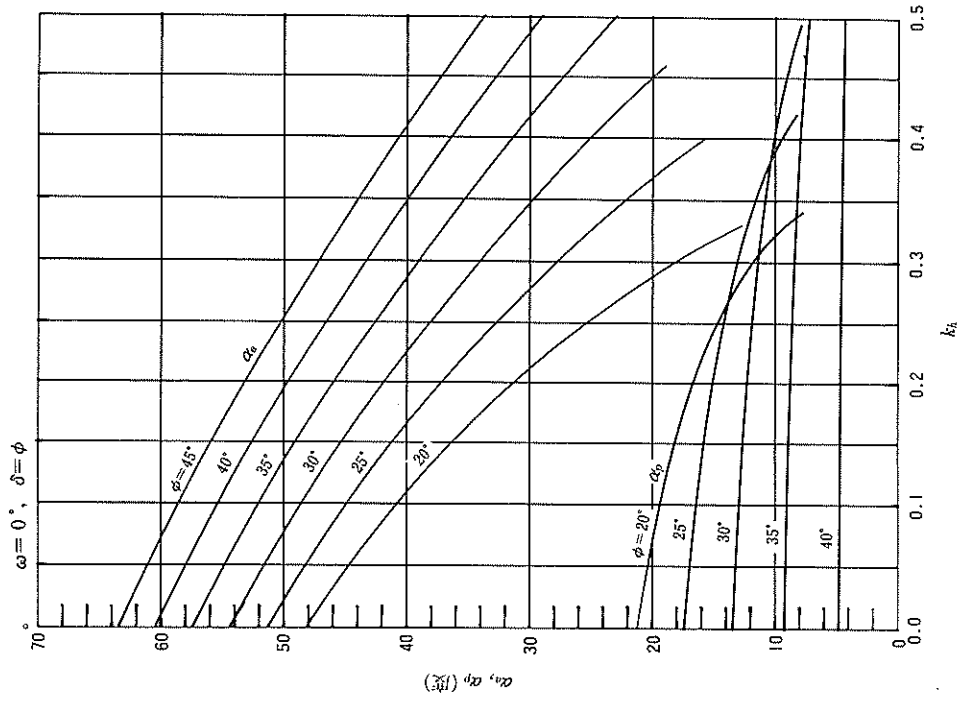
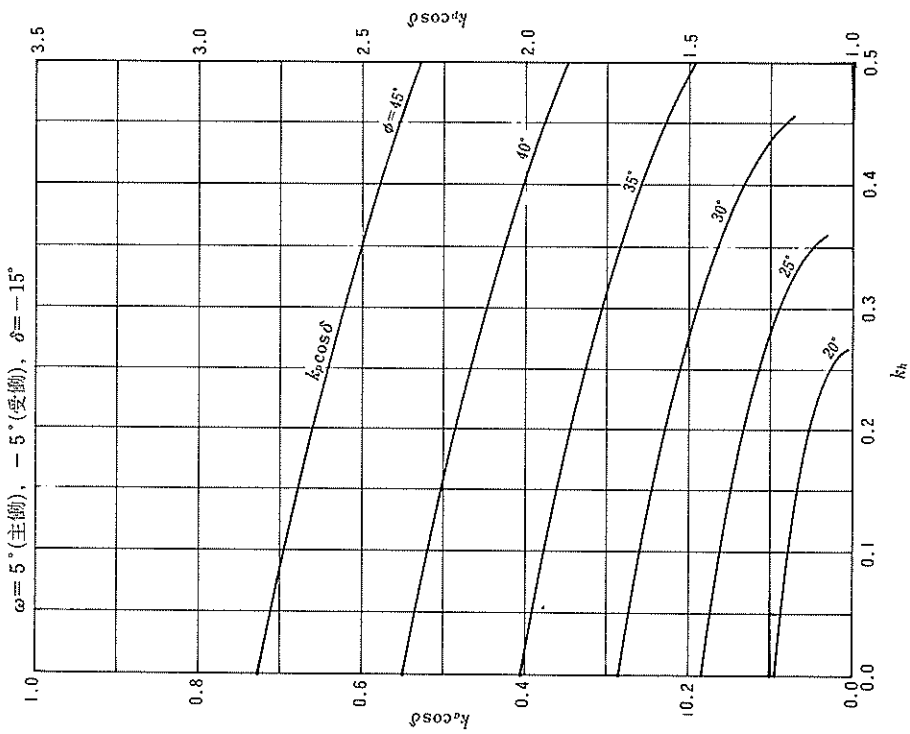
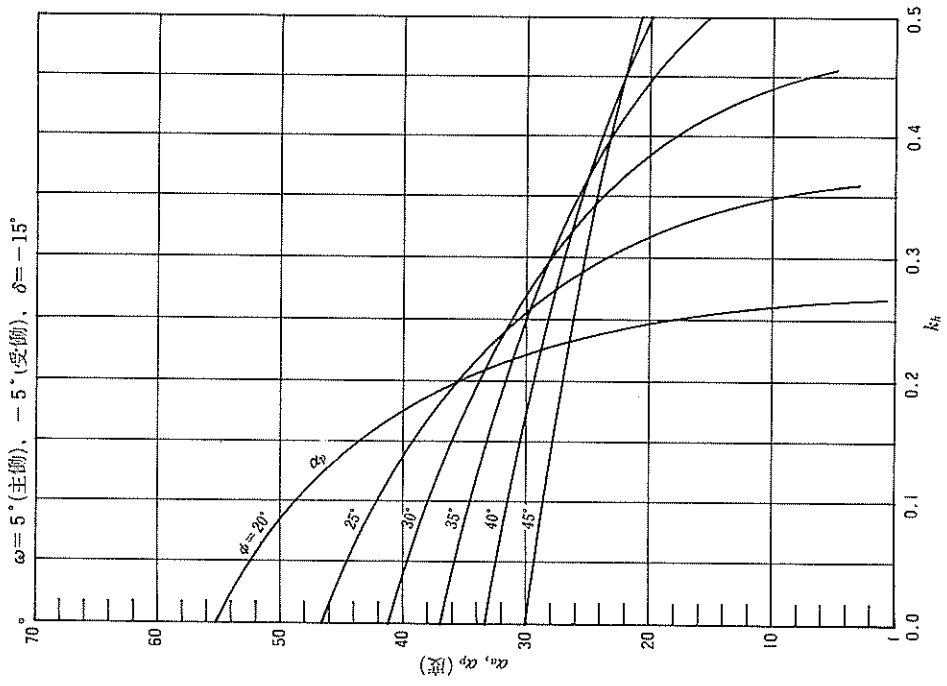


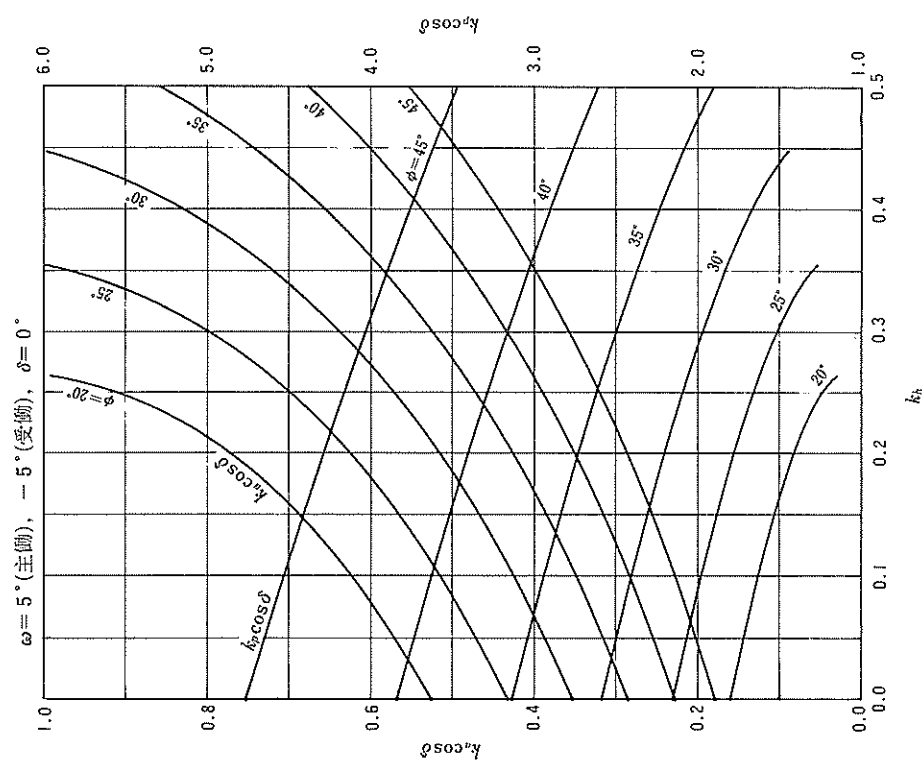
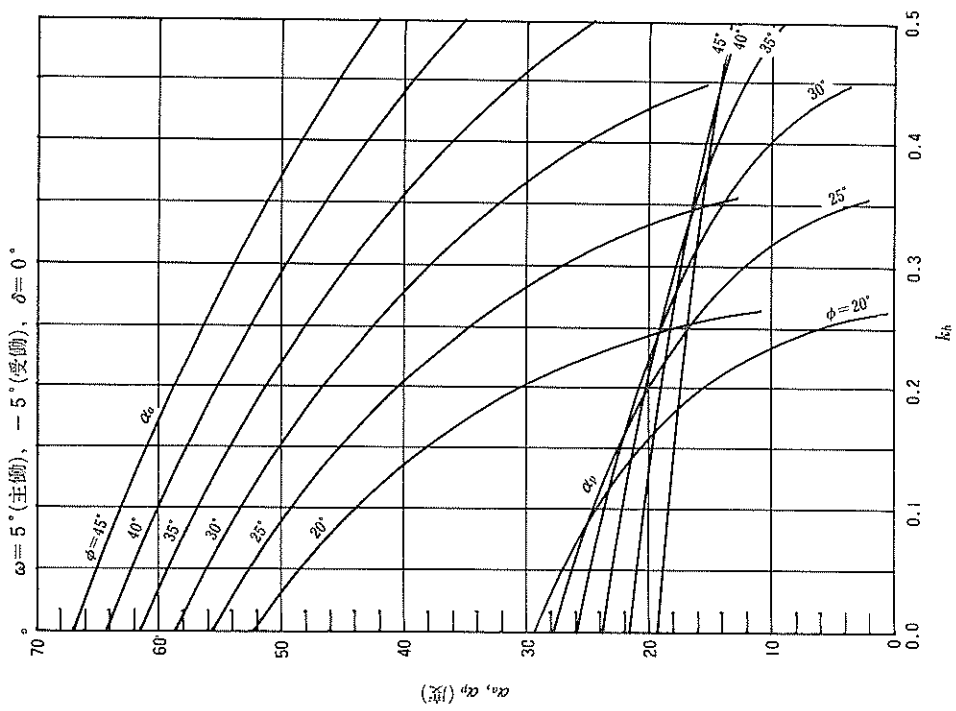
図-4(5) 砂質土の土圧係数と前傾角



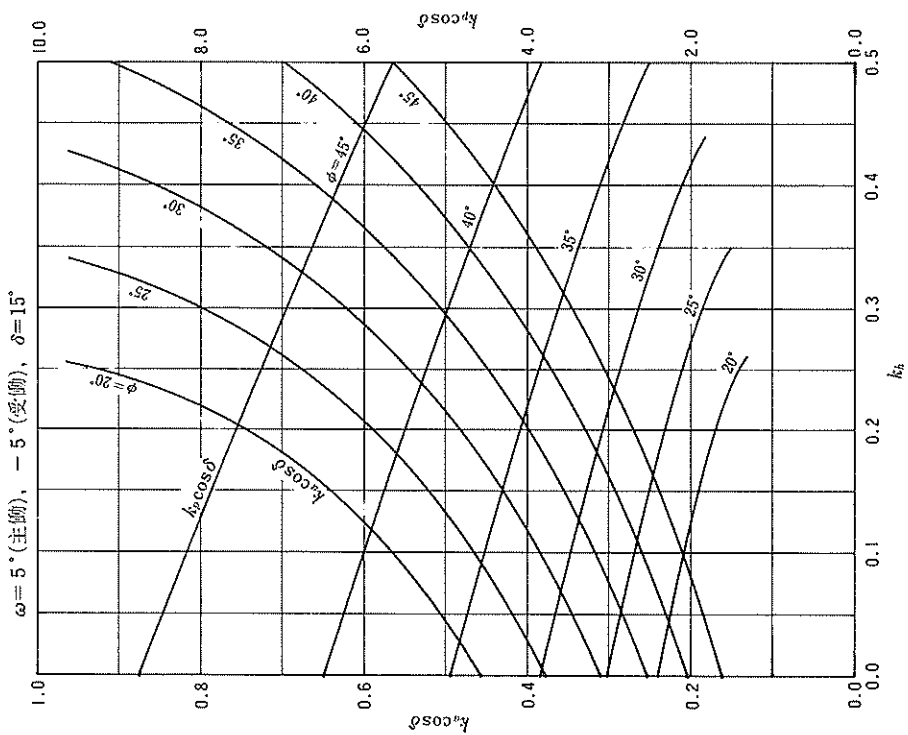
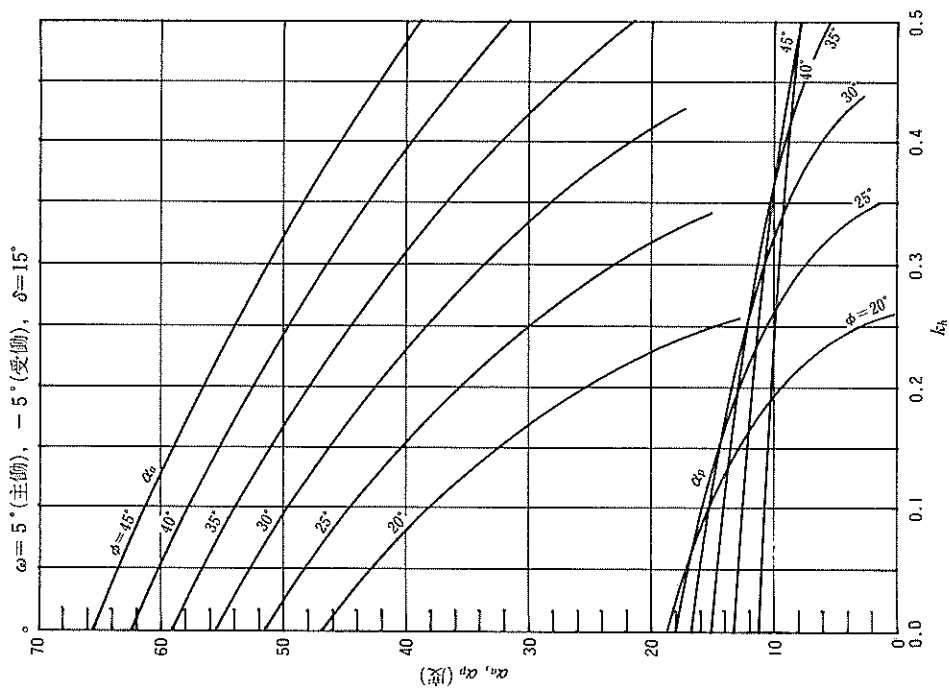
図一4(6) 砂質土の土圧係数と崩壊角



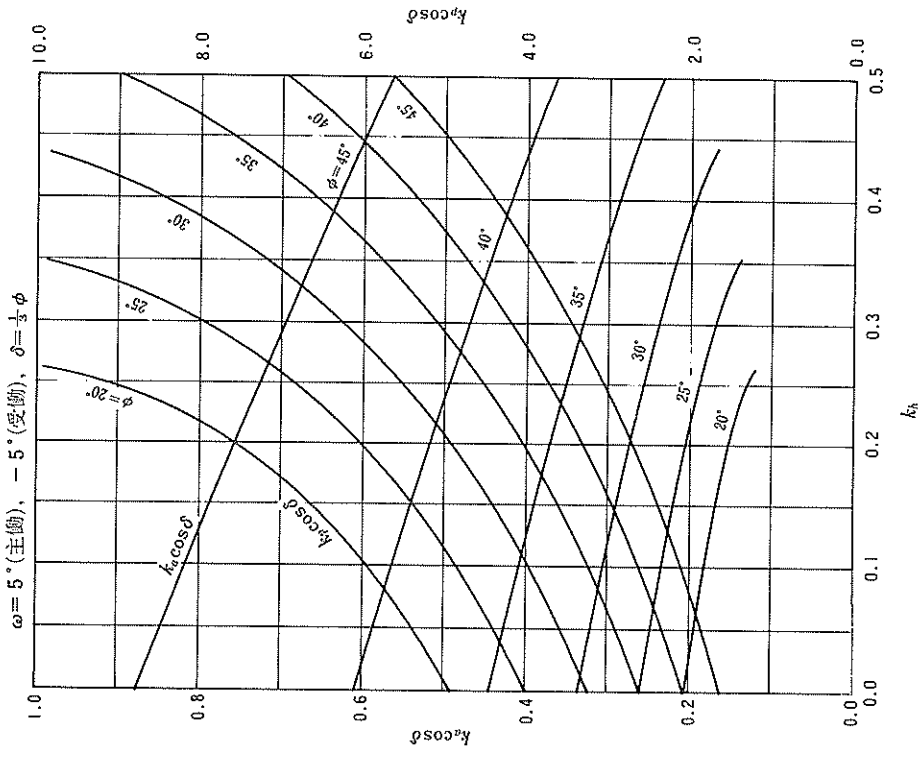
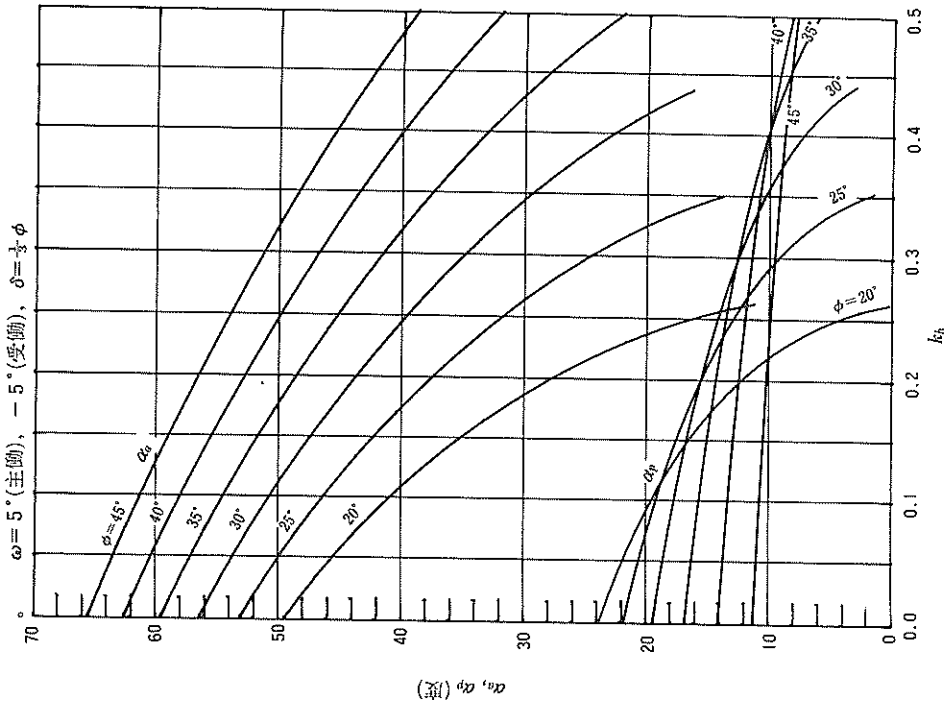
図一4(7) 砂質土の土圧係数と崩壊角



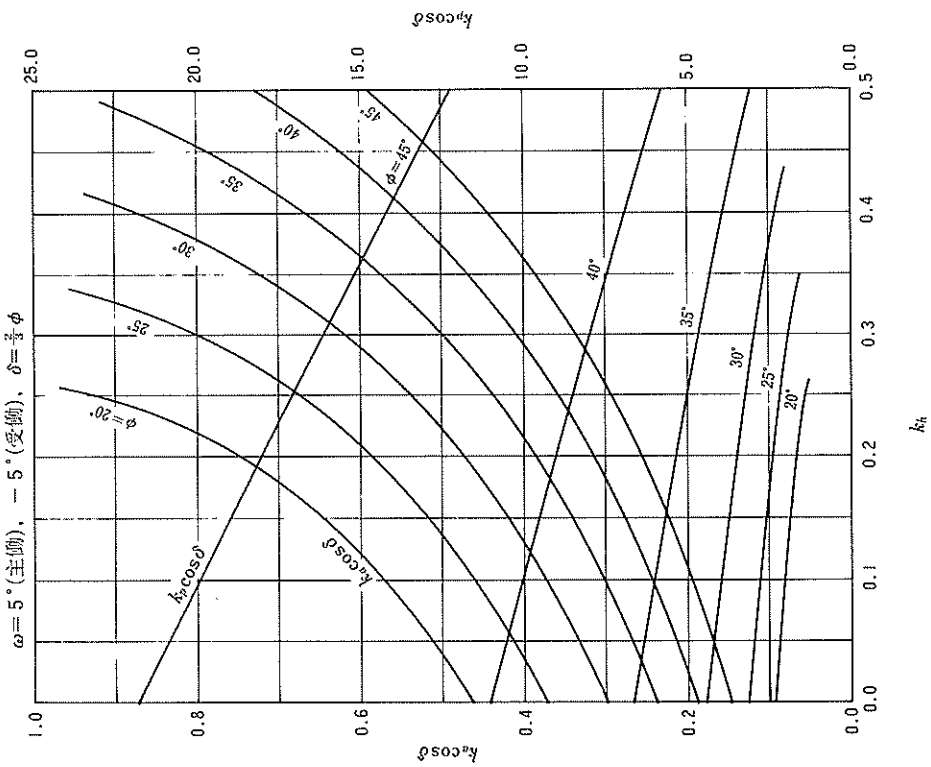
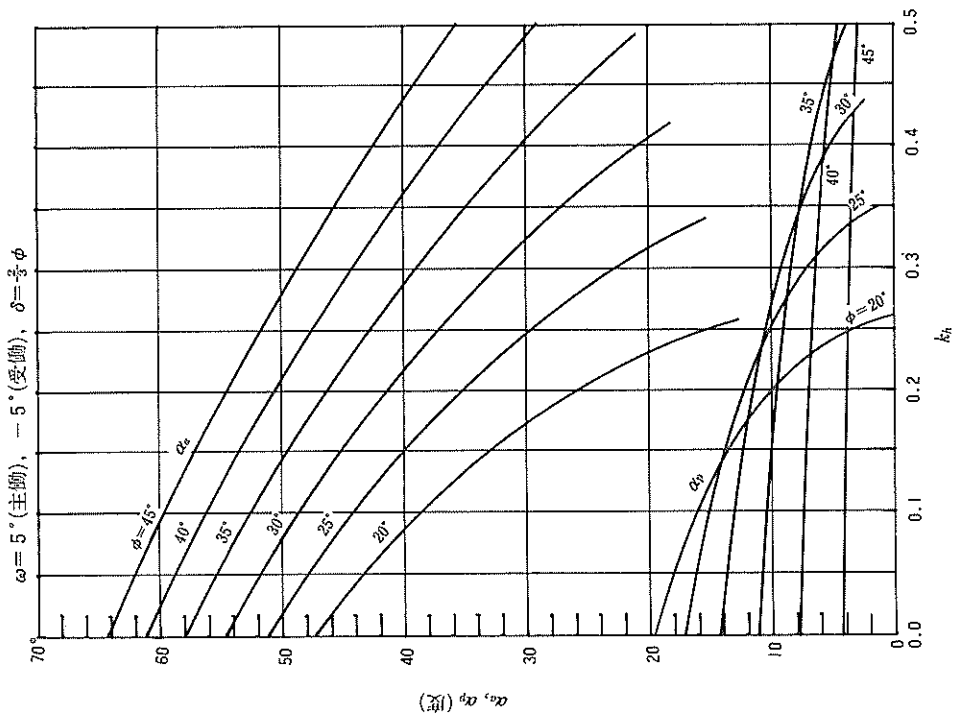
図—4(8) 砂質土の土圧係数と崩壊角



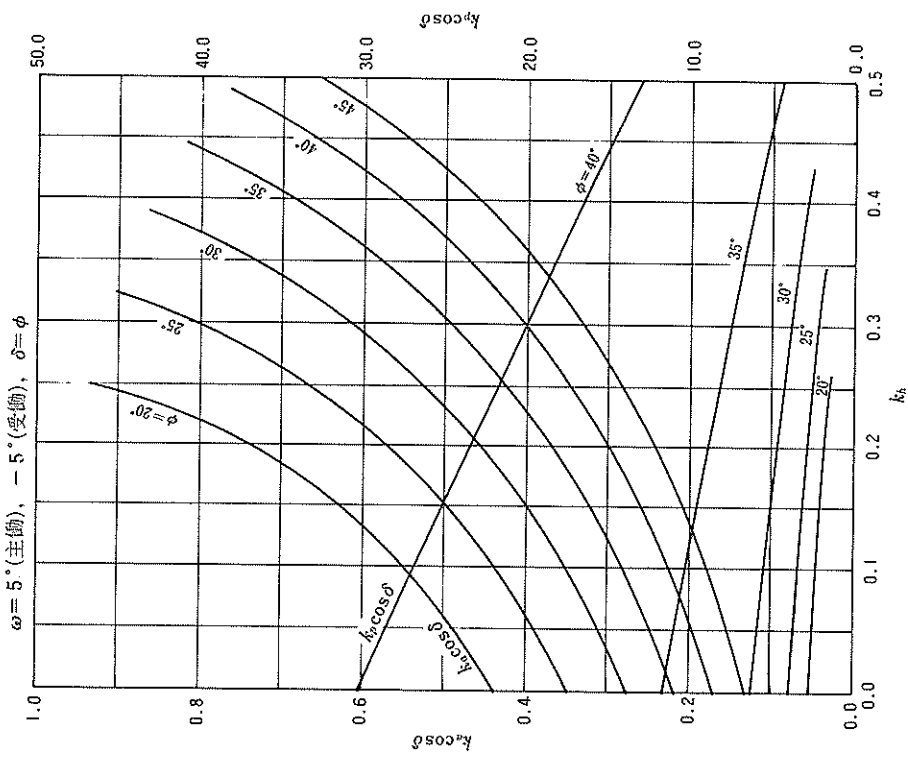
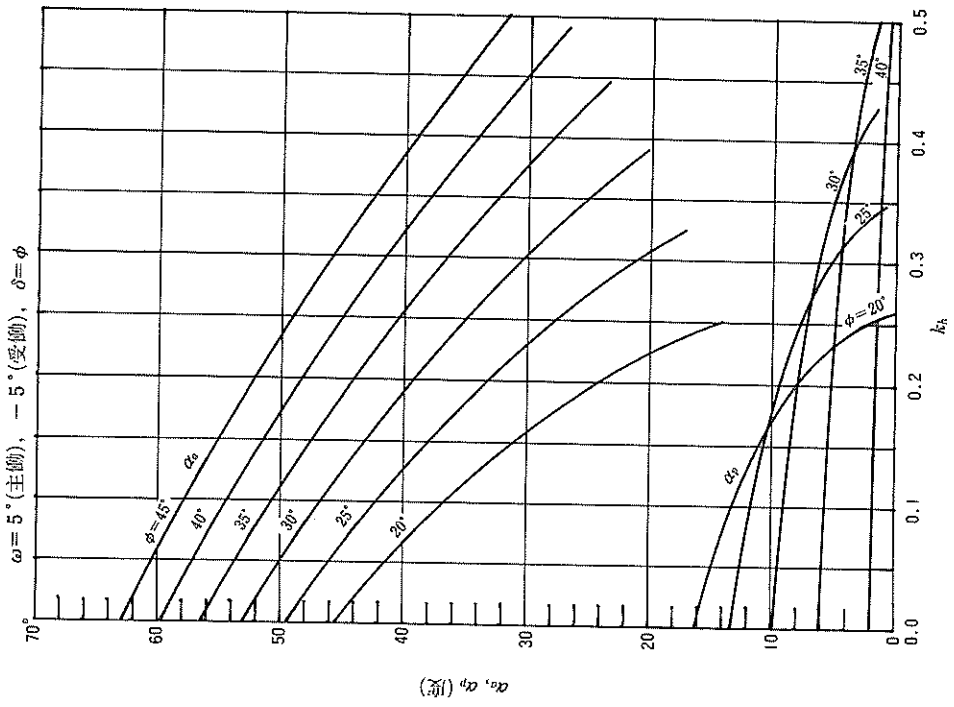
図一4(9) 砂質土の土圧係数と崩壊角



図一410 砂質土の土圧係数と崩壊角

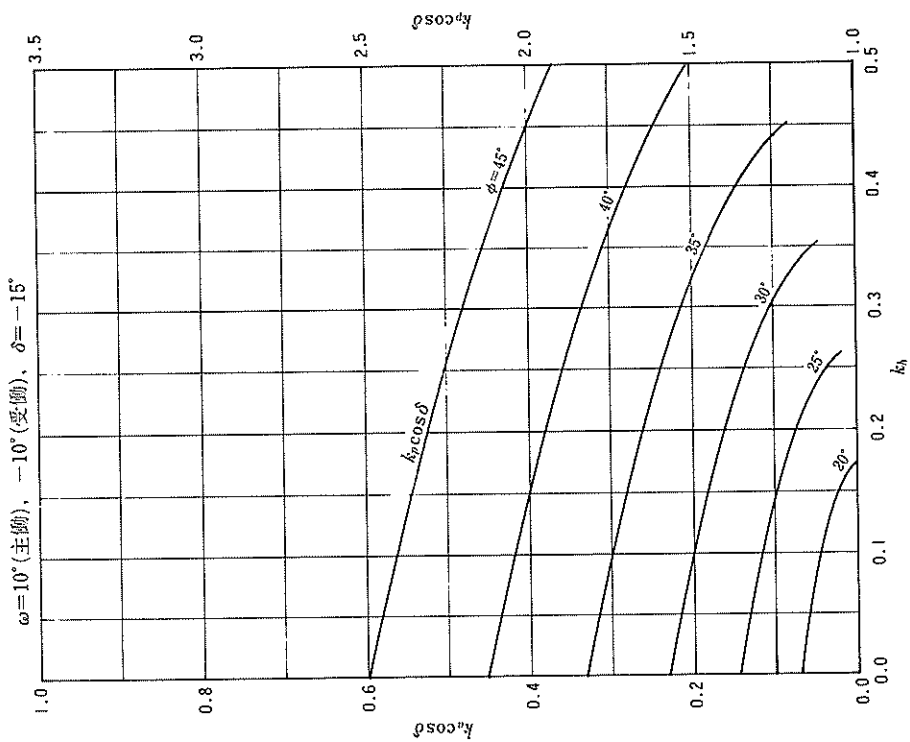
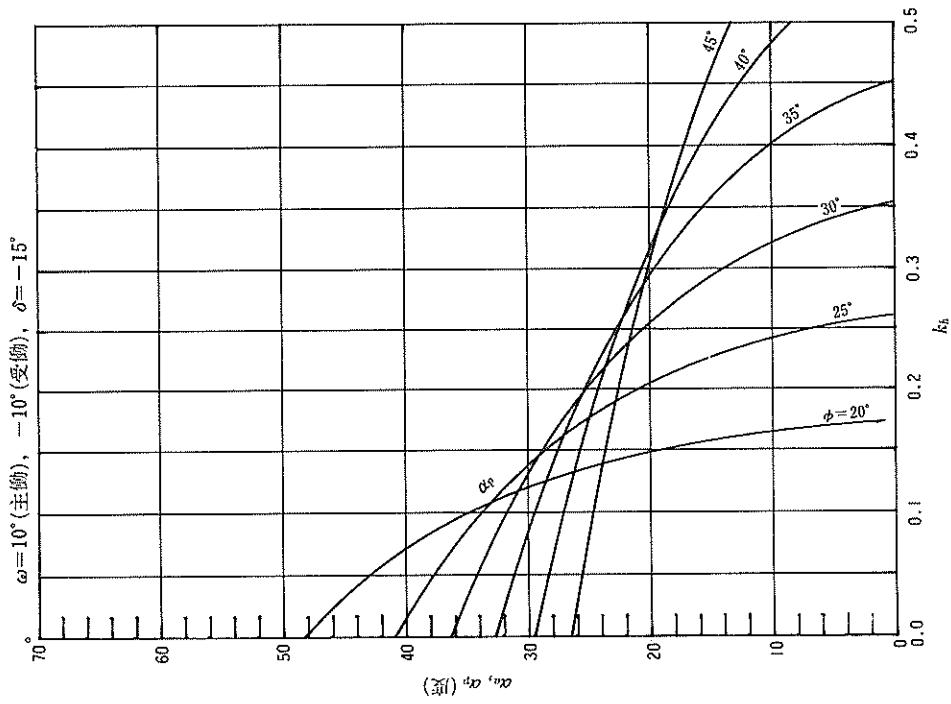


図一四(II) 砂質土の土圧係数と崩壊角



図一4(2) 砂質土の土圧係数と崩壊角





図一4.03 砂質土の土圧係数と崩壊角

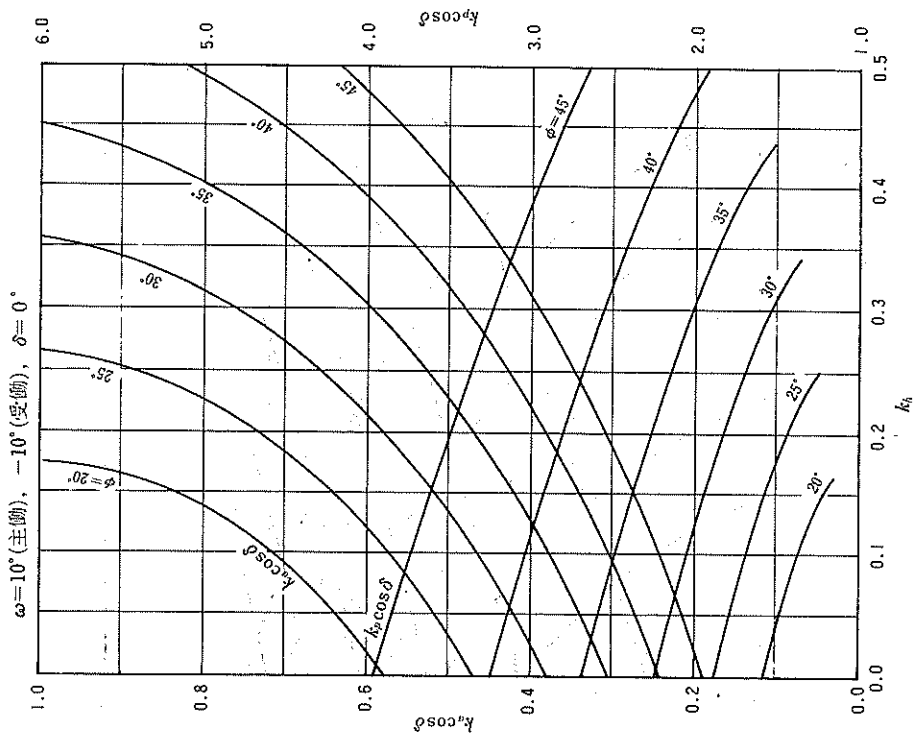
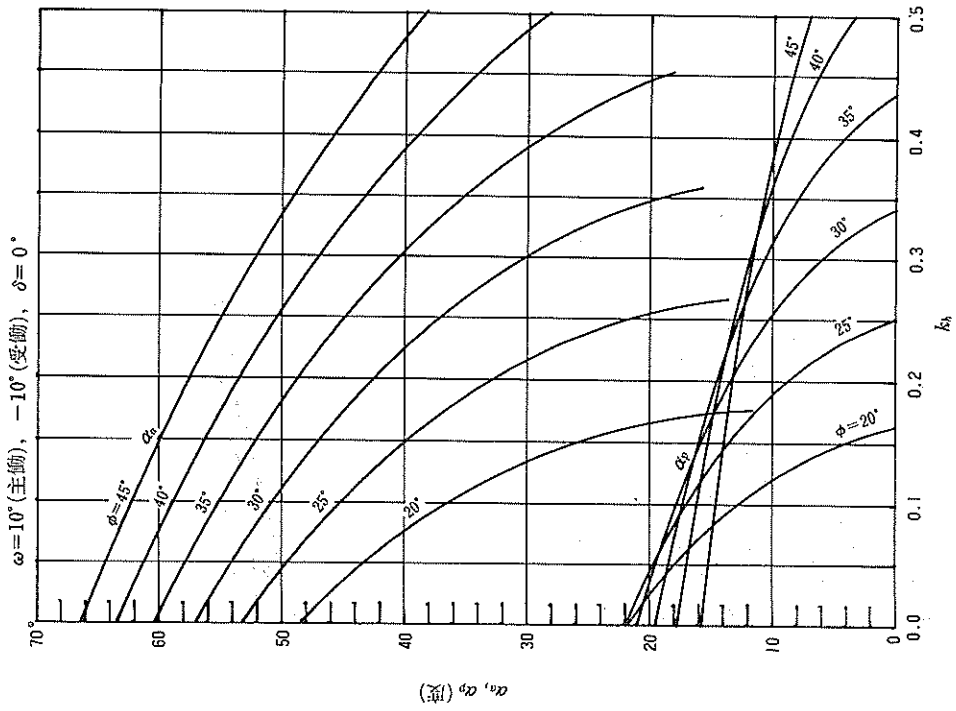
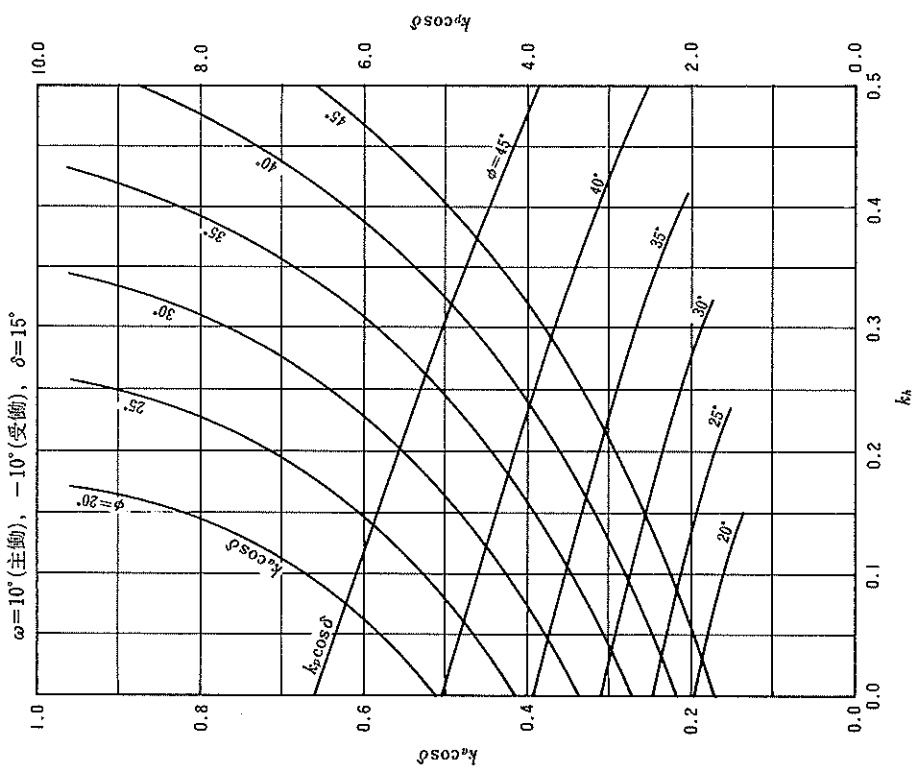
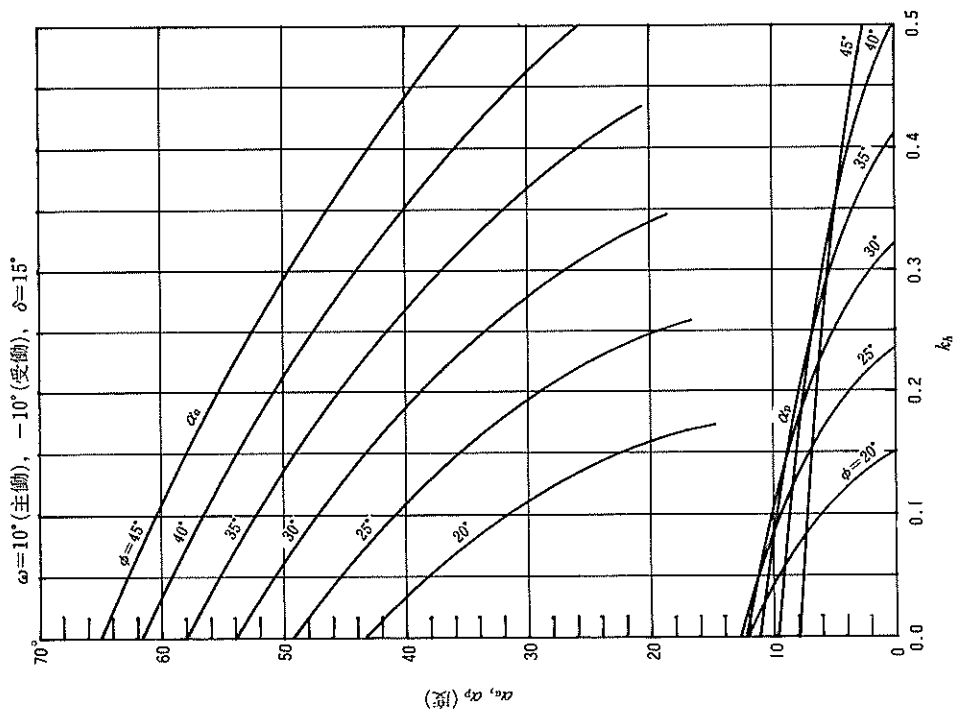
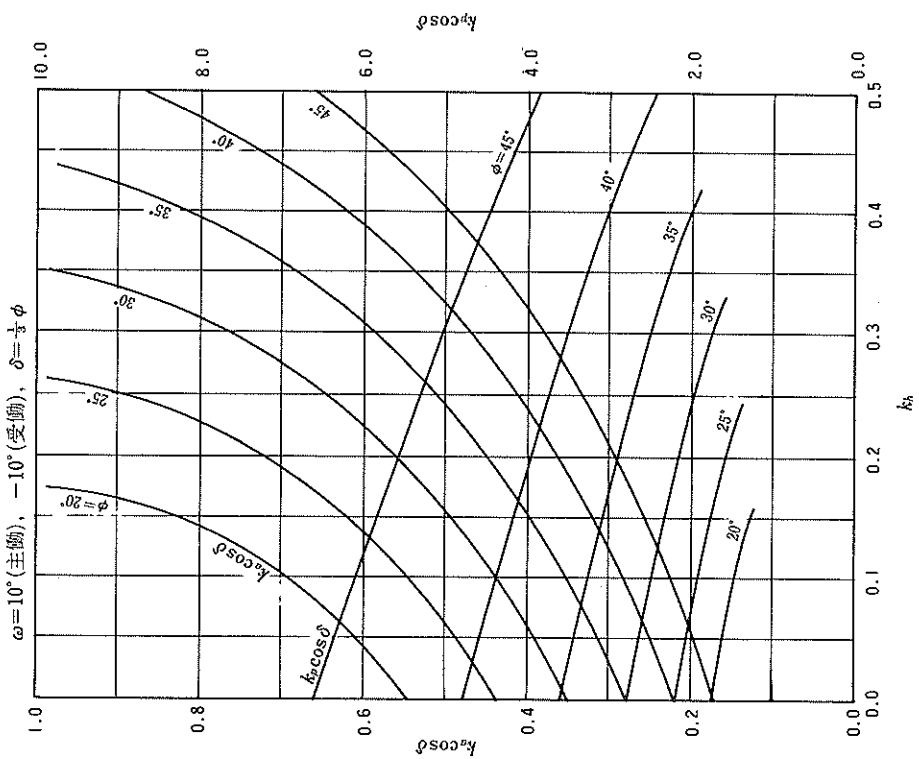
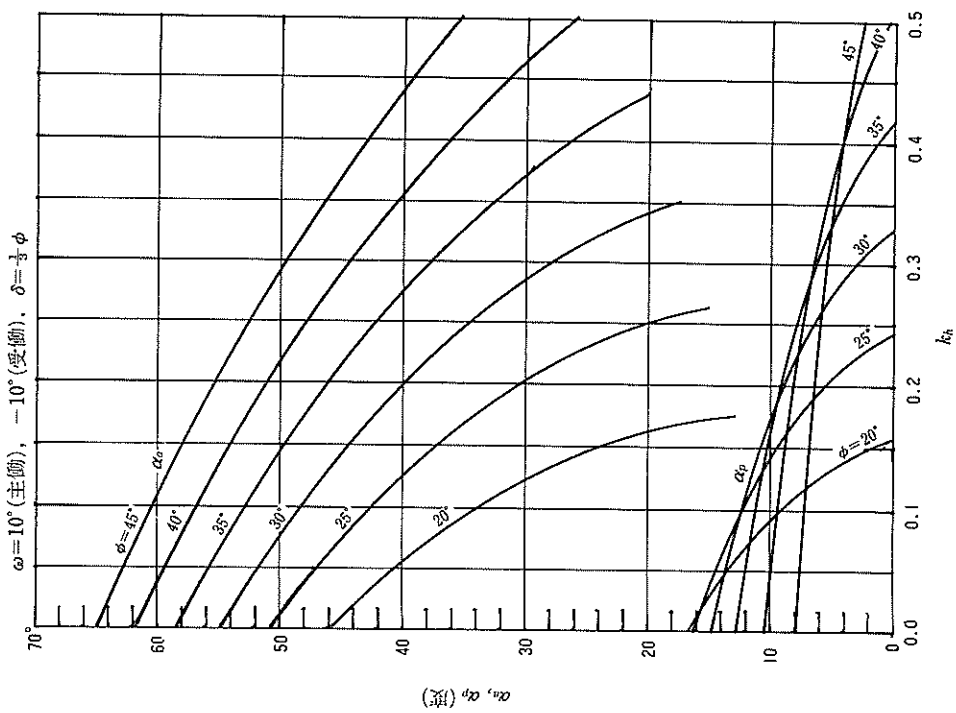


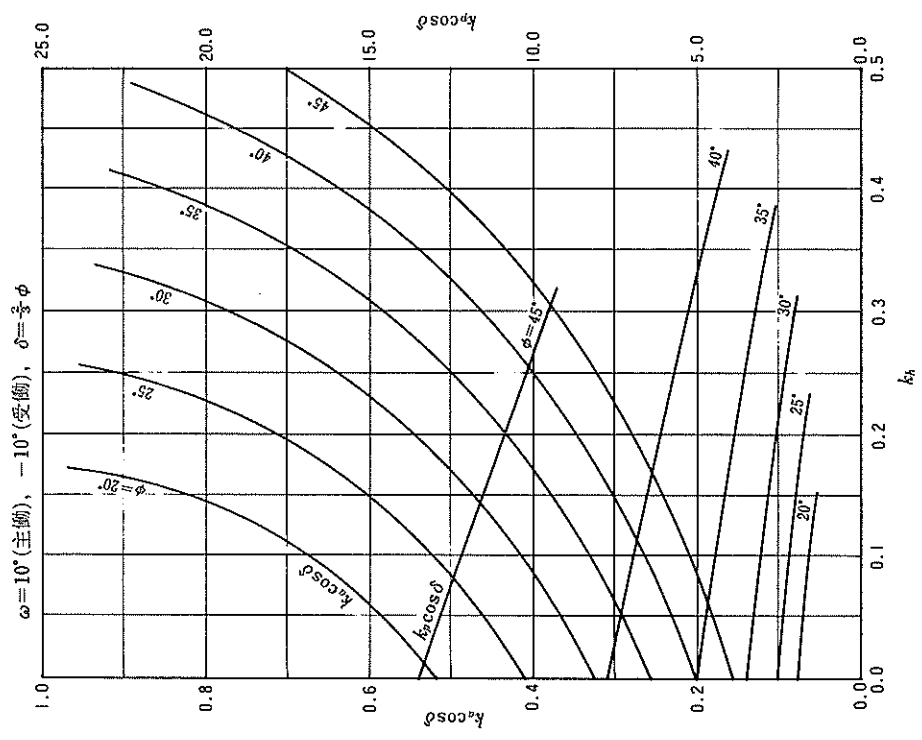
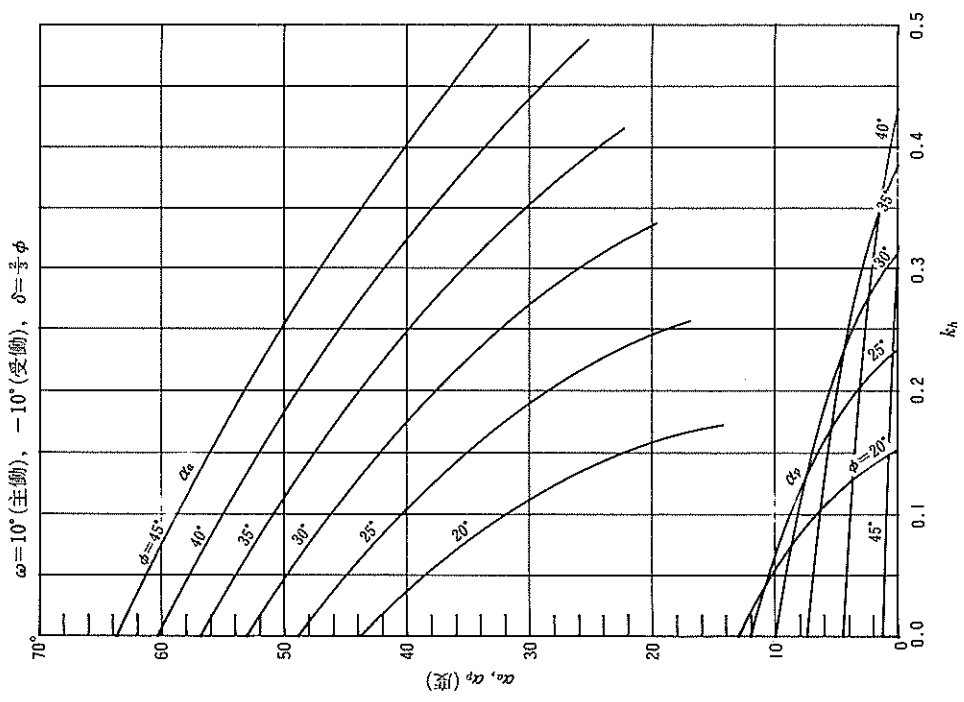
図-410 砂質土の土圧係数と崩壊角



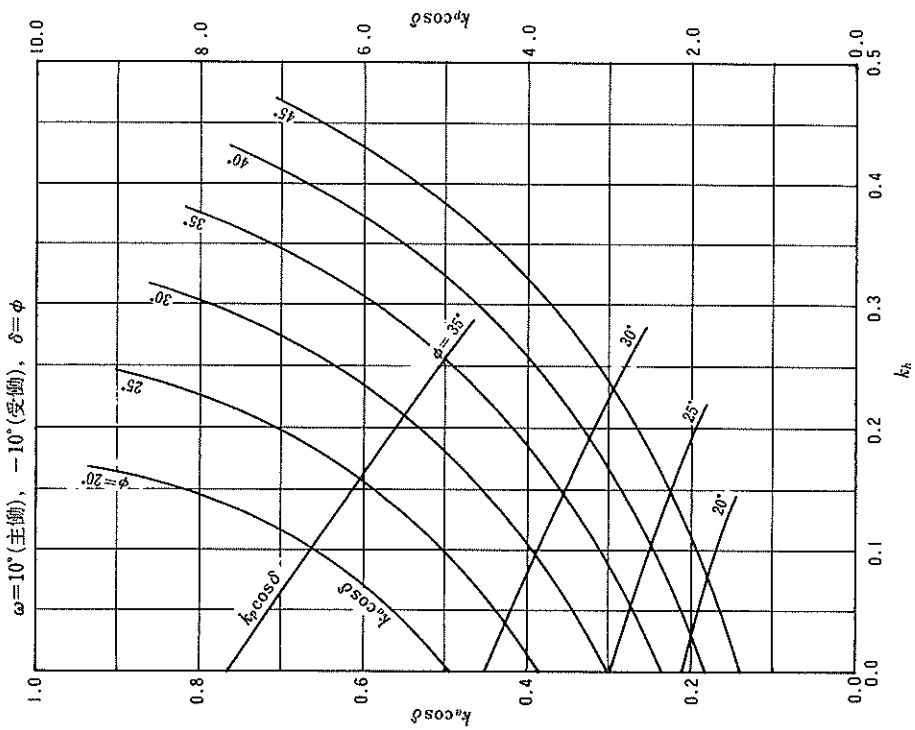
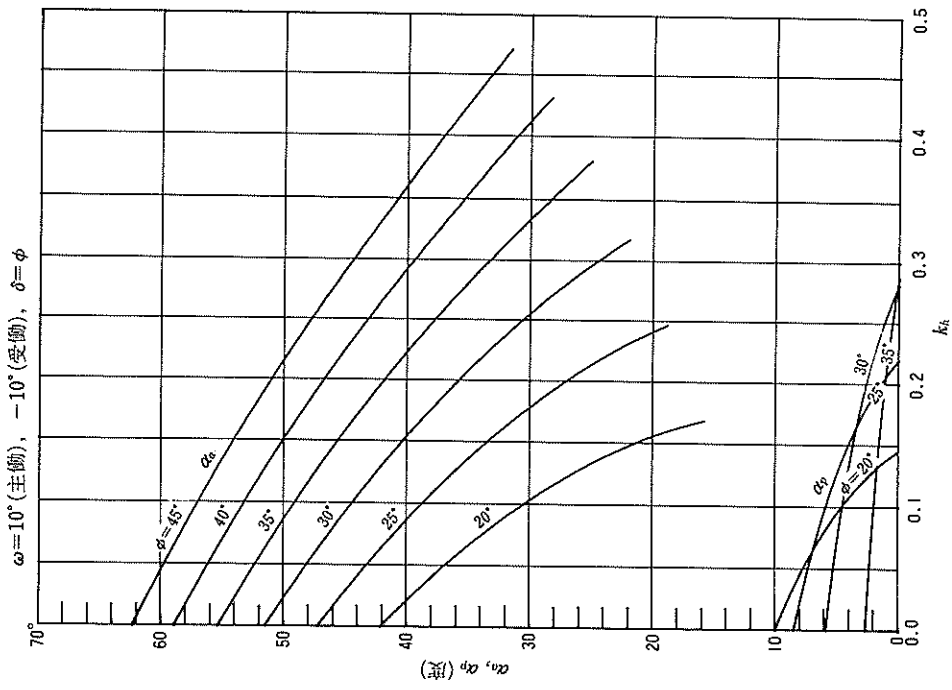
図一415 砂質土の土圧係数と崩壊角



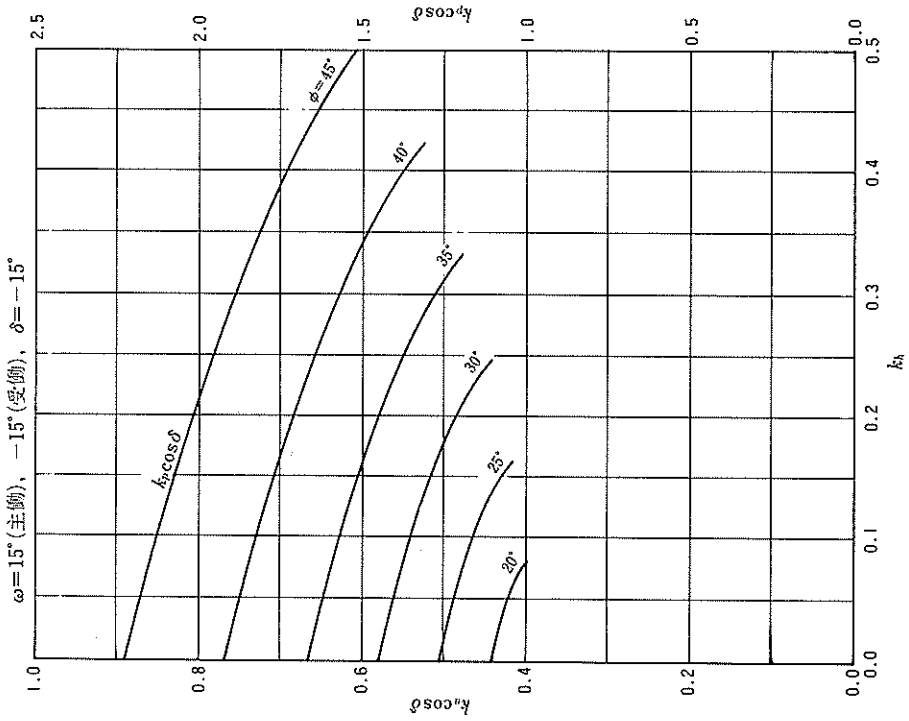
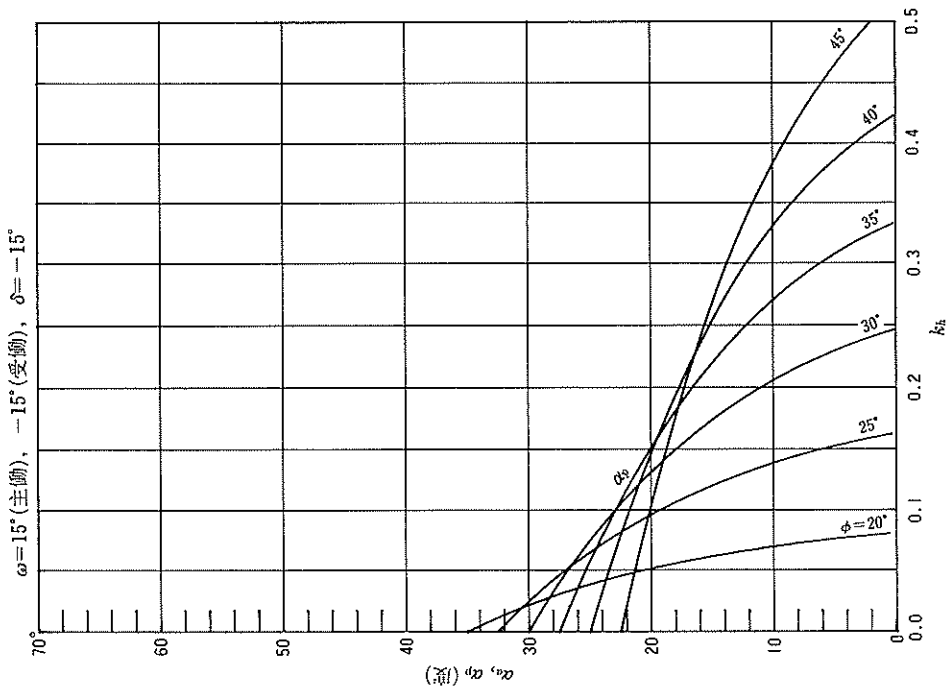
図一4(16) 砂質土の土圧係数と崩壊角



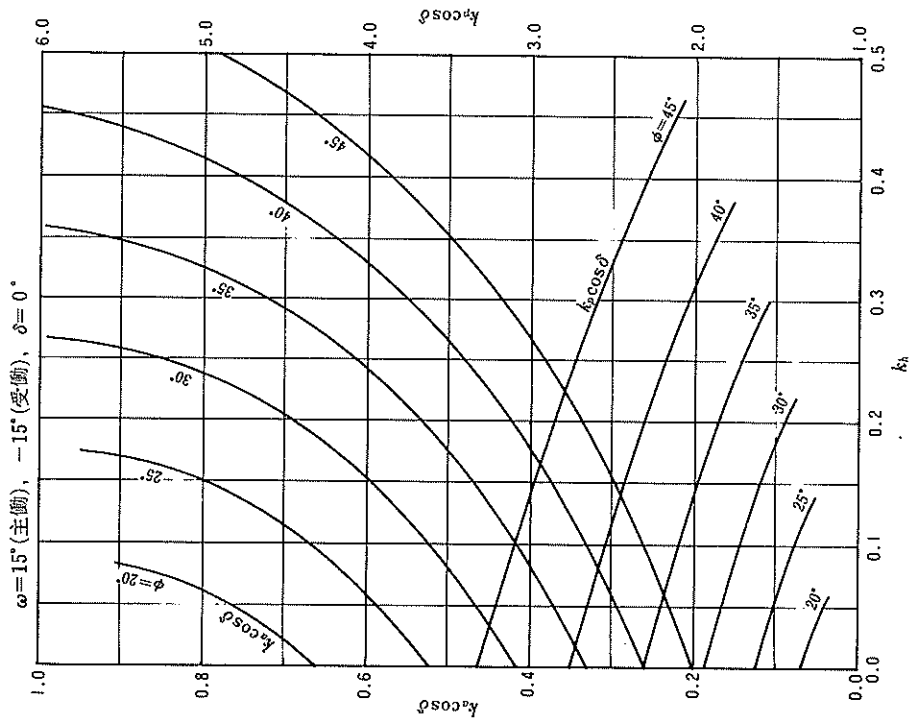
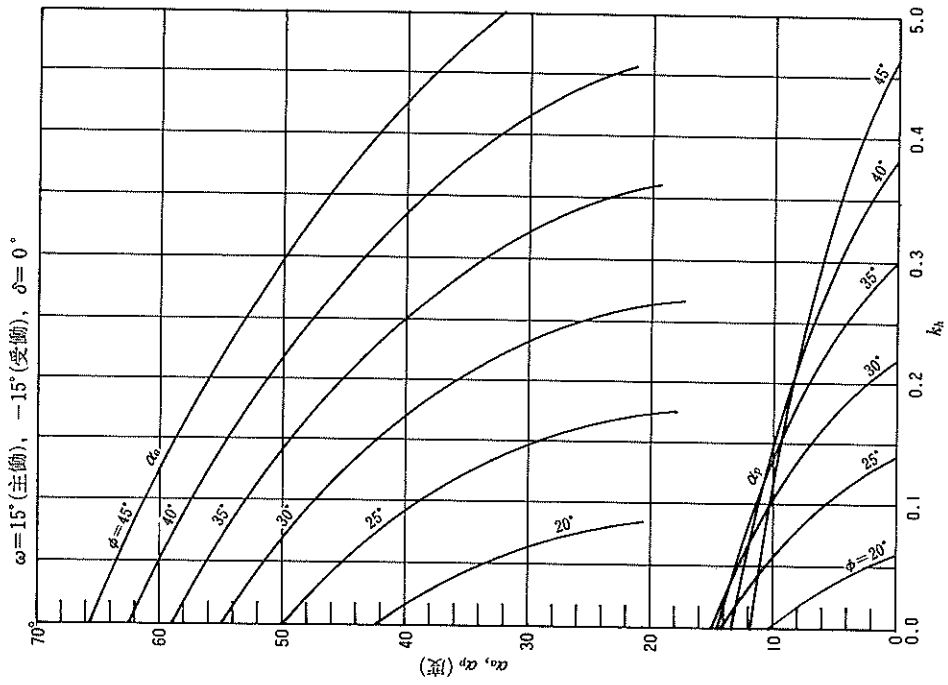
図一4(11) 砂質土の土圧係数と崩壊角



図一418) 砂質土の土圧係数と崩壊角

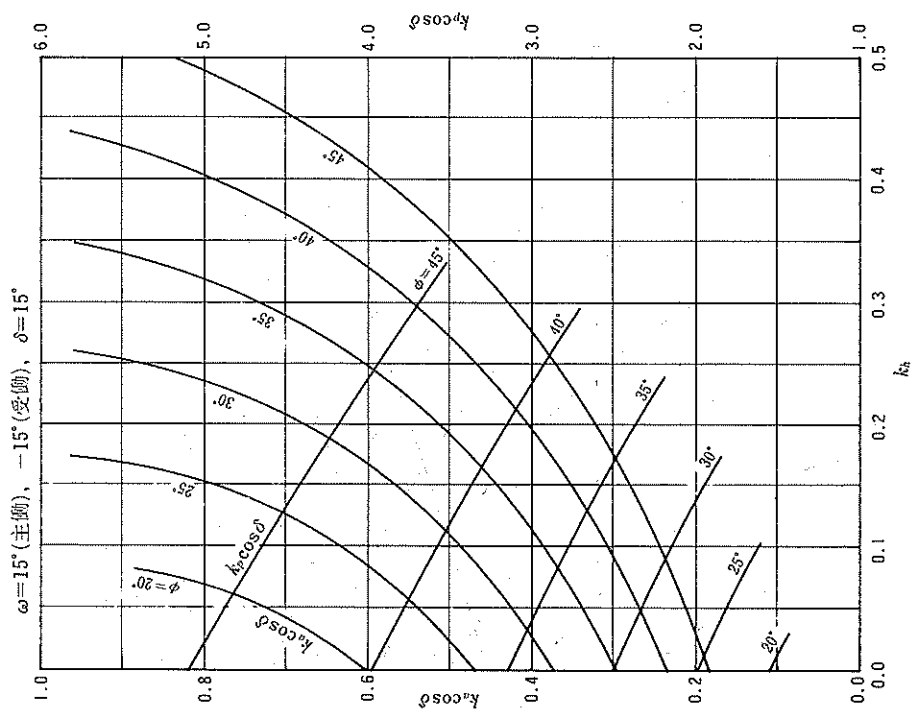
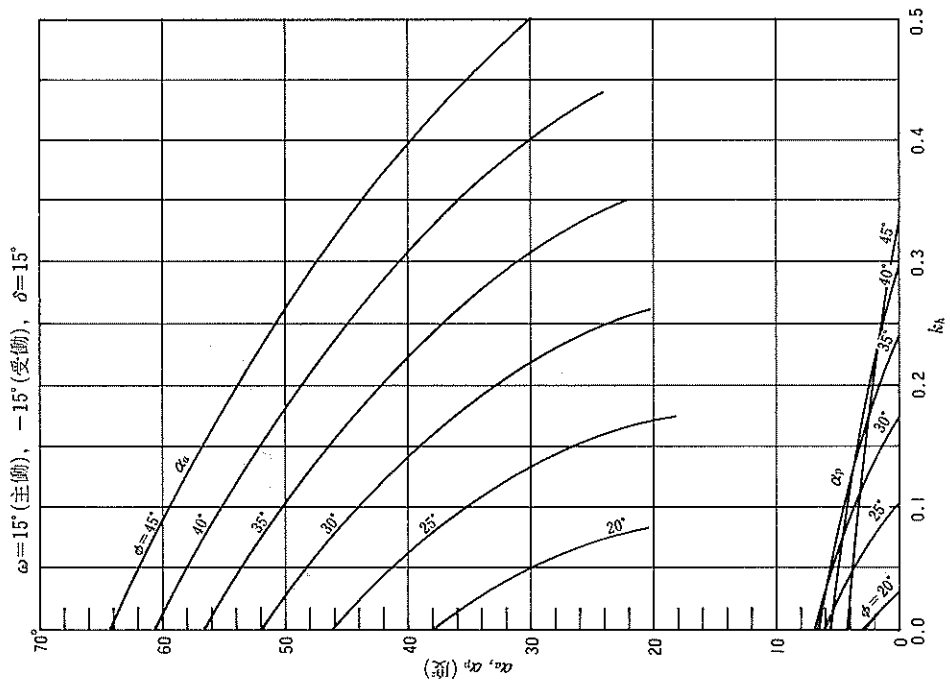


图一四四 砂質土の土圧係数と崩壊角



図一400 砂質土の土圧係数と崩壊角





図一四〇 砂質土の土圧係数と崩壊角

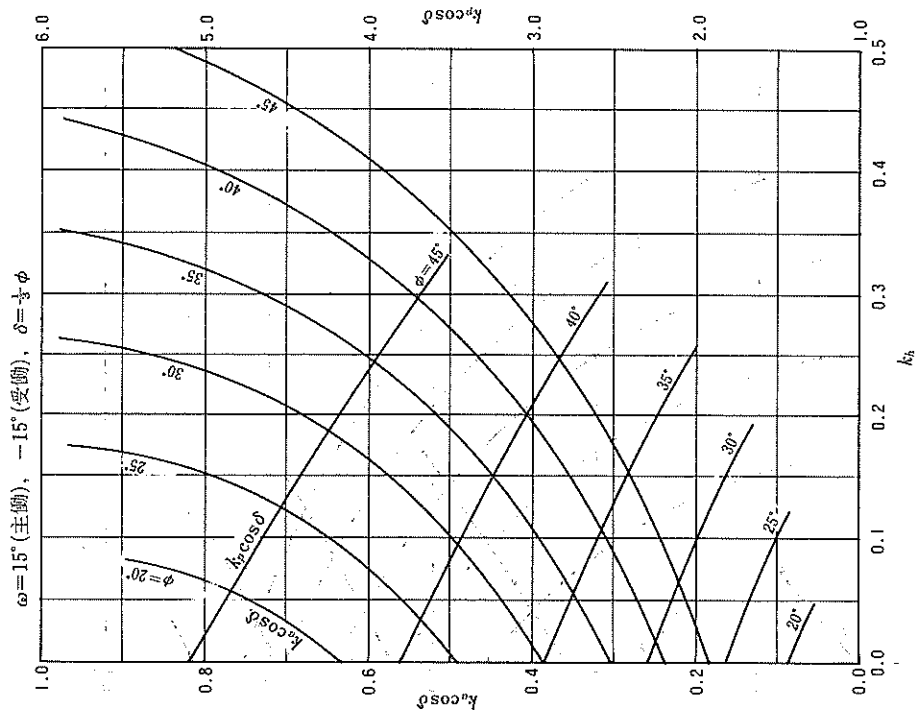
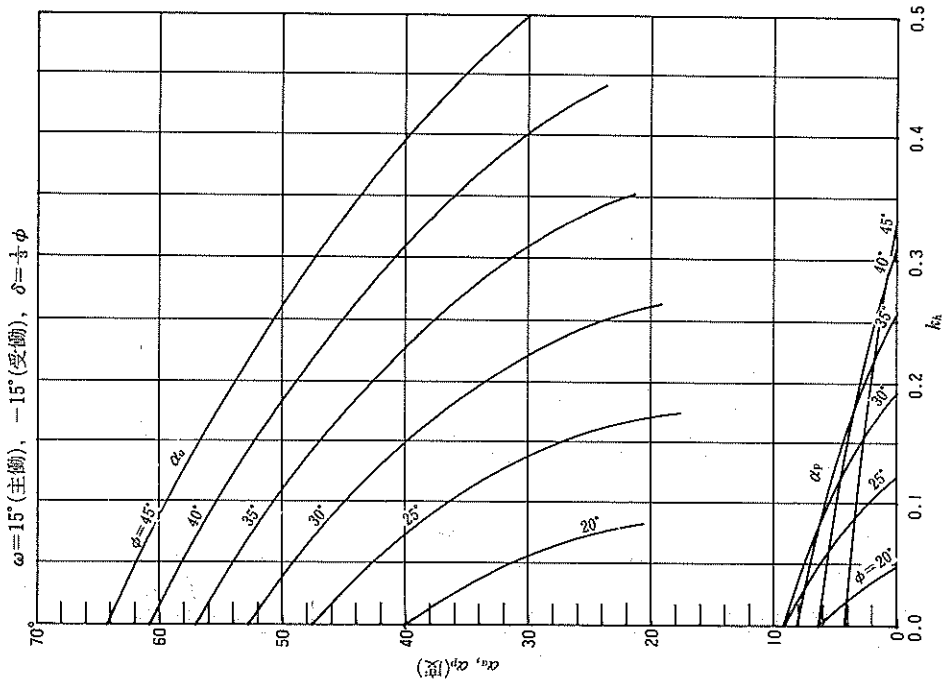
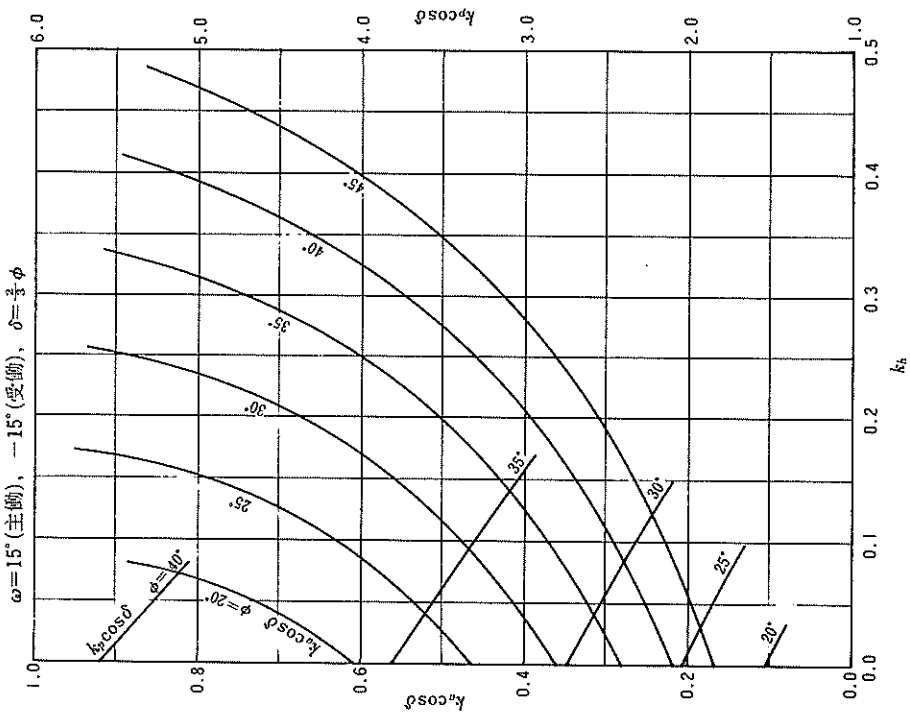
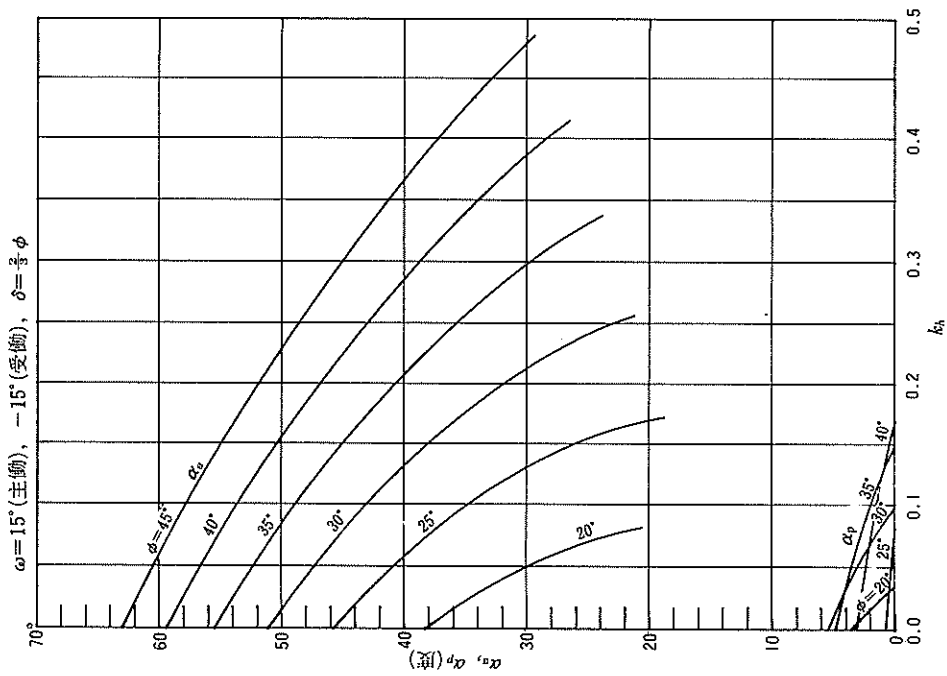
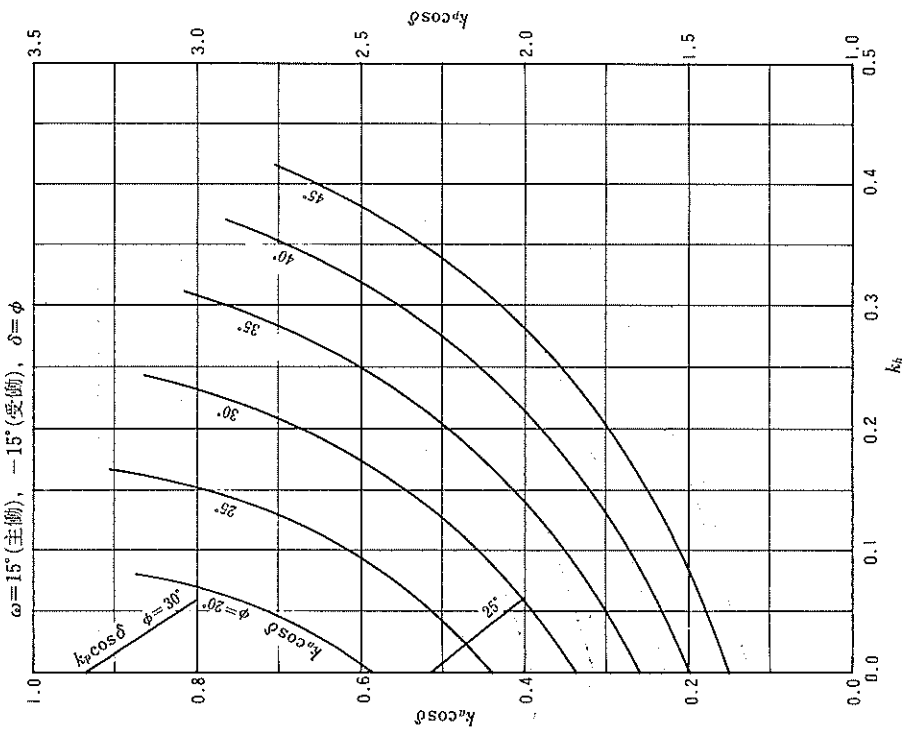
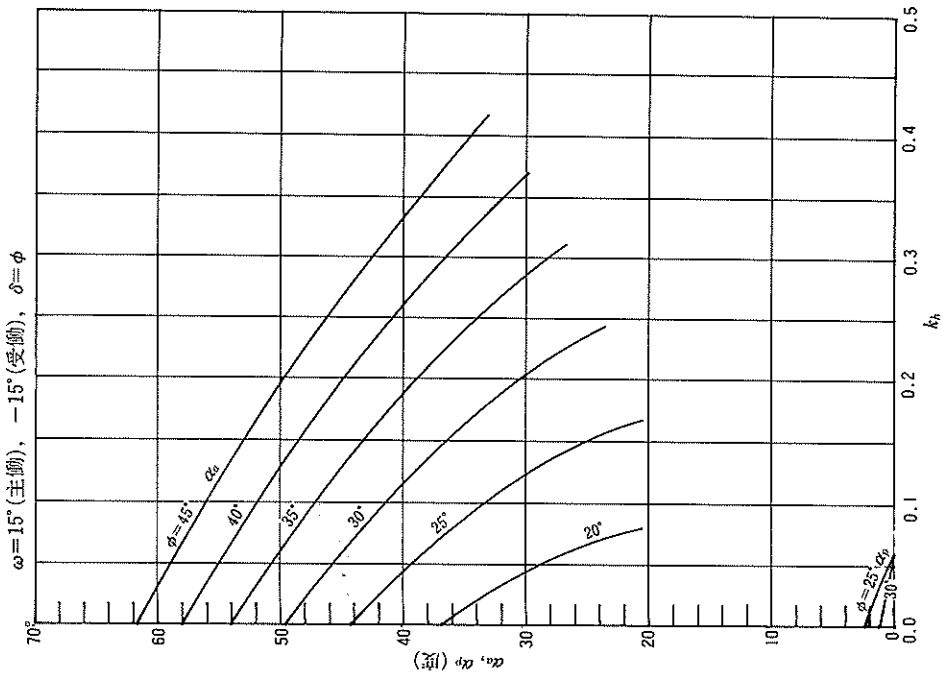


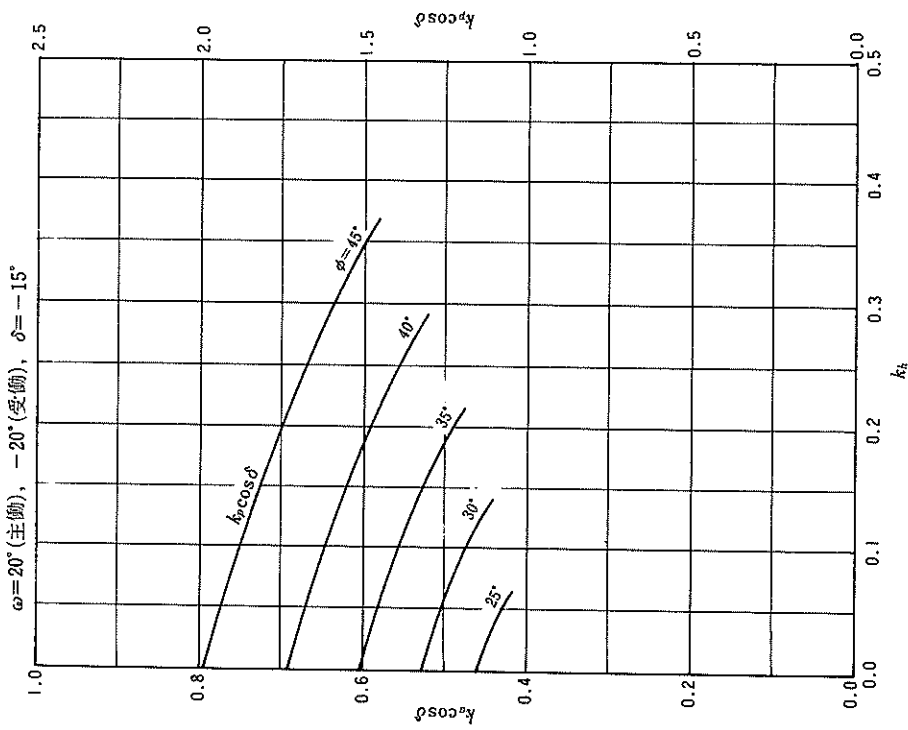
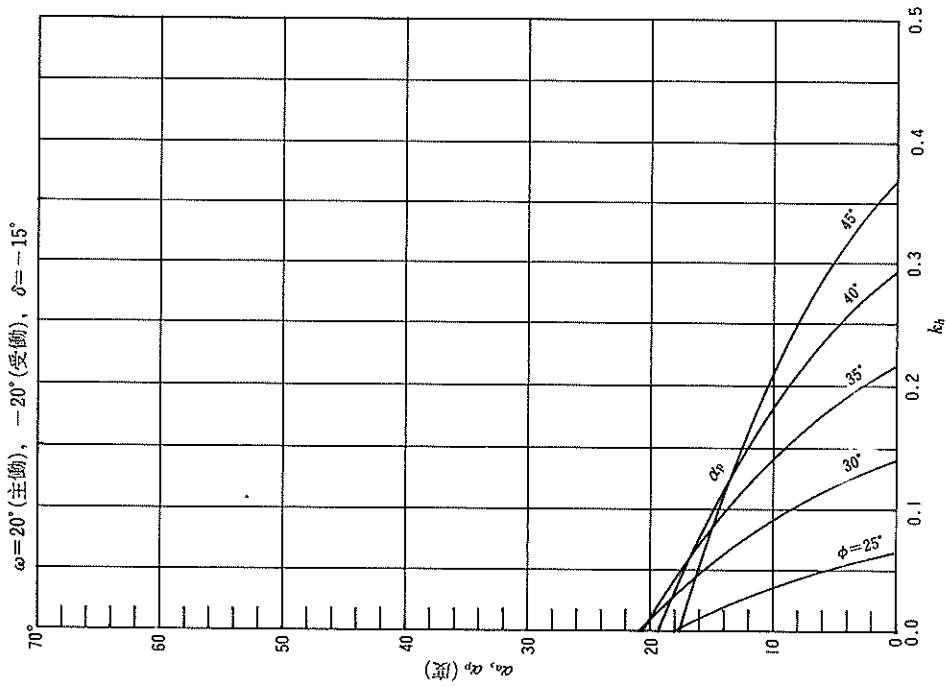
図-4(2) 砂質土の土圧係数と崩壊角



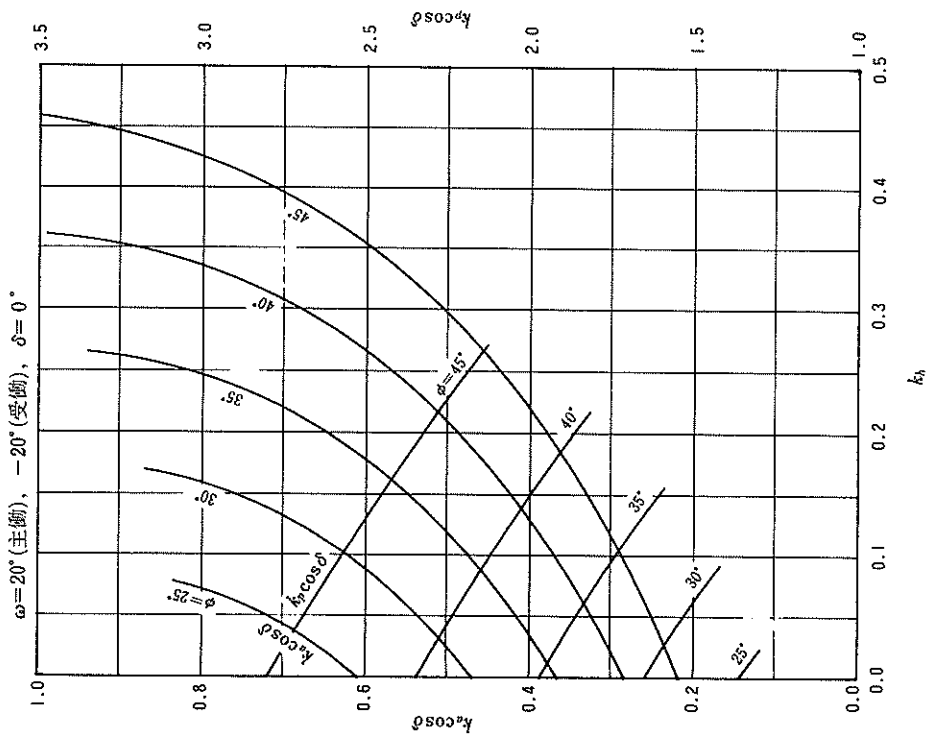
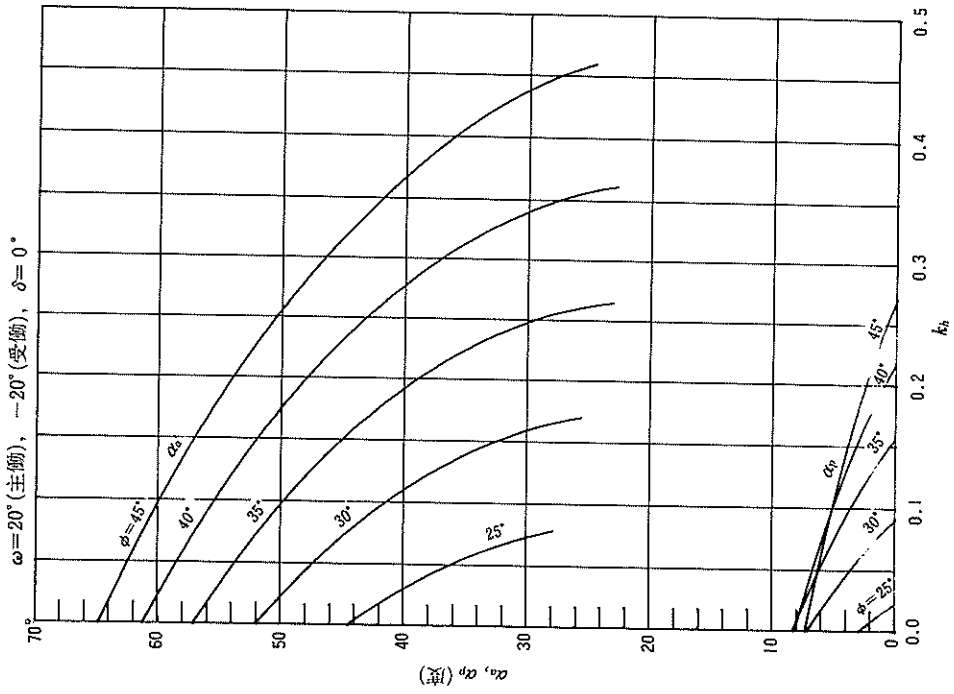
図一4(2) 砂質土の土圧係数と崩壊角



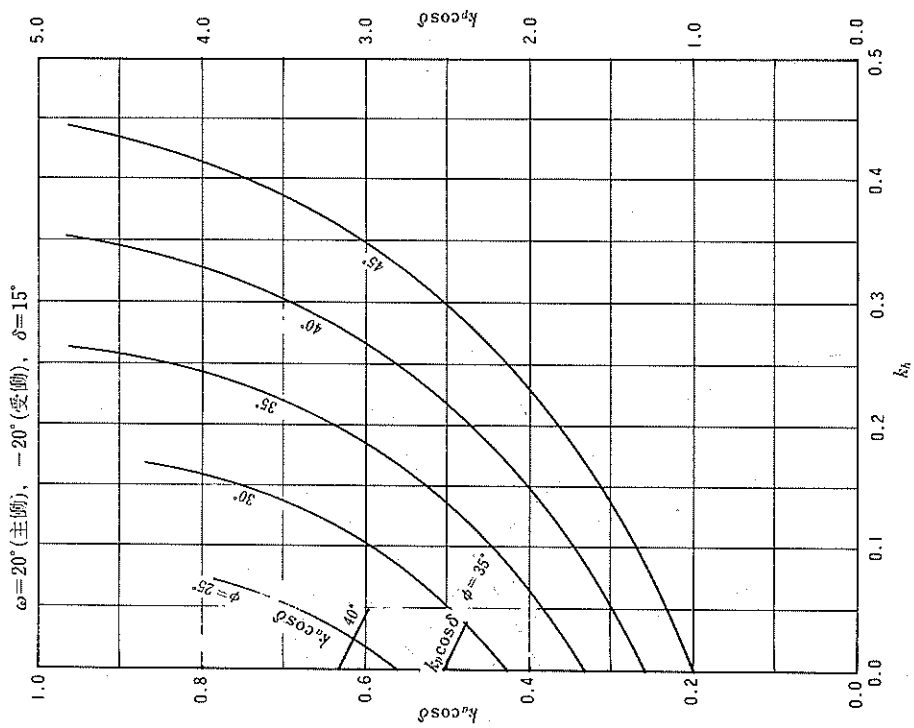
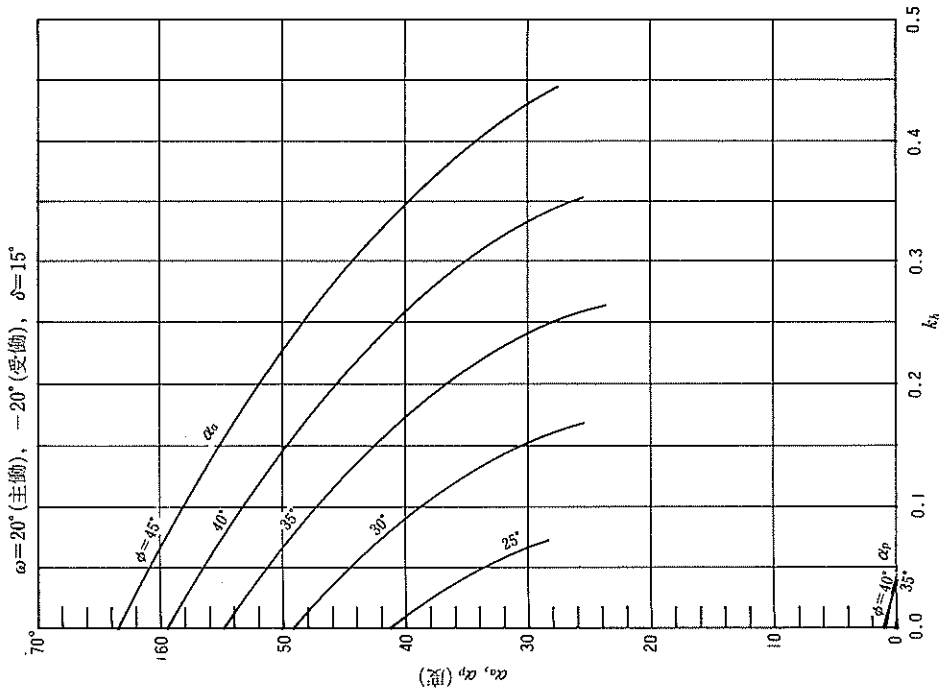
図一4 砂質土の土圧係数と前壁角



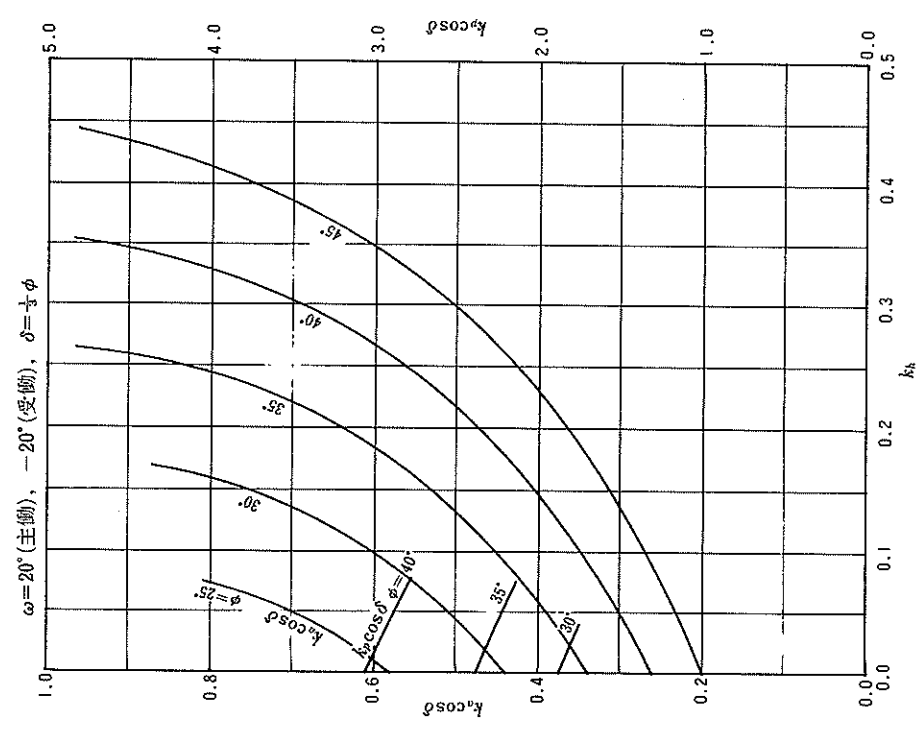
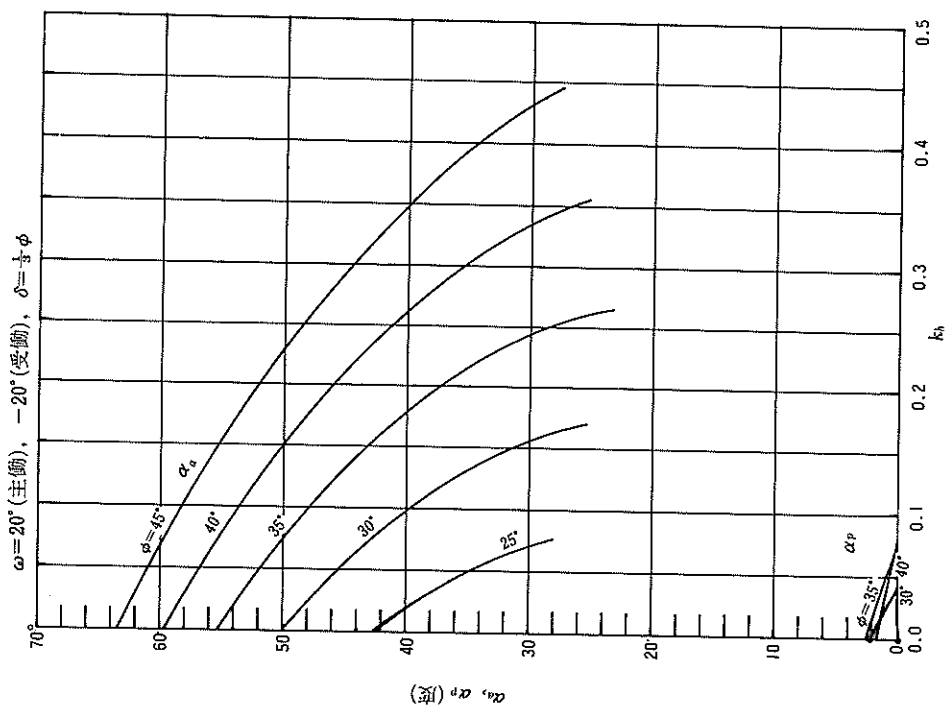
図一4 例 砂質土の土圧係数と崩壊角



図一四 砂質土の土圧係数と崩壊角



図—4(2) 砂質土の土圧係数と崩壊角



図一 4 28 砂質土の土圧係数と崩壊角



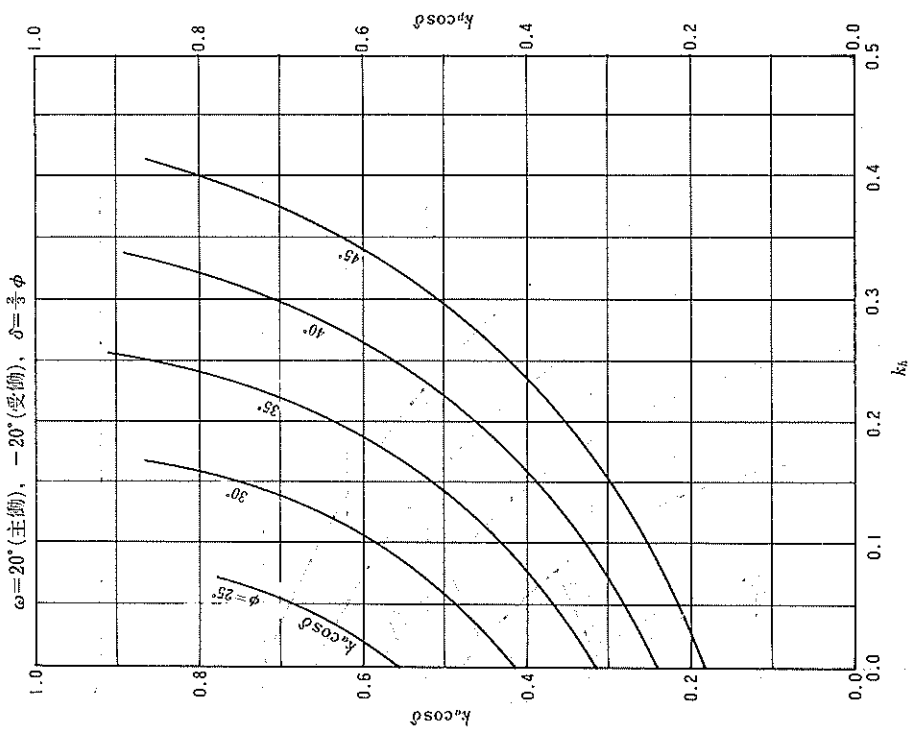
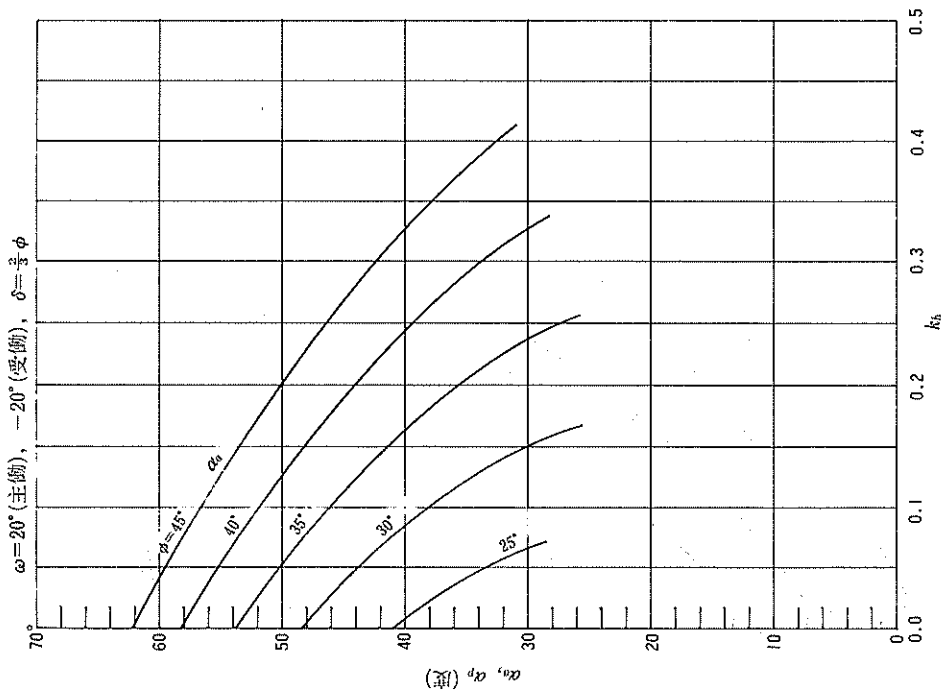
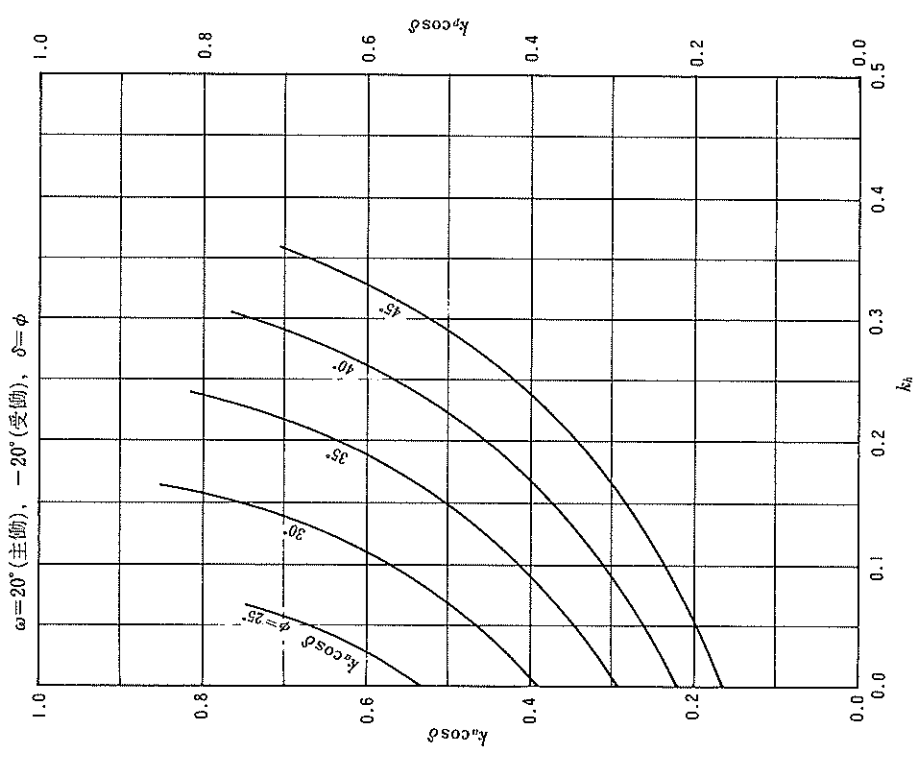
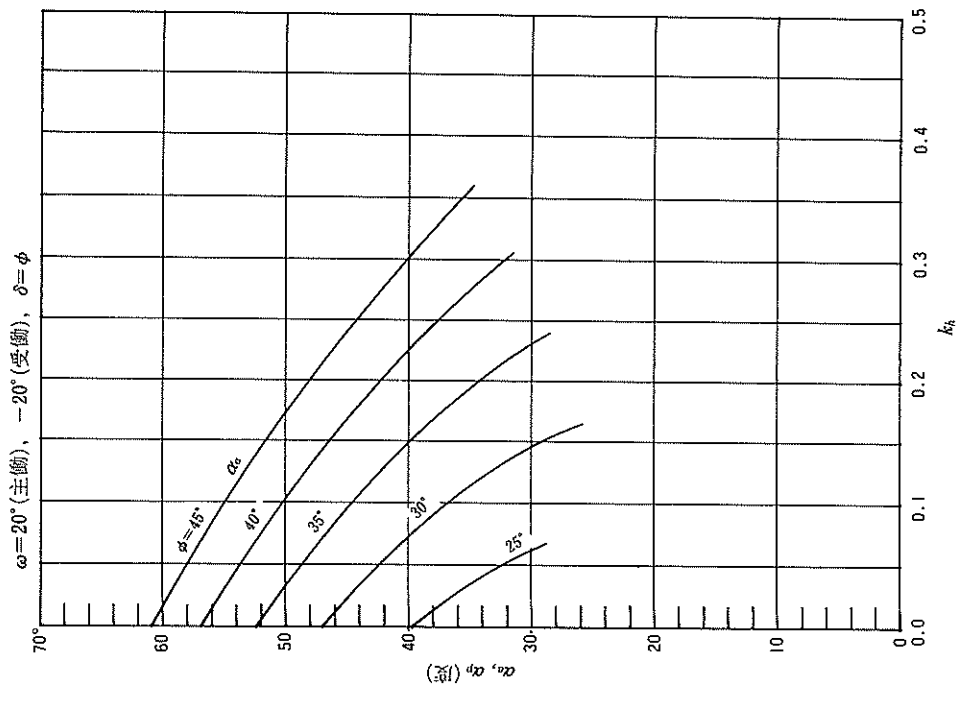


図-4(2) 砂質土の土圧係数と崩壊角



図一480 砂質土の土圧係数と崩壊角

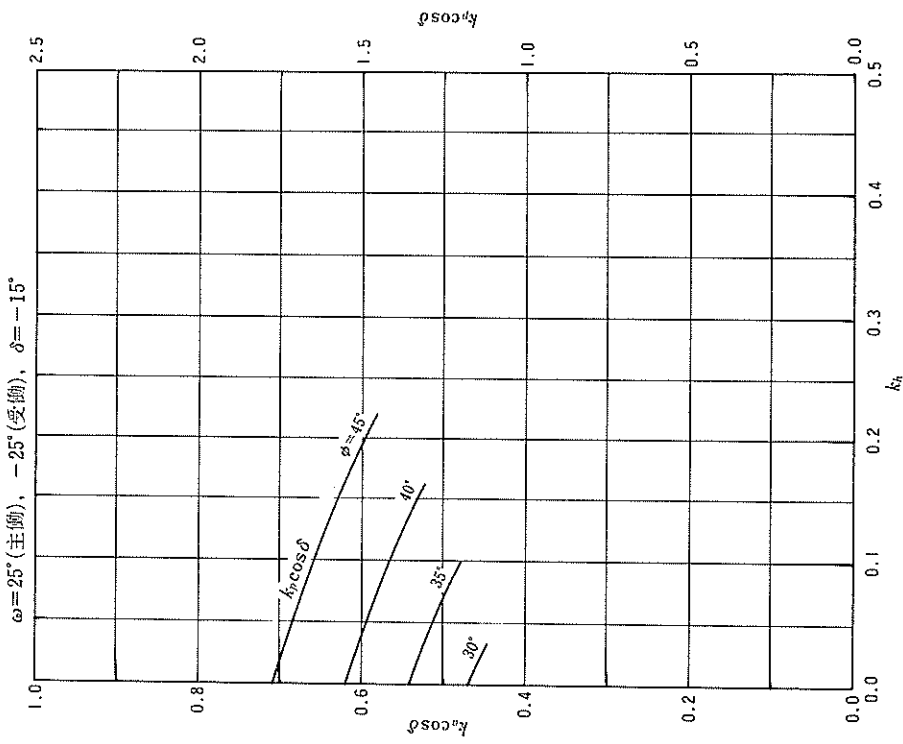
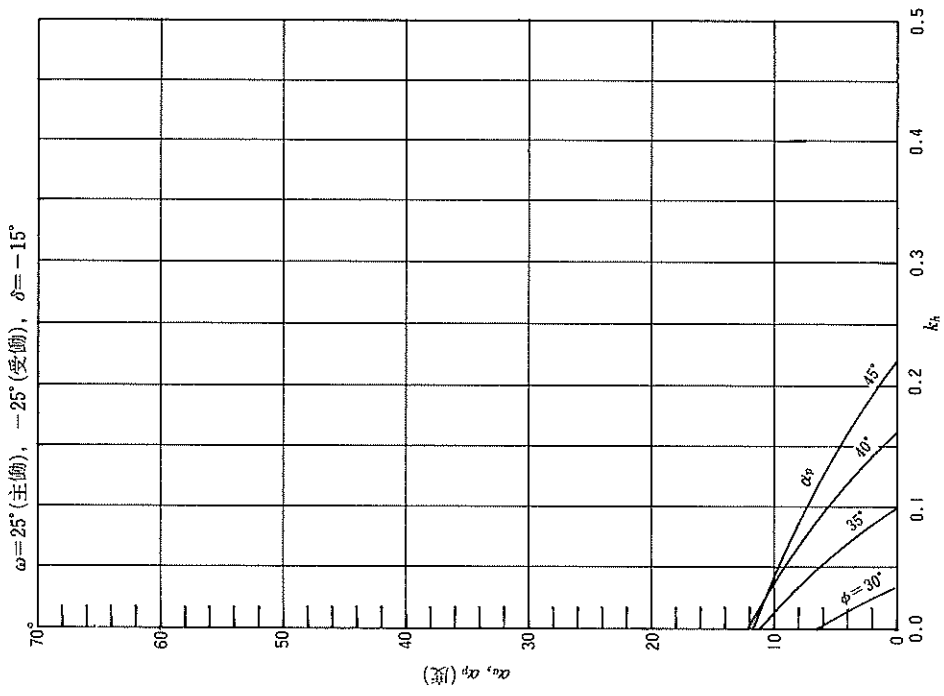
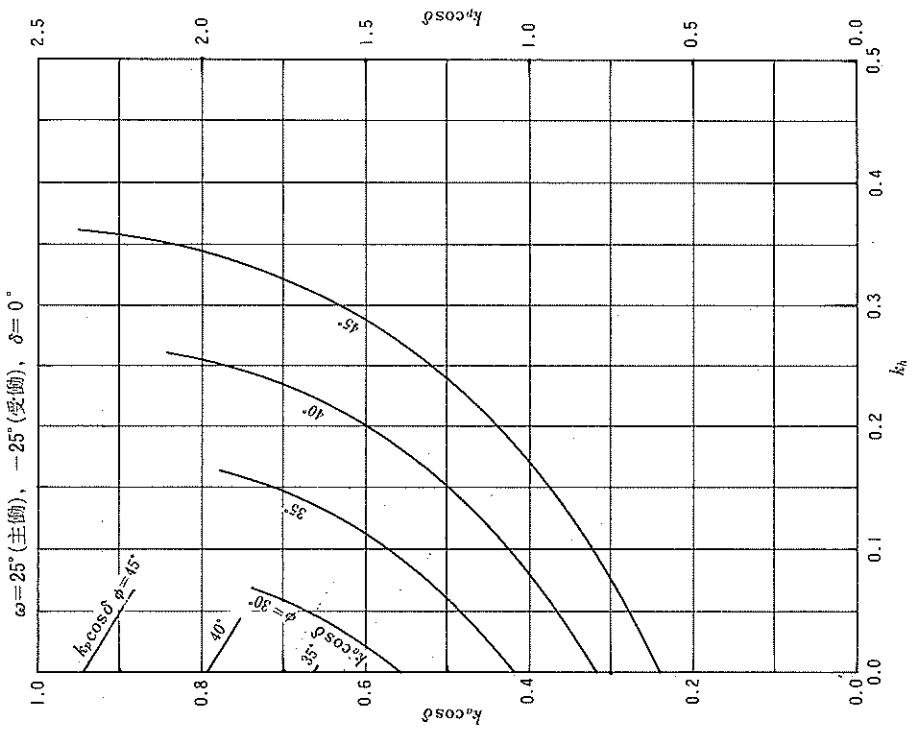
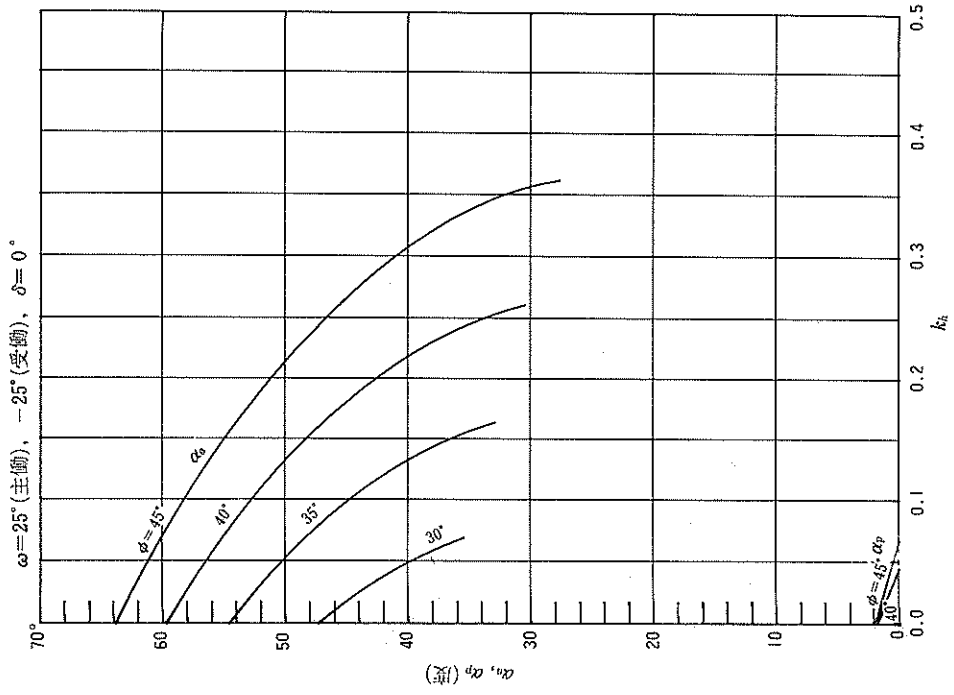
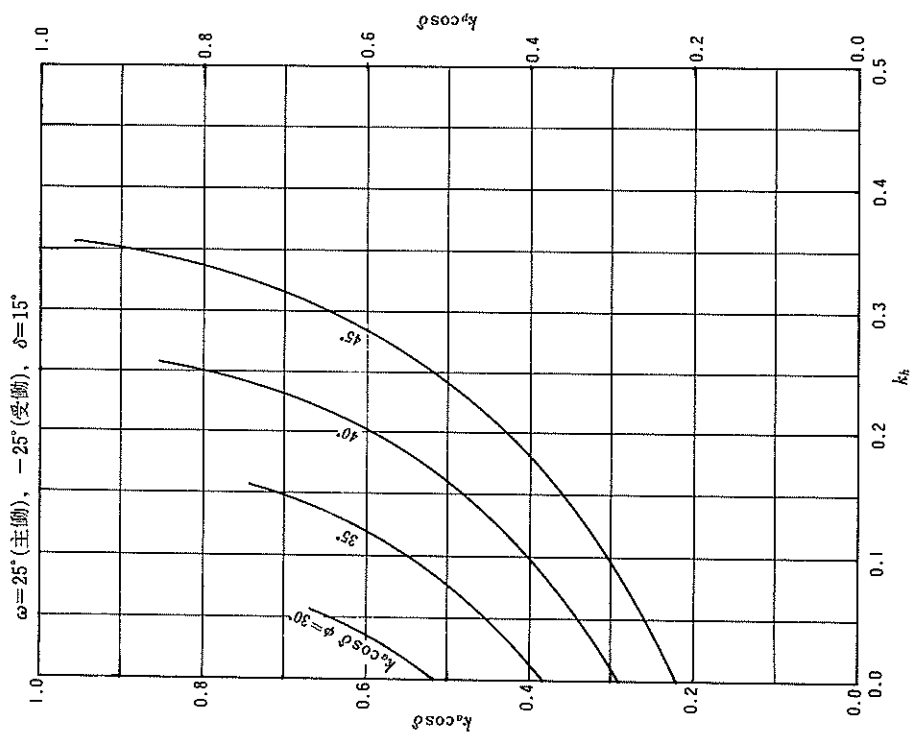
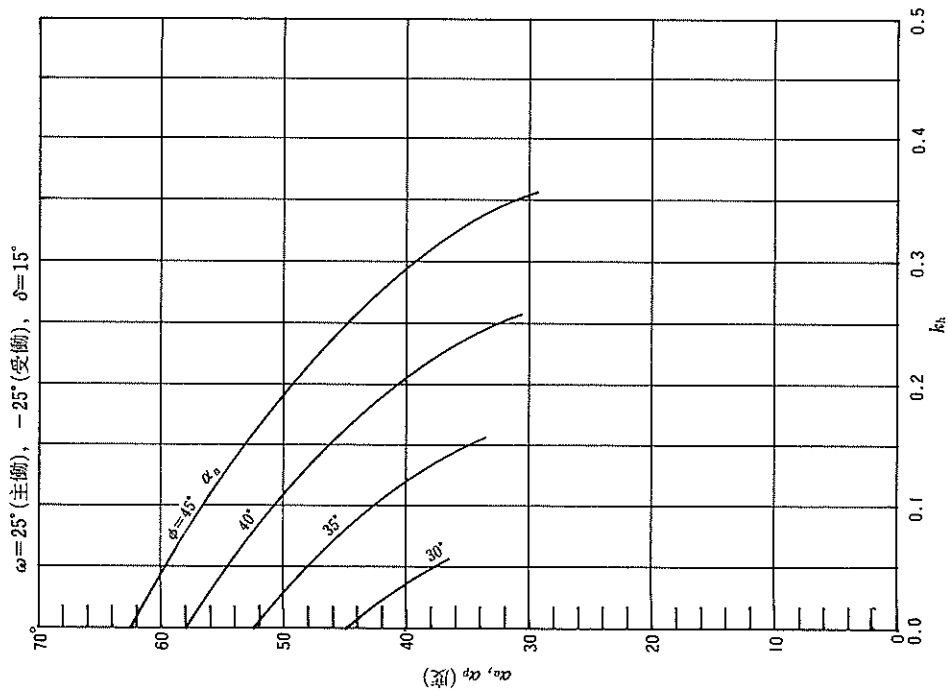


図-4.31 砂質土の土圧係数と崩壊角



図一4 砂質土の土圧係数と崩壊角



図一4 砂質土の土圧係数と崩壊角

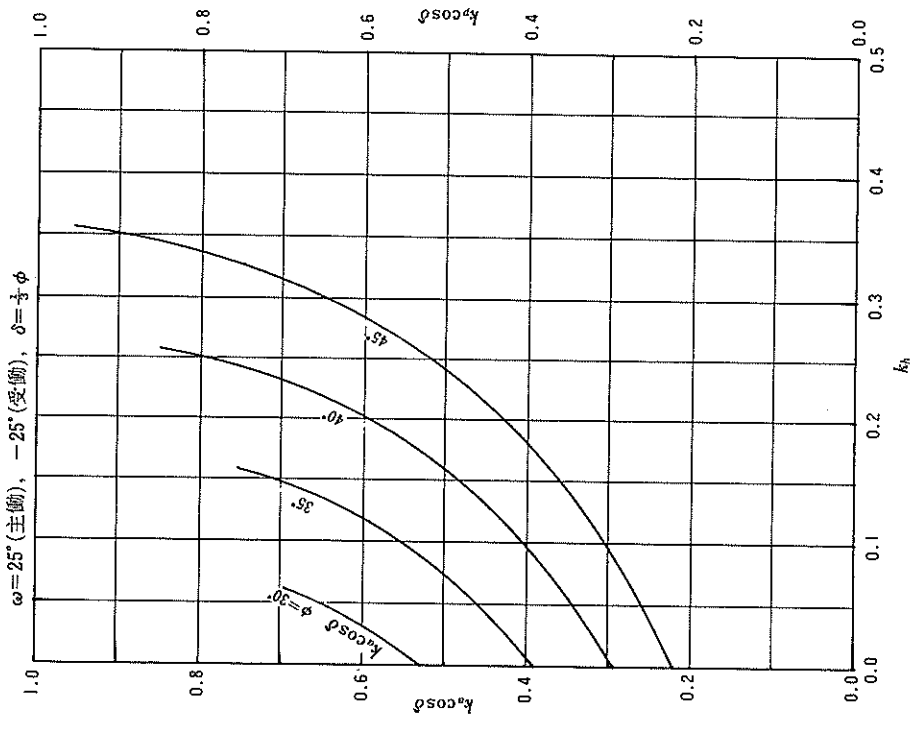
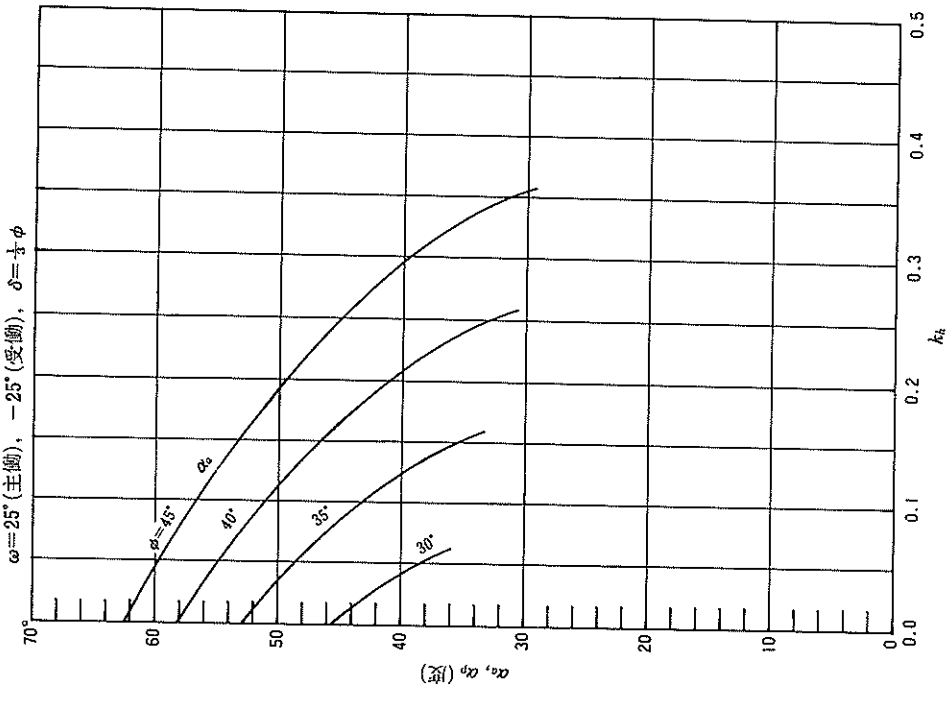


図-4例 砂質土の土圧係数と崩壊角

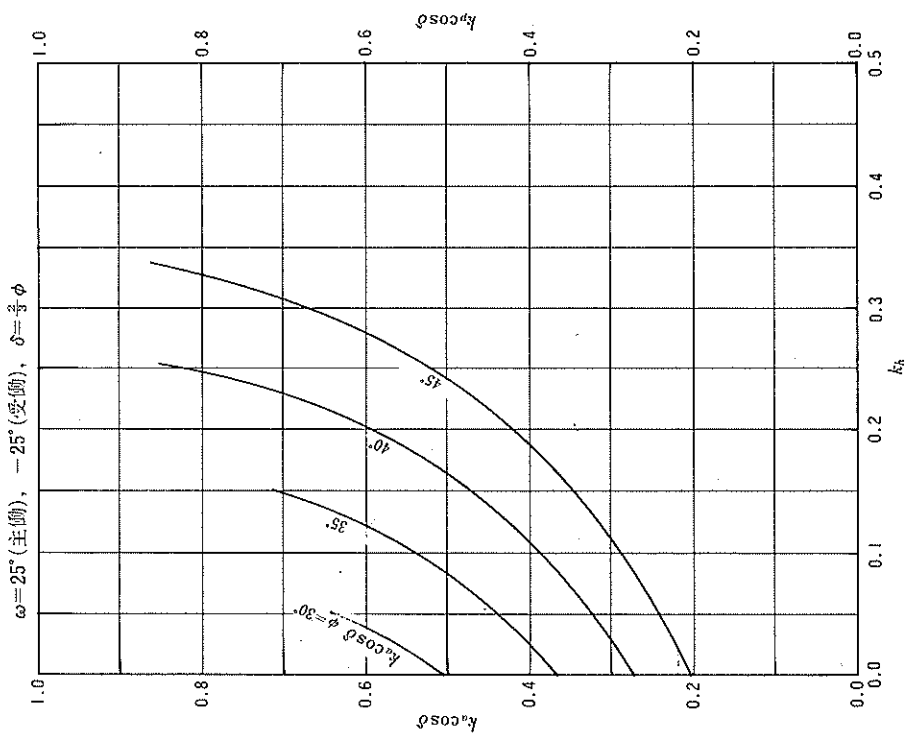
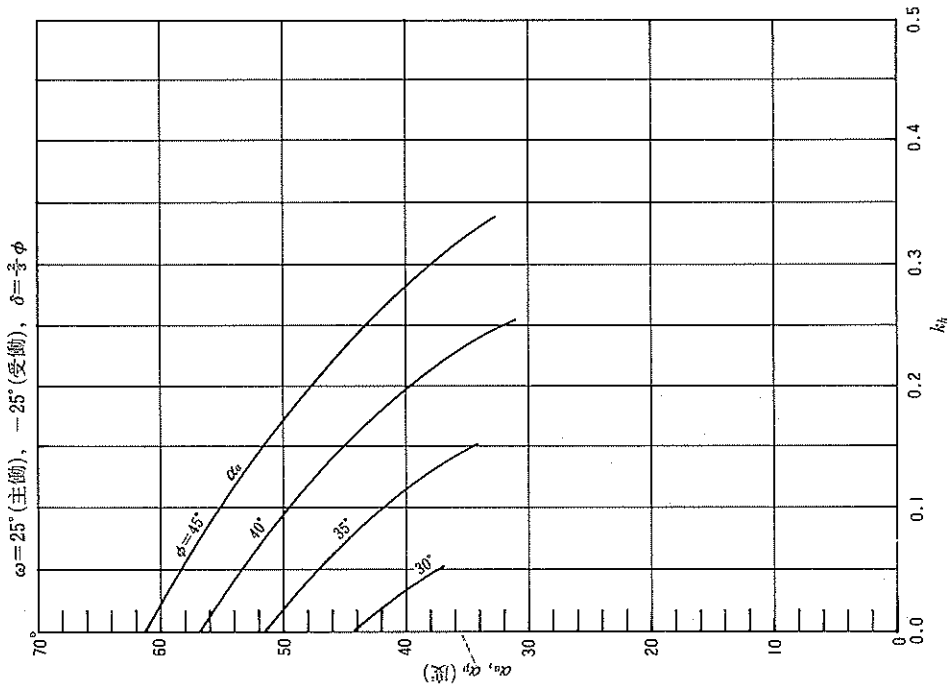
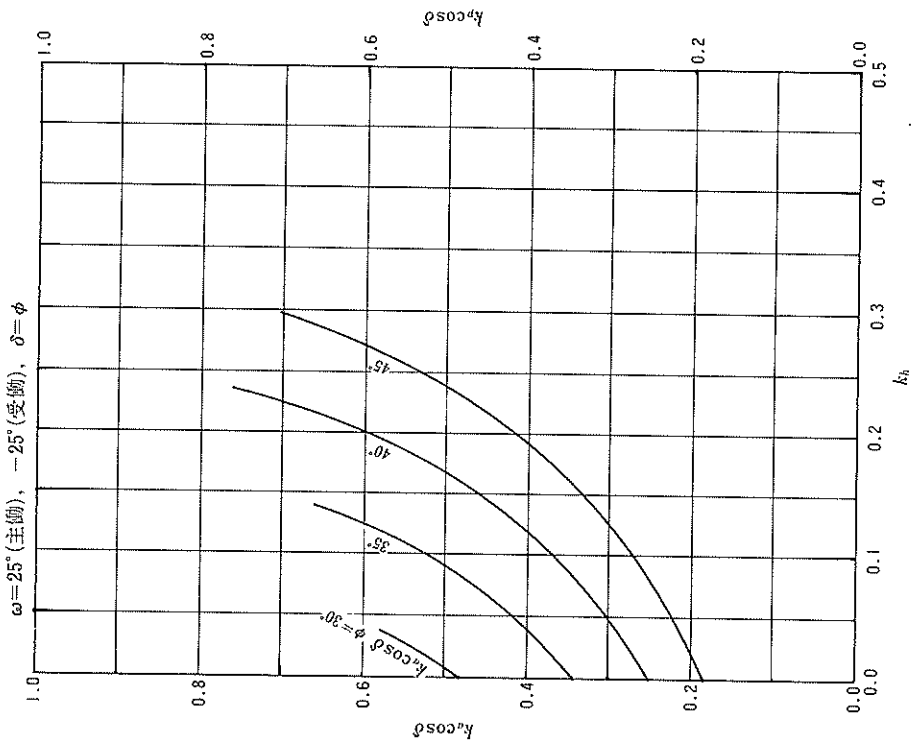
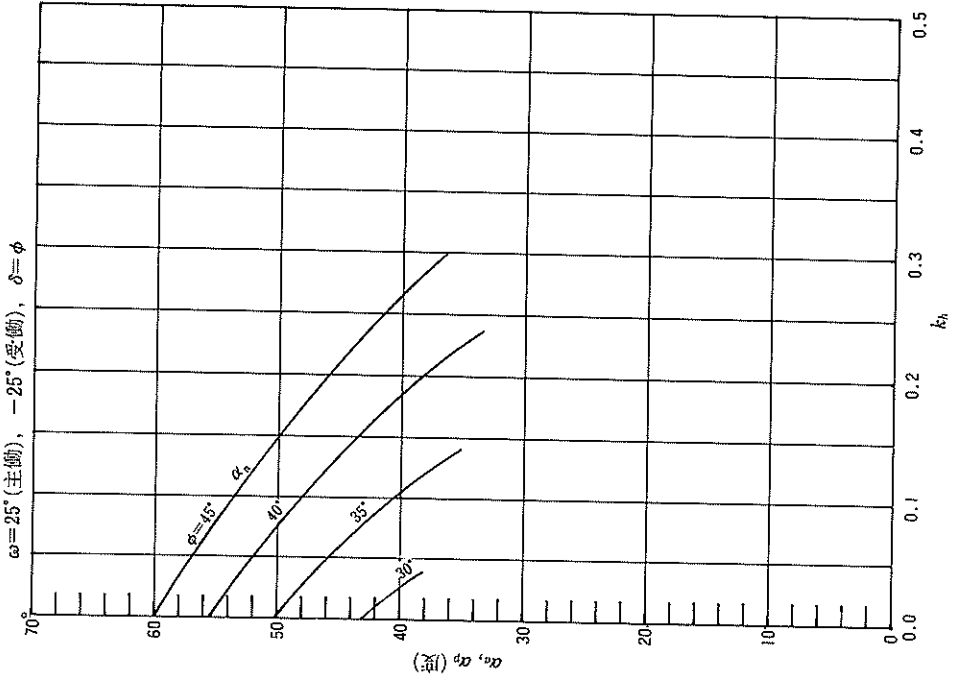
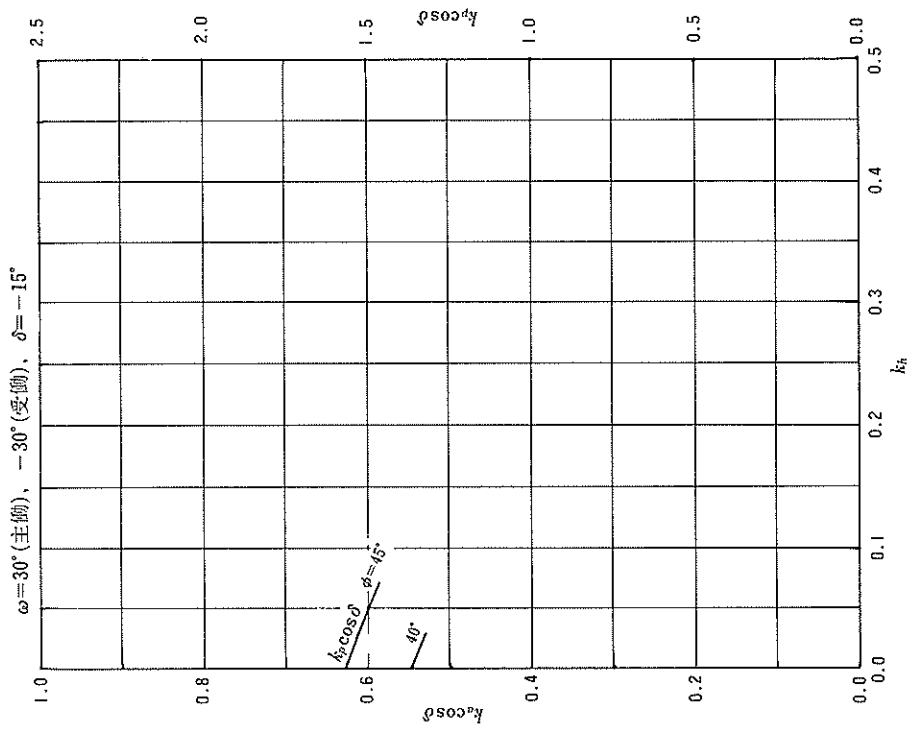
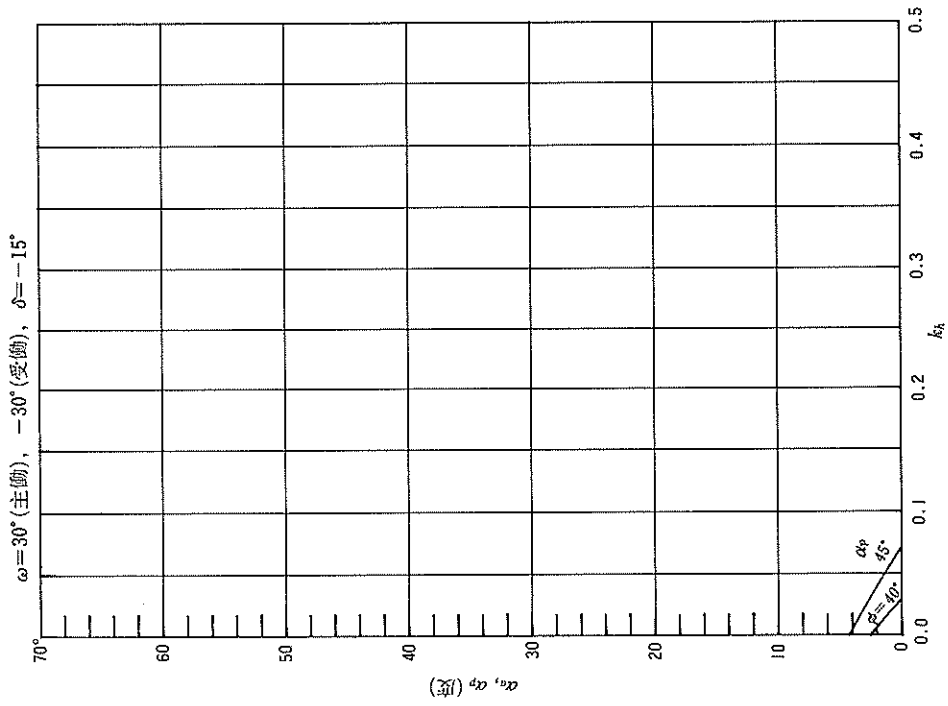


図-4.85 砂質土の土圧係数と崩壊角



図一4 砂質土の土圧係数と崩壊角





図一四 砂質土の土圧係数と崩壊角

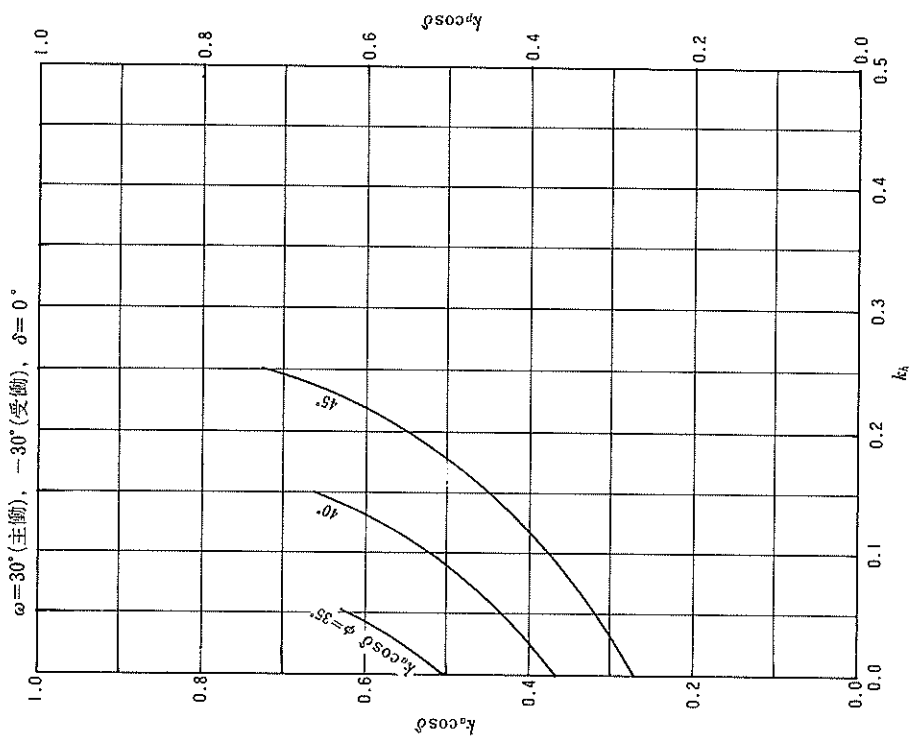
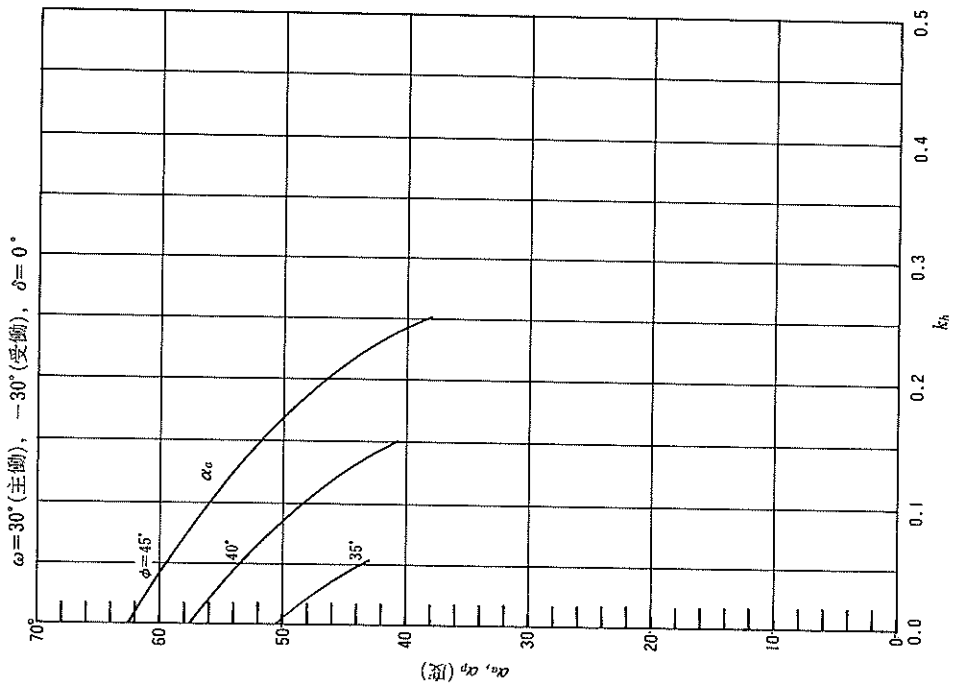
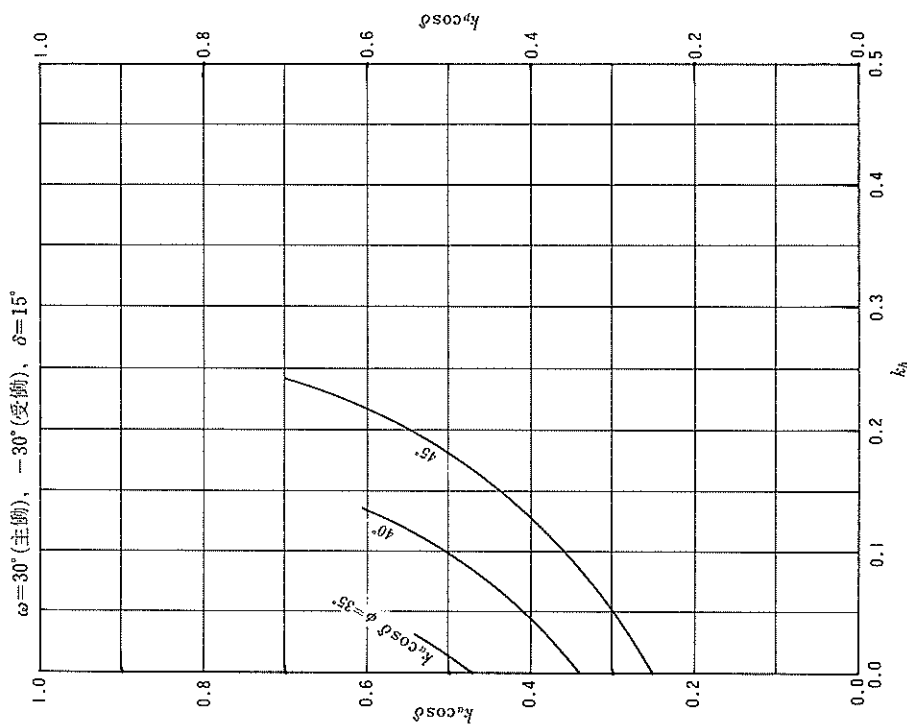
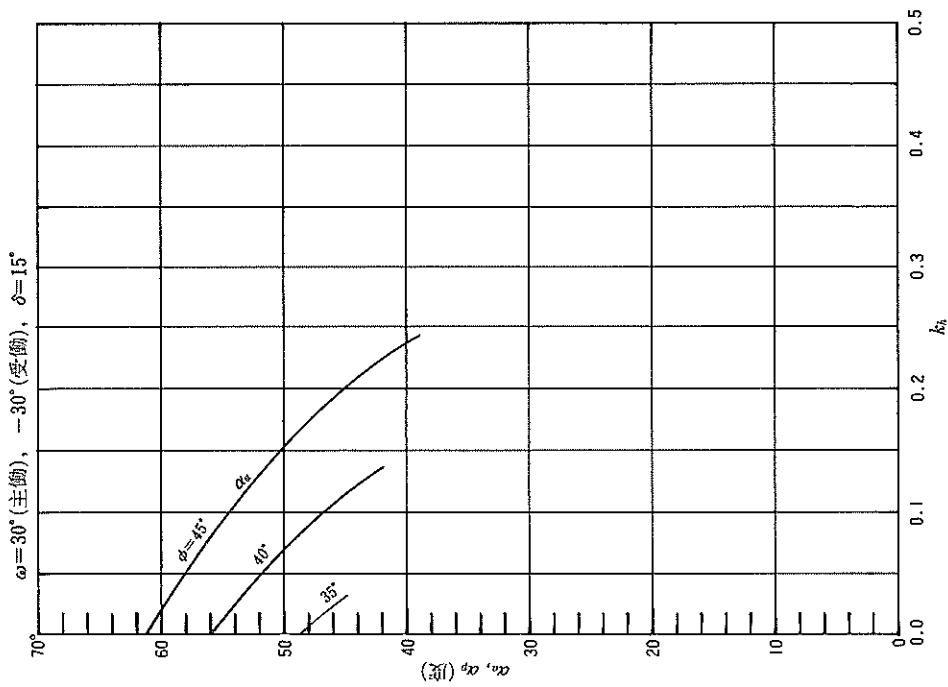
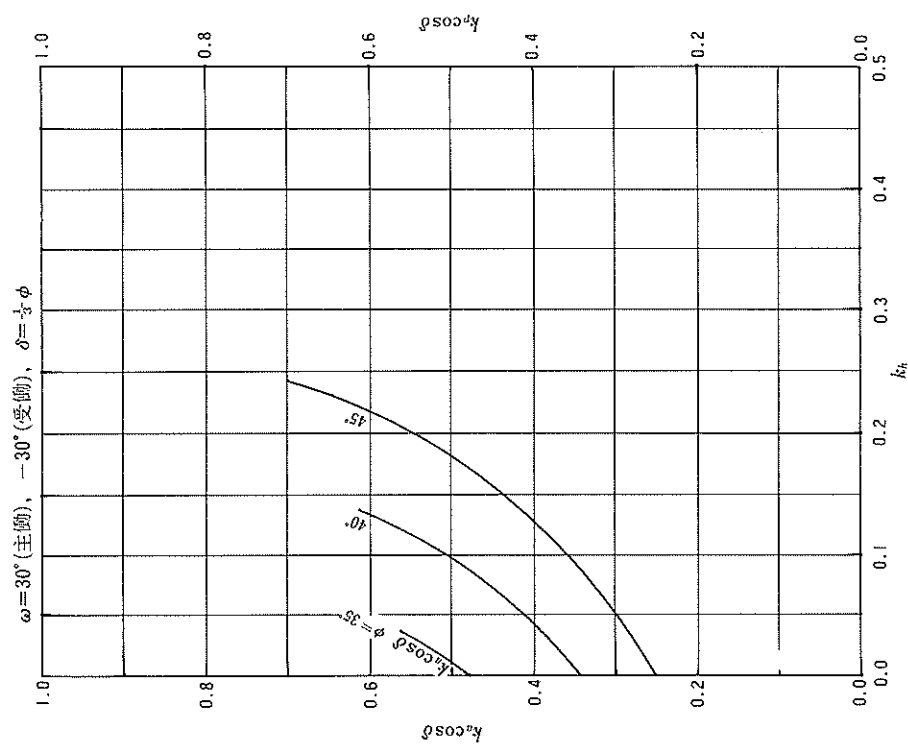
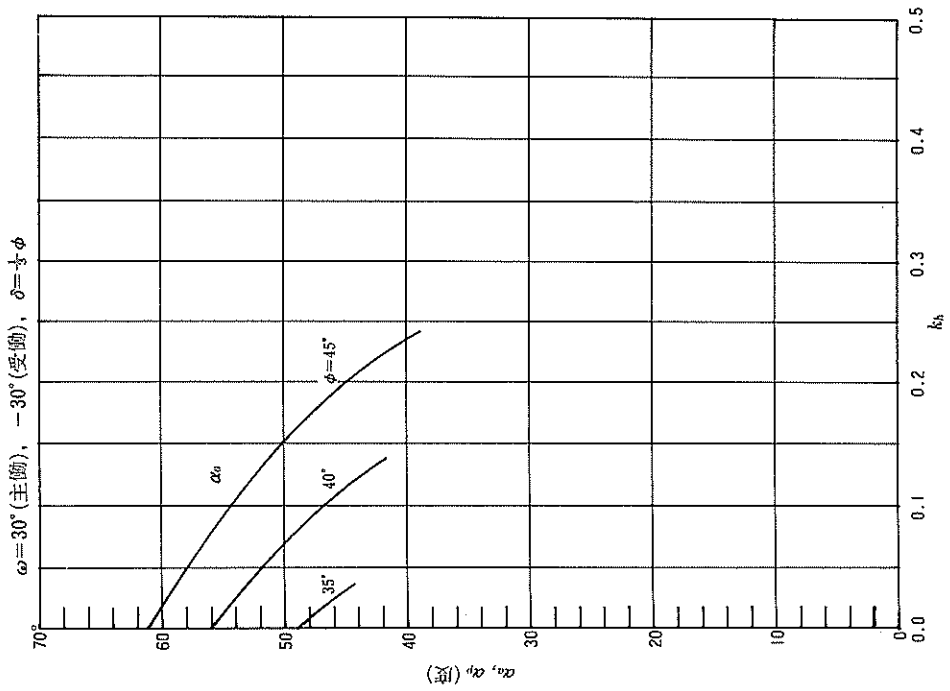


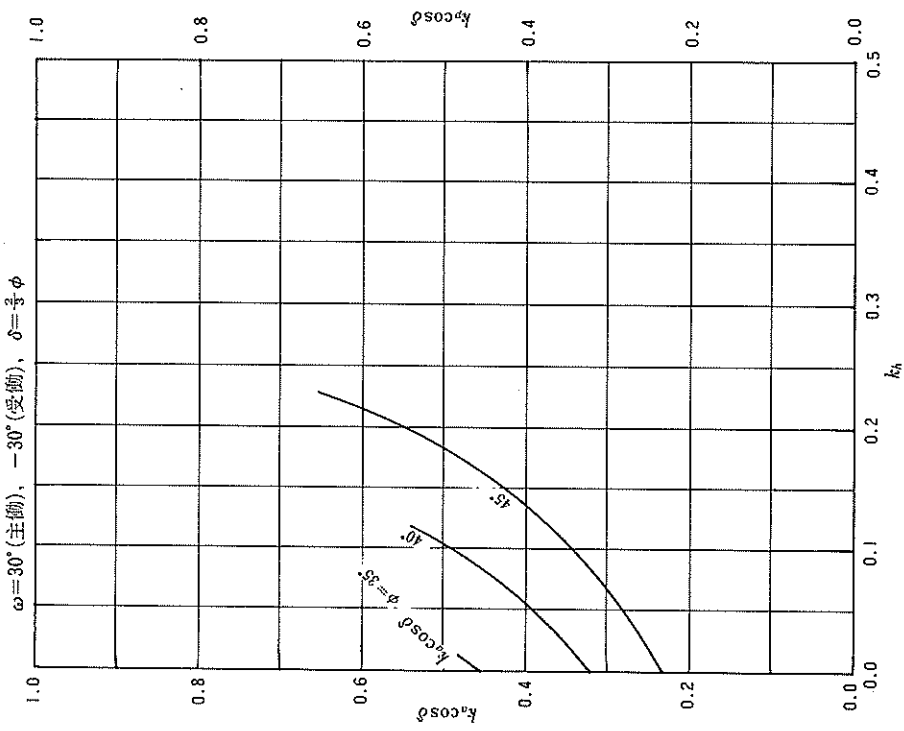
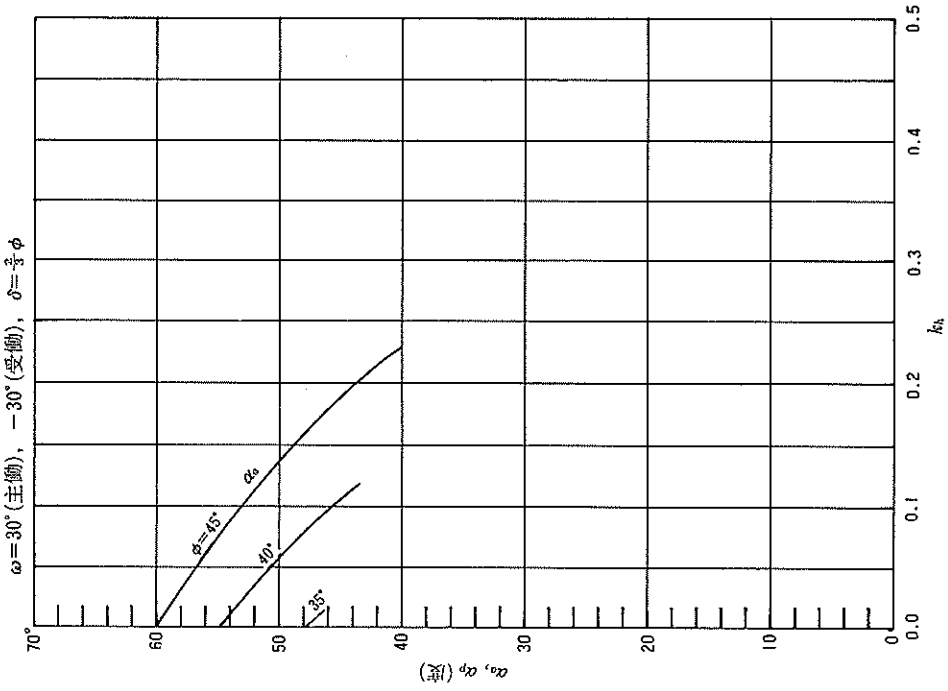
図-4 砂質土の土圧係数と崩壊角



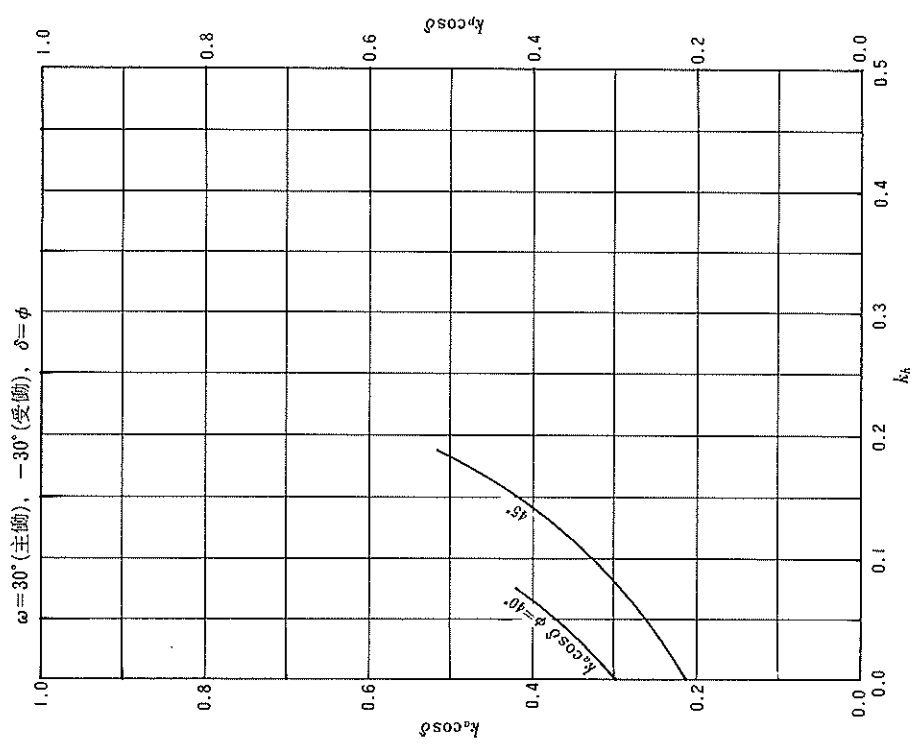
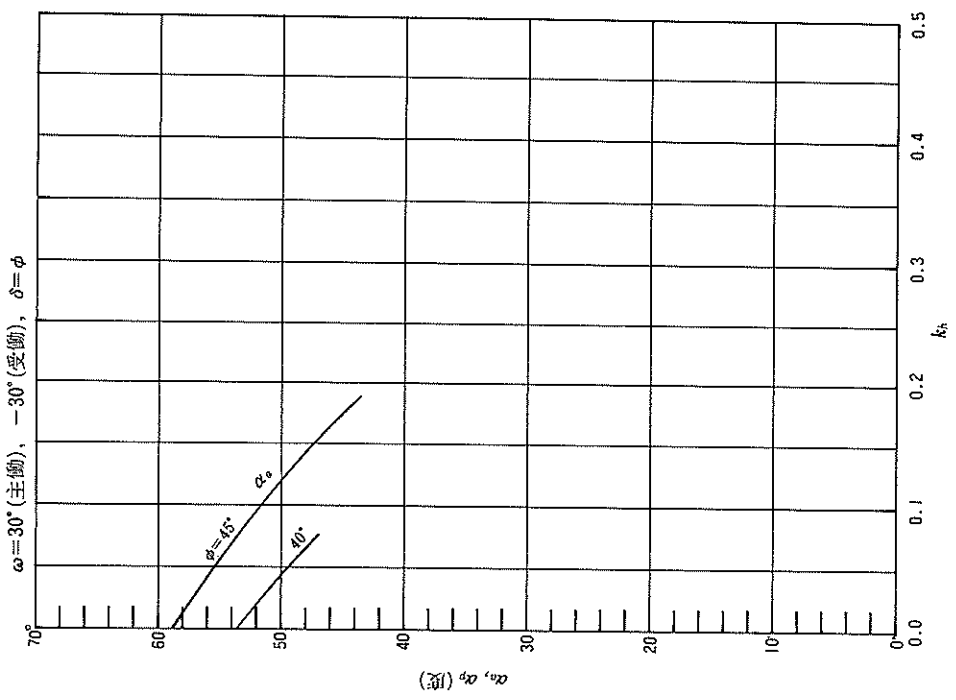
図一488 砂質土の土圧係数と崩壊角



図一4 砂質土の土圧係数と崩壊角



図一4(1) 砂質土の土圧係数と崩壊角



図—4 (2) 砂質土の土圧係数と崩壊角

### 3.3 粘性土の土圧強度と崩壊角

#### (1) 計算条件

##### a) 計算上の仮定と制約条件

表一 8.1~8.3 および 図一 5.1~5.3, 6.1~6.3 に示した粘性土の土圧強度と崩壊角は、壁面が鉛直で、かつ地表面が水平の場合について求めたもの

で、主働土圧については式(21), (22), 受働土圧については式(27), (28)を用いて計算した。

ここで、壁面付着力  $e_a$  と粘着力  $c$  の比で表わされる  $\lambda$  (ここでは付着比と呼ぶ) については、トムリンソンの実験結果<sup>5)</sup>を準用して表一 4 のように決めた。

表一 4 粘着力  $c$  と付着比  $\lambda$  の値

$c$ (kN/m <sup>2</sup> )	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0
$c$ (tf/m <sup>2</sup> )	1.02	2.04	3.06	4.08	5.10	6.12	7.14	8.16	9.18	10.2
$\lambda$	1.00	0.98	0.96	0.92	0.77	0.69	0.63	0.58	0.55	0.51

また、土圧式が成立しないか、あるいは成立しても土圧強度または崩壊角が通常の範囲からはずれる場合は、これを土圧式の制約条件と考えて値を求めている。

粘性土に対する土圧式の制約条件としては、以下の事項を取り上げた。

- ① 主働土圧強度が負の場合
- ② 崩壊角  $\alpha$  が  $0 \sim 90^\circ$  の範囲にない場合
- ③ 式(21)および式(22)において  $\sqrt{\quad}$  の中が負になる場合
- ④ 式(27)および式(28)において  $\alpha = 0$  の場合。この場合は土圧式の分母が 0 となり有限の値が得られない。
- ⑤ 受働土圧強度の式(27)において  $(\alpha + \epsilon) \leq 0$  の場合。この場合は  $\sum \gamma h + q$  が増加すると逆に  $p_p$  が減少することになり現実的でないと考えられるので、この制約条件を設けた。

##### b) 計算範囲

粘性土については、壁面が鉛直で、かつ地表面が水平の場合について主働、受働の土圧強度および崩壊角を次の範囲で求めている。

粘着力 ( $c$ )            10 ~ 100 kN/m<sup>2</sup>  
                               (1.02 ~ 10.2 tf/m<sup>2</sup>)

壁面付着力 ( $e_a$ )    i)  $e_a = 0$  の場合 ( $\lambda = 0$ )  
                               ii)  $e_a = c$  の場合 ( $\lambda = 1$ )  
                               iii)  $e_a = \lambda c$  の場合  
                               ( $\lambda$  の値は、表一 4 参照)

鉛直荷重 ( $\sum \gamma h + q$ )    0 ~ 250 kN/m<sup>2</sup>  
                               (0 ~ 25.5 tf/m<sup>2</sup>)

水平震度 ( $k_h$ )            0 ~ 0.70

#### (2) 計算図表

##### a) 計算図表一覧表

粘性土の計算図表のうち表については、表一 5 に示した壁面付着力  $e_a$  と粘着力  $c$  の組合せごとに水平震度  $k_h$  を  $0 \sim 0.70$ 、鉛直荷重 ( $\sum \gamma h + q$ ) を  $0 \sim 250$  kN/m<sup>2</sup> まで変化させて土圧強度 ( $p_a$ ,  $p_p$ ) および崩壊角  $\alpha$  を求めている。

また、図については、表一 6 および表一 7 に示した壁面付着力  $e_a$  と粘着力  $c$  の組合せごとに水平震度  $k_h$  をパラメーターとして横軸に鉛直荷重 ( $\sum \gamma h + q$ )、縦軸に主働土圧強度  $p_a$  と崩壊角  $\alpha$ 、または受働土圧強度  $p_p$  をとってプロットしてある。

ただし、途中で制約条件により計算できない場合は、そこで図表を終えた。

##### (b) 表

表中の記号は、主働土圧については図一 1、受働土圧については図一 2 に示した方向を正とする。

##### (c) 図

図中の記号は、主働土圧については図一 1、受働土圧については図一 2 に示した方向を正とする。

表-5 粘性土の計算図表(表)一覧表

i) $c_a = 0$ の場合			ii) $c_a = c$ の場合			iii) $c_a = \lambda c$ の場合				
表番	$c$	ページ	表番	$c$	ページ	表番	$c$	$c_a$	$\lambda$	ページ
表-8.1(1)	10 kN/m <sup>2</sup>	73	表-8.2(1)	10 kN/m <sup>2</sup>	90	表-8.3(1)	10 kN/m <sup>2</sup>	10.0 kN/m <sup>2</sup>	1.00	107
(2)	20	74	(2)	20	91	(2)	20	19.6	0.98	108
(3)	30	75	(3)	30	92	(3)	30	28.8	0.96	109
(4)	40	76	(4)	40	93	(4)	40	36.8	0.92	110
(5)	50	78	(5)	50	95	(5)	50	38.5	0.77	112
(6)	60	80	(6)	60	97	(6)	60	41.4	0.69	114
(7)	70	82	(7)	70	99	(7)	70	44.1	0.63	116
(8)	80	84	(8)	80	101	(8)	80	46.4	0.58	118
(9)	90	86	(9)	90	103	(9)	90	49.5	0.55	120
(10)	100	88	(10)	100	105	(10)	100	51.0	0.51	122

表-6 主働土圧強度と崩壊角(図)一覧表

i) $c_a = 0$ の場合			ii) $c_a = c$ の場合			iii) $c_a = \lambda c$ の場合				
図番	$c$	ページ	図番	$c$	ページ	図番	$c$	$c_a$	$\lambda$	ページ
図-5.1(1)	10 kN/m <sup>2</sup>	124	図-5.2(1)	10 kN/m <sup>2</sup>	134	図-5.3(1)	10 kN/m <sup>2</sup>	10.0 kN/m <sup>2</sup>	1.00	144
(2)	20	125	(2)	20	135	(2)	20	19.6	0.98	145
(3)	30	126	(3)	30	136	(3)	30	28.8	0.96	146
(4)	40	127	(4)	40	137	(4)	40	36.8	0.92	147
(5)	50	128	(5)	50	138	(5)	50	38.5	0.77	148
(6)	60	129	(6)	60	139	(6)	60	41.4	0.69	149
(7)	70	130	(7)	70	140	(7)	70	44.1	0.63	150
(8)	80	131	(8)	80	141	(8)	80	46.4	0.58	151
(9)	90	132	(9)	90	142	(9)	90	49.5	0.55	152
(10)	100	133	(10)	100	143	(10)	100	51.0	0.51	153



表-7 受働土圧強度(図)一覧表

i) $c_a = 0$ の場合			ii) $c_a = c$ の場合			iii) $c_a = \lambda c$ の場合				
図番	$c$	ページ	図番	$c$	ページ	図番	$c$	$c_a$	$\lambda$	ページ
図-6.1(1)	10kN/m <sup>2</sup>	154	図-6.2(1)	10kN/m <sup>2</sup>	159	図-6.3(1)	10kN/m <sup>2</sup>	10.0kN/m <sup>2</sup>	1.00	164
(2)	20	〃	(2)	20	〃	(2)	20	19.6	0.98	〃
(3)	30	155	(3)	30	160	(3)	30	28.8	0.96	165
(4)	40	〃	(4)	40	〃	(4)	40	36.8	0.92	〃
(5)	50	156	(5)	50	161	(5)	50	38.5	0.77	166
(6)	60	〃	(6)	60	〃	(6)	60	41.4	0.69	〃
(7)	70	157	(7)	70	162	(7)	70	44.1	0.63	167
(8)	80	〃	(8)	80	〃	(8)	80	46.4	0.58	〃
(9)	90	158	(9)	90	163	(9)	90	49.5	0.55	168
(10)	100	〃	(10)	100	〃	(10)	100	51.0	0.51	〃

表-8・1(1) 粘性土の土圧強度と崩壊角 ( $c_u = 0$  の場合)

$c = 10 \text{ kN/m}^2, c_u = 0 \text{ kN/m}^2$

$k_h = 0$				$k_h = 0.05$			$k_h = 0.10$		
$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		20.0	45.0		20.0	45.0		20.0	45.0
10.0		30.0	45.0		29.5	44.3		29.0	43.5
20.0	0.	40.0	45.0	1.0	39.0	43.5	2.1	37.9	41.8
30.0	10.0	50.0	45.0	11.6	48.4	42.7	13.3	46.7	39.9
40.0	20.0	60.0	45.0	22.1	57.9	41.8	24.5	55.5	37.8
50.0	30.0	70.0	45.0	32.7	67.3	40.9	35.9	64.1	35.3
60.0	40.0	80.0	45.0	43.3	76.7	39.9	47.4	72.6	32.3
70.0	50.0	90.0	45.0	53.9	86.1	38.9	59.0	81.0	28.7
80.0	60.0	100.0	45.0	64.5	95.5	37.8	71.1	88.9	24.1
90.0	70.0	110.0	45.0	75.2	104.8	36.6	83.7	96.3	17.5
100.0	80.0	120.0	45.0	85.9	114.1	35.3	100.0		0.0
110.0	90.0	130.0	45.0	96.6	123.4	33.9			
120.0	100.0	140.0	45.0	107.4	132.6	32.3			
130.0	110.0	150.0	45.0	118.2	141.8	30.6			
140.0	120.0	160.0	45.0	129.0	151.0	28.7			
150.0	130.0	170.0	45.0	140.0	160.0	26.6			
160.0	140.0	180.0	45.0	151.1	168.9	24.1			
170.0	150.0	190.0	45.0	162.3	177.7	21.2			
180.0	160.0	200.0	45.0	173.7	186.3	17.5			
190.0	170.0	210.0	45.0	185.5	194.5	12.6			
200.0	180.0	220.0	45.0	200.0		0.0			
210.0	190.0	230.0	45.0						
220.0	200.0	240.0	45.0						
230.0	210.0	250.0	45.0						
240.0	220.0	260.0	45.0						
250.0	230.0	270.0	45.0						
$k_h = 0.15$				$k_h = 0.20$			$k_h = 0.25$		
0.		20.0	45.0		20.0	45.0		20.0	45.0
10.0		28.4	42.7		27.9	41.8		27.3	40.9
20.0	3.3	36.7	39.9	4.5	35.5	37.8	5.9	34.1	35.3
30.0	15.2	44.8	36.6	17.4	42.6	32.3	20.0	40.0	26.6
40.0	27.4	52.6	32.3	31.1	48.9	24.1	40.0		0.0
50.0	40.0	60.0	26.6	50.0		0.0			
60.0	53.7	66.3	17.5						
$k_h = 0.30$				$k_h = 0.35$			$k_h = 0.40$		
0.		20.0	45.0		20.0	45.0		20.0	45.0
10.0		26.7	39.9		26.1	38.9		25.5	37.8
20.0	7.4	32.6	32.3	9.0	31.0	28.7	11.1	28.9	24.1
30.0	23.7	36.3	17.5						
$k_h = 0.45$				$k_h = 0.50$			$k_h = 0.55$		
0.		20.0	45.0		20.0	45.0		20.0	45.0
10.0		24.8	36.6		24.1	35.3		23.4	33.9
20.0	13.7		17.5	20.0		0.0			
$k_h = 0.60$				$k_h = 0.65$			$k_h = 0.70$		
0.		20.0	45.0		20.0	45.0		20.0	45.0
10.0		22.6	32.3						

表-8・1(2) 粘性土の土圧強度と崩壊角 ( $c_a = 0$  の場合)

$c = 20 \text{ kN/m}^2, c_a = 0 \text{ kN/m}^2$

$k_h = 0$				$k_h = 0.05$			$k_h = 0.10$		
$\Sigma \gamma k + q$ ( $\text{kN/m}^2$ )	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		40.0	45.0		40.0	45.0		40.0	45.0
10.0		50.0	45.0		49.5	44.6		49.0	44.3
20.0		60.0	45.0		59.0	44.3		57.9	43.5
30.0		70.0	45.0		68.5	43.9		66.9	42.7
40.0	0.	80.0	45.0	2.1	77.9	43.5	4.2	75.8	41.8
50.0	10.0	90.0	45.0	12.6	87.4	43.1	15.4	84.6	40.9
60.0	20.0	100.0	45.0	23.1	96.9	42.7	26.5	93.5	39.9
70.0	30.0	110.0	45.0	33.7	106.3	42.2	37.8	102.2	38.9
80.0	40.0	120.0	45.0	44.2	115.8	41.8	49.0	111.0	37.8
90.0	50.0	130.0	45.0	54.8	125.2	41.4	60.3	119.7	36.6
100.0	60.0	140.0	45.0	65.4	134.6	40.9	71.7	128.3	35.3
110.0	70.0	150.0	45.0	75.9	144.1	40.4	83.2	136.8	33.9
120.0	80.0	160.0	45.0	86.5	153.5	39.9	94.7	145.3	32.3
130.0	90.0	170.0	45.0	97.1	162.9	39.4	106.3	153.7	30.6
140.0	100.0	180.0	45.0	107.8	172.2	38.9	118.1	161.9	28.7
150.0	110.0	190.0	45.0	118.4	181.6	38.3	130.0	170.0	26.6
160.0	120.0	200.0	45.0	129.0	191.0	37.8	142.1	177.9	24.1
170.0	130.0	210.0	45.0	139.7	200.3	37.2	154.5	185.5	21.2
180.0	140.0	220.0	45.0	150.3	209.7	36.6	167.4	192.6	17.5
190.0	150.0	230.0	45.0	161.0	219.0	35.9	181.1	198.9	12.6
200.0	160.0	240.0	45.0	171.7	228.3	35.3	200.0		0.0
210.0	170.0	250.0	45.0	182.4	237.6	34.6			
220.0	180.0	260.0	45.0	193.2	246.8	33.9			
230.0	190.0	270.0	45.0	203.9	256.1	33.1			
240.0	200.0	280.0	45.0	214.7	265.3	32.3			
250.0	210.0	290.0	45.0	225.5	274.5	31.5			
$k_h = 0.15$				$k_h = 0.20$			$k_h = 0.25$		
0.		40.0	45.0		40.0	45.0		40.0	45.0
10.0		48.5	43.9		47.9	43.5		47.4	43.1
20.0		56.9	42.7		55.8	41.8		54.6	40.9
30.0		65.2	41.4		63.5	39.9		61.6	38.3
40.0	6.5	73.5	39.9	9.0	71.0	37.8	11.7	68.3	35.3
50.0	18.4	81.6	38.3	21.7	78.3	35.3	22.5	74.5	31.5
60.0	30.3	89.7	36.6	34.7	85.3	32.3	40.0	80.0	26.6
70.0	42.4	97.6	34.6	48.1	91.9	28.7	55.9	84.1	19.5
80.0	54.7	105.3	32.3	62.1	97.9	24.1	80.0		0.0
90.0	67.2	112.8	29.7	77.4	102.6	17.5			
100.0	80.0	120.0	26.6	100.0		0.0			
110.0	93.3	126.7	22.7						
120.0	107.4	132.6	17.5						
130.0	123.7	136.3	9.0						
$k_h = 0.30$				$k_h = 0.35$			$k_h = 0.40$		
0.		40.0	45.0		40.0	45.0		40.0	45.0
10.0		46.9	42.7		46.3	42.2		45.8	41.8
20.0		53.5	39.9		52.2	38.9		51.0	37.8
30.0	0.3	59.7	36.6	2.4	57.6	34.6	4.7	55.3	32.3
40.0	14.7	65.3	32.3	18.1	61.9	28.7	22.1	57.9	24.1
50.0	30.0	70.0	26.6	35.9	64.1	19.5			
60.0	47.4	72.6	17.5						
$k_h = 0.45$				$k_h = 0.50$			$k_h = 0.55$		
0.		40.0	45.0		40.0	45.0		40.0	45.0
10.0		45.2	41.4		44.6	40.9		44.1	40.4
20.0		49.7	36.6		48.3	35.3		46.8	33.9
30.0	7.2	52.8	29.7	10.0		26.6	13.3		22.7
40.0	27.4		17.5	40.0		0.0			
$k_h = 0.60$				$k_h = 0.65$			$k_h = 0.70$		
0.		40.0	45.0		40.0	45.0		40.0	45.0
10.0		43.5	39.9		42.9	39.4		42.2	38.9
20.0		45.3	32.3						
30.0	17.4		17.5	23.7		9.0			

表-8・1(3) 粘性土の土圧強度と崩壊角 ( $c_a = 0$  の場合)

$c = 30 \text{ kN/m}^2, c_0 = 0 \text{ kN/m}^2$

$k_A = 0$				$k_A = 0.05$			$k_A = 0.10$		
$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		60.0	45.0		60.0	45.0		60.0	45.0
10.0		70.0	45.0		69.5	44.8		69.0	44.5
20.0		80.0	45.0		79.0	44.5		78.0	44.0
30.0		90.0	45.0		88.5	44.3		86.9	43.5
40.0		100.0	45.0		98.0	44.0		95.9	43.0
50.0		110.0	45.0		107.4	43.8		104.8	42.4
60.0	0.	120.0	45.0	3.1	116.9	43.5	6.3	113.7	41.8
70.0	10.0	130.0	45.0	13.6	126.4	43.2	17.5	122.5	41.2
80.0	20.0	140.0	45.0	24.1	135.9	43.0	28.6	131.4	40.6
90.0	30.0	150.0	45.0	34.7	145.3	42.7	39.8	140.2	39.9
100.0	40.0	160.0	45.0	45.2	154.8	42.4	51.0	149.0	39.2
110.0	50.0	170.0	45.0	55.8	164.2	42.1	62.3	157.7	38.5
120.0	60.0	180.0	45.0	66.3	173.7	41.8	73.5	166.5	37.8
130.0	70.0	190.0	45.0	76.9	183.1	41.5	84.8	175.2	37.0
140.0	80.0	200.0	45.0	87.5	192.5	41.2	96.2	183.8	36.1
150.0	90.0	210.0	45.0	98.0	202.0	40.9	107.6	192.4	35.3
160.0	100.0	220.0	45.0	108.6	211.4	40.6	119.0	201.0	34.3
170.0	110.0	230.0	45.0	119.2	220.8	40.2	130.5	209.5	33.4
180.0	120.0	240.0	45.0	129.8	230.2	39.9	142.1	217.9	32.3
190.0	130.0	250.0	45.0	140.4	239.6	39.6	153.7	226.3	31.2
200.0	140.0	260.0	45.0	151.0	249.0	39.2	165.4	234.6	30.0
210.0	150.0	270.0	45.0	161.6	258.4	38.9	177.1	242.9	28.7
220.0	160.0	280.0	45.0	172.3	267.7	38.5	189.0	251.0	27.3
230.0	170.0	290.0	45.0	182.9	277.1	38.1	201.0	259.0	25.8
240.0	180.0	300.0	45.0	193.5	286.5	37.8	213.2	266.8	24.1
250.0	190.0	310.0	45.0	204.2	295.8	37.4	225.5	274.5	22.2
$k_A = 0.15$				$k_A = 0.20$			$k_A = 0.25$		
0.		60.0	45.0		60.0	45.0		60.0	45.0
10.0		68.5	44.3		68.0	44.0		67.4	43.8
20.0		76.9	43.5		75.9	43.0		74.8	42.4
30.0		85.3	42.7		83.7	41.8		82.0	40.9
40.0		93.7	41.8		91.4	40.6		89.0	39.2
50.0		102.0	40.9	1.0	99.0	39.2	4.2	95.8	37.4
60.0	9.8	110.2	39.9	13.5	106.5	37.8	17.6	102.4	35.3
70.0	21.6	118.4	38.9	26.2	113.8	36.1	31.3	108.7	32.8
80.0	33.5	126.5	37.8	39.0	121.0	34.3	45.4	114.6	30.0
90.0	45.5	134.5	36.6	52.1	127.9	32.3	60.0	120.0	26.6
100.0	57.6	142.4	35.3	65.4	134.6	30.0	75.5	124.5	22.2
110.0	69.8	150.2	33.9	79.0	141.0	27.3	92.7	127.3	16.1
120.0	82.1	157.9	32.3	93.2	146.8	24.1	120.0		0.0
130.0	94.5	165.5	30.6	108.1	151.9	20.1			
140.0	107.1	172.9	28.7	124.5	155.5	14.5			
150.0	120.0	180.0	26.6	150.0		0.0			
160.0	133.2	186.8	24.1						
170.0	146.8	193.2	21.2						
180.0	161.0	199.0	17.5						
190.0	176.6	203.4	12.6						
200.0	200.0		0.0						
$k_A = 0.30$				$k_A = 0.35$			$k_A = 0.40$		
0.		60.0	45.0		60.0	45.0		60.0	45.0
10.0		66.9	43.5		66.4	43.2		65.9	43.0
20.0		73.7	41.8		72.5	41.2		71.4	40.6
30.0		80.2	39.9		78.4	38.9		76.5	37.8
40.0		86.5	37.8		83.8	36.1		81.0	34.3
50.0	7.6	92.4	35.3	11.3	88.7	32.8	15.4	84.6	30.0
60.0	22.1	97.9	32.3	27.1	92.9	28.7	33.2	86.8	24.1
70.0	37.1	102.9	28.7	44.3	95.7	23.2	54.5		14.5
80.0	53.2	106.8	24.1	64.5		14.5			
90.0	71.0	109.0	17.5						
$k_A = 0.45$				$k_A = 0.50$			$k_A = 0.55$		
0.		60.0	45.0		60.0	45.0		60.0	45.0
10.0		65.3	42.7		64.8	42.4		64.2	42.1
20.0		70.2	39.9		69.0	39.2		67.7	38.5
30.0		74.5	36.6		72.4	35.3		70.2	33.9
40.0	2.1	77.9	32.3	5.4	74.6	30.0	9.0		27.3
50.0	20.0	80.0	26.6	25.5		22.2	32.7		16.1
60.0	41.0		17.5	60.0		0.0			
$k_A = 0.60$				$k_A = 0.65$			$k_A = 0.70$		
0.		60.0	45.0		60.0	45.0		60.0	45.0
10.0		63.7	41.8		63.1	41.5		62.5	41.2
20.0		66.5	37.8		65.2	37.0		63.8	36.1
30.0		67.9	32.3						
40.0	13.2		24.1	18.1		20.1	24.5		14.5

表-8・1(4) 粘性土の土圧強度と崩壊角 ( $c_a = 0$  の場合)

$c = 40.0 \text{ kN/m}^2, c_a = 0 \text{ kN/m}^2$  (その1)

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_h = 0$			$k_h = 0.05$			$k_h = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.	80.0	45.0	45.0	80.0	45.0	45.0	80.0	80.0	45.0
10.0	90.0	45.0	45.0	89.5	44.8	44.6	89.0	89.0	44.6
20.0	100.0	45.0	45.0	99.0	44.6	44.3	98.0	98.0	44.3
30.0	110.0	45.0	45.0	108.5	44.5	43.9	106.9	106.9	43.9
40.0	120.0	45.0	45.0	118.0	44.3	43.5	115.9	115.9	43.5
50.0	130.0	45.0	45.0	127.5	44.1	43.1	124.8	124.8	43.1
60.0	140.0	45.0	45.0	136.9	43.9	42.7	133.8	133.8	42.7
70.0	150.0	45.0	45.0	146.4	43.7	42.2	142.7	142.7	42.2
80.0	160.0	45.0	45.0	155.9	43.5	41.8	151.6	151.6	41.8
90.0	170.0	45.0	45.0	165.4	43.3	41.4	160.4	160.4	41.4
100.0	180.0	45.0	45.0	25.2	174.8	43.1	30.7	169.3	40.9
110.0	30.0	190.0	45.0	35.7	184.3	42.9	41.9	178.1	40.4
120.0	40.0	200.0	45.0	46.2	193.8	42.7	53.1	186.9	39.9
130.0	50.0	210.0	45.0	56.8	203.2	42.5	64.3	195.7	39.4
140.0	60.0	220.0	45.0	67.3	212.7	42.2	75.5	204.5	38.9
150.0	70.0	230.0	45.0	77.9	222.1	42.0	86.8	213.2	38.3
160.0	80.0	240.0	45.0	88.4	231.6	41.8	98.0	222.0	37.8
170.0	90.0	250.0	45.0	99.0	241.0	41.6	109.3	230.7	37.2
180.0	100.0	260.0	45.0	109.6	250.4	41.4	120.7	239.3	36.6
190.0	110.0	270.0	45.0	120.1	259.9	41.1	132.0	248.0	35.9
200.0	120.0	280.0	45.0	130.7	269.3	40.9	143.4	256.6	35.3
210.0	130.0	290.0	45.0	141.3	278.7	40.7	154.9	265.1	34.6
220.0	140.0	300.0	45.0	151.9	288.1	40.4	166.3	273.7	33.9
230.0	150.0	310.0	45.0	162.5	297.5	40.2	177.8	282.2	33.1
240.0	160.0	320.0	45.0	173.1	306.9	39.9	189.4	290.6	32.3
250.0	170.0	330.0	45.0	183.7	316.3	39.7	201.0	299.0	31.5
<b><math>k_h = 0.15</math></b>									
0.	80.0	45.0	45.0	80.0	45.0	45.0	80.0	80.0	45.0
10.0	88.5	44.5	44.5	88.0	44.3	44.1	87.5	87.5	44.1
20.0	96.9	43.9	43.9	95.9	43.5	43.1	94.8	94.8	43.1
30.0	105.4	43.3	43.3	103.8	42.7	42.0	102.1	102.1	42.0
40.0	113.8	42.7	42.7	111.6	41.8	41.4	109.3	109.3	40.9
50.0	122.1	42.0	42.0	119.3	40.9	40.7	116.3	116.3	39.7
60.0	130.4	41.4	41.4	126.9	39.9	39.9	123.2	123.2	38.3
70.0	138.7	40.7	40.7	134.5	38.9	39.0	130.0	130.0	36.9
80.0	146.9	39.9	39.9	142.0	37.8	38.4	136.6	136.6	35.3
90.0	24.9	155.1	39.1	30.7	149.3	36.6	37.1	142.9	33.5
100.0	36.8	163.2	38.3	43.4	156.6	35.3	51.0	149.0	31.5
110.0	48.7	171.3	37.5	56.3	163.7	33.9	65.3	154.7	29.2
120.0	60.7	179.3	36.6	69.4	170.6	32.3	80.0	160.0	26.6
130.0	72.7	187.3	35.6	82.7	177.3	30.6	95.4	164.6	23.4
140.0	84.9	195.1	34.6	96.2	183.8	28.7	111.7	168.3	19.5
150.0	97.1	202.9	33.5	110.0	190.0	26.6	130.0	170.0	14.0
160.0	109.4	210.6	32.3	124.2	195.8	24.1	159.9		0.0
170.0	121.8	218.2	31.1	139.0	201.0	21.2			
180.0	134.4	225.6	29.7	154.7	205.3	17.5			
190.0	147.1	232.9	28.2	172.1	207.9	12.6			
200.0	160.0	240.0	26.6	200.0		0.0			
210.0	173.1	246.9	24.7						
220.0	186.5	253.5	22.7						
230.0	200.3	259.7	20.3						
240.0	214.7	265.3	17.5						
250.0	230.0	270.0	14.0						
<b><math>k_h = 0.30</math></b>									
0.	80.0	45.0	45.0	80.0	45.0	45.0	80.0	80.0	45.0
10.0	86.9	43.9	43.9	86.4	43.7	43.5	85.9	85.9	43.5
20.0	93.8	42.7	42.7	92.7	42.2	42.0	91.6	91.6	41.8
30.0	100.4	41.4	41.4	98.7	40.7	40.7	96.9	96.9	39.9
40.0	106.9	39.9	39.9	104.5	38.9	38.9	102.0	102.0	37.8
50.0	113.2	38.3	38.3	110.0	36.9	36.9	106.6	106.6	35.3
60.0	0.7	119.3	36.6	4.9	115.1	34.6	9.4	110.6	32.3
70.0	14.9	125.1	34.6	20.2	119.8	31.9	26.2	113.8	28.7
80.0	29.4	130.6	32.3	36.2	123.8	28.7	44.2	115.8	24.1
90.0	44.4	135.6	29.7	53.1	126.9	24.7	64.7		17.5
100.0	60.0	140.0	26.6	71.7	128.3	19.5			
110.0	76.5	143.5	22.7	94.5		11.0			
120.0	94.7	145.3	17.5						
130.0	117.4		9.0						

$c = 40.0 \text{ kN/m}^2$ ,  $c_a = 0 \text{ kN/m}^2$  (その2)

$\Sigma Th+g$ ( $\text{kN/m}^2$ )	$k_k = 0.45$			$k_k = 0.50$			$k_k = 0.55$			
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$	
0.		80.0	45.0		80.0	45.0		80.0	45.0	
10.0		85.4	43.3		84.8	43.1		84.3	42.9	
20.0		90.4	41.4		89.3	40.9		88.1	40.4	
30.0		95.1	39.1		93.2	38.3		91.3	37.5	
40.0		99.3	36.6		96.6	35.3		93.7	33.9	
50.0		102.9	33.5	1.0	99.0	31.5	5.3	94.7	29.2	
60.0	14.4	105.6	29.7	20.0		26.6	26.5		22.7	
70.0	33.1	106.9	24.7	41.7		19.5	54.5		11.0	
80.0	54.7		17.5	80.0		0.0				
		$k_k = 0.60$			$k_k = 0.65$			$k_k = 0.70$		
0.		80.0	45.0		80.0	45.0		80.0	45.0	
10.0		83.8	42.7		83.2	42.5		82.7	42.2	
20.0		86.9	39.9		85.7	39.4		84.5	38.9	
30.0		89.3	36.6		87.3	35.6				
40.0		90.6	32.3							
50.0	10.0		26.6	15.4		23.4	21.7		19.5	
60.0	34.7		17.5	47.4		9.0				

表-8・1(5) 粘性土の土圧強度と崩壊角 ( $c_a = 0$  の場合)

$c = 50.0 \text{ kN/m}^2$ ,  $c_a = 0 \text{ kN/m}^2$  (その1)

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_a = 0$			$k_a = 0.50$			$k_a = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		100.0	45.0		100.0	45.0		100.0	45.0
10.0		100.0	45.0		109.5	44.9		109.0	44.7
20.0		120.0	45.0		119.0	44.7		118.0	44.4
30.0		130.0	45.0		128.5	44.6		127.0	44.1
40.0		140.0	45.0		138.0	44.4		135.9	43.8
50.0		150.0	45.0		147.5	44.3		144.9	43.5
60.0		160.0	45.0		157.0	44.1		153.8	43.2
70.0		170.0	45.0		166.4	44.0		162.7	42.8
80.0		180.0	45.0		175.9	43.8		171.7	42.5
90.0		190.0	45.0		185.4	43.6		180.6	42.2
100.0	0.	200.0	45.0	5.1	194.9	43.5	10.6	189.4	41.8
110.0	10.0	210.0	45.0	15.7	204.3	43.3	21.7	198.3	41.5
120.0	20.0	220.0	45.0	26.2	213.8	43.2	32.8	207.2	41.1
130.0	30.0	230.0	45.0	36.7	223.3	43.0	44.0	216.0	40.7
140.0	40.0	240.0	45.0	47.3	232.7	42.8	55.1	224.9	40.3
150.0	50.0	250.0	45.0	57.8	242.2	42.7	66.3	233.7	39.9
160.0	60.0	260.0	45.0	68.3	251.7	42.5	77.5	242.5	39.5
170.0	70.0	270.0	45.0	78.9	261.1	42.3	88.8	251.2	39.1
180.0	80.0	280.0	45.0	89.4	270.6	42.2	100.0	260.0	38.7
190.0	90.0	290.0	45.0	100.0	280.0	42.0	111.3	268.7	38.2
200.0	100.0	300.0	45.0	110.6	289.4	41.8	122.5	277.5	37.8
210.0	110.0	310.0	45.0	121.1	298.9	41.6	133.8	286.2	37.3
220.0	120.0	320.0	45.0	131.7	308.3	41.5	145.2	294.8	36.8
230.0	130.0	330.0	45.0	142.3	317.7	41.3	156.5	303.5	36.3
240.0	140.0	340.0	45.0	152.8	327.2	41.1	167.9	312.1	35.8
250.0	150.0	350.0	45.0	163.4	336.6	40.9	179.3	320.7	35.3
<b><math>k_a = 0.15</math></b>									
0.		100.0	45.0		100.0	45.0		100.0	45.0
10.0		108.5	44.6		108.0	44.4		107.5	44.3
20.0		117.0	44.1		115.9	43.8		114.9	43.5
30.0		125.4	43.6		123.8	43.2		122.2	42.7
40.0		133.8	43.2		131.7	42.5		129.4	41.8
50.0		142.2	42.7		139.4	41.8		136.6	40.9
60.0		150.6	42.2		147.2	41.1		143.7	39.9
70.0		158.9	41.6		154.9	40.3		150.6	38.9
80.0		167.2	41.1		162.5	39.5	2.5	157.5	37.8
90.0	4.6	175.4	40.5	10.0	170.0	38.7	15.8	164.2	36.6
100.0	16.3	183.7	39.9	22.5	177.5	37.8	29.3	170.7	35.3
110.0	28.1	191.9	39.3	35.2	184.8	36.8	42.9	177.1	33.9
120.0	40.0	200.0	38.7	47.9	192.1	35.8	56.8	183.2	32.3
130.0	51.9	208.1	38.0	60.7	199.3	34.7	70.8	189.2	30.6
140.0	63.8	216.2	37.3	73.7	206.3	33.6	85.2	194.8	28.7
150.0	75.8	224.2	36.6	86.8	213.2	32.3	100.0	200.0	26.6
160.0	87.9	232.1	35.8	100.0	220.0	31.0	115.3	204.7	24.1
170.0	100.0	240.0	35.0	113.4	226.6	29.5	131.3	208.7	21.2
180.0	112.2	247.8	34.1	127.1	232.9	27.9	148.4	211.6	17.5
190.0	124.4	255.6	33.3	141.0	239.0	26.1	167.6		12.6
200.0	136.8	263.2	32.3	155.3	244.7	24.1	199.9		0.0
210.0	149.2	270.8	31.3	170.0	250.0	21.8			
220.0	161.7	278.3	30.2	185.4	254.6	19.1			
230.0	174.3	285.7	29.1	201.7	258.3	15.8			
240.0	187.1	292.9	27.9	220.0		11.3			
250.0	200.0	300.0	26.6	250.0		0.0			
<b><math>k_a = 0.30</math></b>									
0.		100.0	45.0		100.0	45.0		100.0	45.0
10.0		107.0	44.1		106.4	44.0		105.9	43.8
20.0		113.8	43.2		112.7	42.8		111.7	42.5
30.0		120.6	42.2		118.9	41.6		117.2	41.1
40.0		127.2	41.1		124.9	40.3		122.5	39.5
50.0		133.7	39.9		130.6	38.9		127.5	37.8
60.0		140.0	38.7		136.2	37.3		132.1	35.8
70.0		146.2	37.3		141.4	35.5	3.7	136.3	33.6
80.0	7.9	152.1	35.8	13.7	146.3	33.6	20.0	140.0	31.0
90.0	22.2	157.8	34.1	29.2	150.8	31.3	37.1	142.9	27.9
100.0	36.8	163.2	32.3	45.2	154.8	28.7	55.3	144.7	24.1
110.0	51.7	168.3	30.2	62.0	158.0	25.6	75.4		19.1
120.0	67.1	172.9	27.9	80.0	160.0	21.8	100.0		11.3
130.0	83.1	176.9	25.1	100.0		16.7			
140.0	100.0	180.0	21.8	125.9		8.0			
150.0	118.4	181.6	17.5						
160.0	140.0		11.3						

$c = 50.0 \text{ kN/m}^2, c_e = 0 \text{ kN/m}^2$  (その2)

$\sum \gamma k + q$ ( $\text{kN/m}^2$ )	$k_k = 0.45$			$k_k = 0.50$			$k_k = 0.55$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.0		100.0	45.0		100.0	45.0		100.0	45.0
10.0		105.4	43.6		104.9	43.5		104.3	43.3
20.0		110.6	42.2		109.4	41.8		108.3	41.5
30.0		115.4	40.5		113.7	39.9		111.9	39.3
40.0		120.0	38.7		117.5	37.8		114.8	36.8
50.0		124.2	36.6		120.7	35.3		117.1	33.9
60.0		127.8	34.1		123.2	32.3	1.7	118.3	30.2
70.0	9.2	130.8	31.3	15.2	124.8	28.7	22.0		25.6
80.0	27.1	132.9	27.9	35.3		24.1	45.4		19.1
90.0	46.4		23.6	58.4		17.5	80.0		5.7
100.0	68.4		17.5	100.0		0.0			
110.0	100.0		5.7						
$k_k = 0.60$				$k_k = 0.65$			$k_k = 0.70$		
0.0		100.0	45.0		100.0	45.0		100.0	45.0
10.0		103.8	43.2		103.3	43.0		102.7	42.8
20.0		107.2	41.1		106.0	40.7		104.9	40.3
30.0		110.0	38.7		108.1	38.0		106.2	37.3
40.0		112.1	35.8		109.3	34.7			
50.0		113.2	32.3						
60.0	7.1		27.9	13.1		25.1	20.0		21.8
70.0	30.0		21.8	40.0		16.7	55.9		8.0
80.0	60.0		11.3						



表一 8・1(6) 粘性土の土圧強度と崩壊角 ( $c_a = 0$  の場合)

$c = 60.0 \text{ kN/m}^2, c_a = 0 \text{ kN/m}^2$  (その1)

$k_a = 0$				$k_a = 0.05$			$k_a = 0.10$		
$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		120.0	45.0		120.0	45.0		120.0	45.0
10.0		130.0	45.0		129.5	44.9		129.0	44.8
20.0		140.0	45.0		139.0	44.8		138.0	44.5
30.0		150.0	45.0		148.5	44.6		147.0	44.3
40.0		160.0	45.0		158.0	44.5		155.9	44.0
50.0		170.0	45.0		167.5	44.4		164.9	43.8
60.0		180.0	45.0		177.0	44.3		173.8	43.5
70.0		190.0	45.0		186.4	44.1		182.8	43.2
80.0		200.0	45.0		195.9	44.0		191.7	43.0
90.0		210.0	45.0		205.4	43.9		200.6	42.7
100.0		220.0	45.0		214.9	43.8		209.5	42.4
110.0		230.0	45.0		224.4	43.6	1.6	218.4	42.1
120.0	0.	240.0	45.0	6.2	233.8	43.5	12.7	227.3	41.8
130.0	10.0	250.0	45.0	16.7	243.3	43.4	23.8	236.2	41.5
140.0	20.0	260.0	45.0	27.2	252.8	43.2	34.9	245.1	41.2
150.0	30.0	270.0	45.0	37.8	262.2	43.1	46.1	253.9	40.9
160.0	40.0	280.0	45.0	48.3	271.7	43.0	57.2	262.8	40.6
170.0	50.0	290.0	45.0	58.8	281.2	42.8	68.4	271.6	40.2
180.0	60.0	300.0	45.0	69.4	290.6	42.7	79.6	280.4	39.9
190.0	70.0	310.0	45.0	79.9	300.1	42.5	90.8	289.2	39.6
200.0	80.0	320.0	45.0	90.5	309.5	42.4	102.0	298.0	39.2
210.0	90.0	330.0	45.0	101.0	319.0	42.2	113.3	306.7	38.9
220.0	100.0	340.0	45.0	111.6	328.4	42.1	124.5	315.5	38.5
230.0	110.0	350.0	45.0	122.1	337.9	42.0	135.8	324.2	38.1
240.0	120.0	360.0	45.0	132.7	347.3	41.8	147.0	333.0	37.8
250.0	130.0	370.0	45.0	143.2	356.8	41.7	158.3	341.7	37.4
$k_a = 0.15$				$k_a = 0.20$			$k_a = 0.25$		
0.		120.0	45.0		120.0	45.0		120.0	45.0
10.0		128.5	44.6		128.0	44.5		127.5	44.4
20.0		137.0	44.3		135.9	44.0		134.9	43.8
30.0		145.4	43.9		143.8	43.5		142.2	43.1
40.0		153.8	43.5		151.7	43.0		149.5	42.4
50.0		162.2	43.1		159.5	42.4		156.8	41.7
60.0		170.6	42.7		167.3	41.8		163.9	40.9
70.0		179.0	42.2		175.1	41.2		171.0	40.1
80.0		187.3	41.8		182.8	40.6		178.0	39.2
90.0		195.6	41.4		190.4	39.9		184.9	38.3
100.0		203.9	40.9	2.0	198.0	39.2	8.3	191.7	37.4
110.0	7.8	212.2	40.4	14.5	205.5	38.5	21.7	198.3	36.4
120.0	19.6	220.4	39.9	27.0	213.0	37.8	35.1	204.9	35.3
130.0	31.4	228.6	39.4	39.7	220.3	37.0	48.8	211.2	34.1
140.0	43.3	236.7	38.9	52.4	227.6	36.1	62.5	217.5	32.8
150.0	55.1	244.9	38.3	65.1	234.9	35.3	76.5	223.5	31.5
160.0	67.0	253.0	37.8	78.0	242.0	34.3	90.7	229.3	30.0
170.0	79.0	261.0	37.2	91.0	249.0	33.4	105.2	234.8	28.4
180.0	91.0	269.0	36.6	104.1	255.9	32.3	120.0	240.0	26.6
190.0	103.1	276.9	35.9	117.3	262.7	31.2	135.2	244.8	24.5
200.0	115.1	284.9	35.3	130.7	269.3	30.0	151.0	249.0	22.2
210.0	127.3	292.7	34.6	144.3	275.7	28.7	167.6	252.4	19.5
220.0	139.5	300.5	33.9	158.0	282.0	27.3	185.4	254.6	16.1
230.0	151.8	308.2	33.1	172.0	288.0	25.8	205.5		11.5
240.0	164.1	315.9	32.3	186.3	293.7	24.1	240.0		0.0
250.0	176.5	323.5	31.5	201.0	299.0	22.2			
$k_a = 0.30$				$k_a = 0.35$			$k_a = 0.40$		
0.		120.0	45.0		120.0	45.0		120.0	45.0
10.0		127.0	44.3		126.4	44.1		125.9	44.0
20.0		133.8	43.5		132.8	43.2		131.7	43.0
30.0		140.6	42.7		139.0	42.2		137.3	41.8
40.0		147.3	41.8		145.1	41.2		142.8	40.6
50.0		153.9	40.9		151.0	40.1		148.0	39.2
60.0		160.4	39.9		156.7	38.9		153.0	37.8
70.0		166.7	38.9		162.3	37.6		157.6	36.1
80.0		173.0	37.8		167.6	36.1		162.0	34.3
90.0	1.0	179.0	36.6	7.3	172.7	34.6	14.1	165.9	32.3
100.0	15.1	184.9	35.3	22.5	177.5	32.8	30.7	169.3	30.0
110.0	29.5	190.5	33.9	38.2	181.8	30.9	48.0	172.0	27.3
120.0	44.1	195.9	32.3	54.3	185.7	28.7	66.3	173.7	24.1
130.0	59.0	201.0	30.6	71.0	189.0	26.2	86.2		20.1
140.0	74.3	205.7	28.7	88.6	191.4	23.2	109.0		14.5
150.0	90.0	210.0	26.6	107.6	192.4	19.5			
160.0	106.3	213.7	24.1	129.0		14.5			
170.0	123.5	216.5	21.2	159.0		5.2			
180.0	142.1	217.9	17.5						
190.0	163.2		12.6						

$c = 60.0 \text{ kN/m}^2, c_a = 0 \text{ kN/m}^2$  ( 円の 2 )

$k_A = 0.45$				$k_A = 0.50$			$k_A = 0.55$		
$\Sigma \gamma A + q$ ( $\text{kN/m}^2$ )	$p_e$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ ( 度 )	$p_e$	$p_p$	$\alpha$	$p_e$	$p_p$	$\alpha$
0.		120.0	45.0		120.0	45.0		120.0	45.0
10.0		125.4	43.9		124.9	43.8		124.4	43.6
20.0		130.6	42.7		129.5	42.4		128.4	42.1
30.0		135.6	41.4		133.9	40.9		132.2	40.4
40.0		140.4	39.9		138.0	39.2		135.5	38.5
50.0		144.9	38.3		141.7	37.4		138.3	36.4
60.0		149.0	36.6		144.9	35.3		140.5	33.9
70.0		152.7	34.6		147.5	32.8		141.8	30.9
80.0	4.1	155.9	32.3	10.7	149.3	30.0	18.0		27.3
90.0	21.6	158.4	29.7	30.0		26.6	39.8		22.7
100.0	40.0	160.0	26.6	51.0		22.2	65.4		16.1
110.0	59.8		22.7	75.4		16.1			
120.0	82.1		17.5	120.0		0.0			
130.0	111.0		9.0						
$k_A = 0.60$				$k_A = 0.65$			$k_A = 0.70$		
0.		120.0	45.0		120.0	45.0		120.0	45.0
10.0		123.8	43.5		123.3	43.4		122.8	43.2
20.0		127.3	41.8		126.2	41.5		125.1	41.2
30.0		130.4	39.9		128.6	39.4		126.7	38.9
40.0		133.0	37.8		130.3	37.0		127.6	36.1
50.0		134.9	35.3		131.2	34.1			
60.0		135.9	32.3						
70.0	4.3		28.7	11.0		26.2	18.6		23.2
80.0	26.3		24.1	36.2		20.1	49.0		14.5
90.0	52.1		17.5	71.0		9.0			

表-8・1(7) 粘性土の土圧強度と崩壊角( $c_a = 0$ の場合)

$c = 70.0 \text{ kN/m}^2, c_a = 0 \text{ kN/m}^2$  (その1)

$\Sigma \gamma k + q$ ( $\text{kN/m}^2$ )	$k_a = 0$			$k_a = 0.05$			$k_a = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		140.0	45.0		140.0	45.0		140.0	45.0
10.0		150.0	45.0		149.5	44.9		149.0	44.8
20.0		160.0	45.0		159.0	44.8		158.0	44.6
30.0		170.0	45.0		168.5	44.7		167.0	44.4
40.0		180.0	45.0		178.0	44.6		175.9	44.2
50.0		190.0	45.0		187.5	44.5		184.9	43.9
60.0		200.0	45.0		197.0	44.4		193.9	43.7
70.0		210.0	45.0		206.5	44.3		202.8	43.5
80.0		220.0	45.0		215.9	44.2		211.8	43.3
90.0		230.0	45.0		225.4	44.0		220.7	43.0
100.0		240.0	45.0		234.9	43.9		229.6	42.8
110.0		250.0	45.0		244.4	43.8		238.5	42.6
120.0		260.0	45.0		253.9	43.7		247.4	42.3
130.0		270.0	45.0		263.3	43.6	3.7	256.3	42.1
140.0	0.	280.0	45.0	7.2	272.8	43.5	14.8	265.2	41.8
150.0	10.0	290.0	45.0	17.7	282.3	43.4	25.9	274.1	41.6
160.0	20.0	300.0	45.0	28.2	291.8	43.3	37.0	283.0	41.3
170.0	30.0	310.0	45.0	38.8	301.2	43.1	48.2	291.8	41.0
180.0	40.0	320.0	45.0	49.3	310.7	43.0	59.3	300.7	40.8
190.0	50.0	330.0	45.0	59.8	320.2	42.9	70.5	309.5	40.5
200.0	60.0	340.0	45.0	70.4	329.6	42.8	81.7	318.3	40.2
210.0	70.0	350.0	45.0	80.9	339.1	42.7	92.9	327.1	39.9
220.0	80.0	360.0	45.0	91.5	348.5	42.6	104.1	335.9	39.6
230.0	90.0	370.0	45.0	102.0	358.0	42.4	115.3	344.7	39.3
240.0	100.0	380.0	45.0	112.6	367.4	42.3	126.5	353.5	39.0
250.0	110.0	390.0	45.0	123.1	376.9	42.2	137.8	362.2	38.7
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$\Sigma \gamma k + q$ ( $\text{kN/m}^2$ )	$k_a = 0.15$			$k_a = 0.20$			$k_a = 0.25$		
	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		140.0	45.0		140.0	45.0		140.0	45.0
10.0		148.5	44.7		148.0	44.6		147.5	44.5
20.0		157.0	44.4		155.9	44.2		154.9	43.9
30.0		165.4	44.0		163.9	43.7		162.3	43.4
40.0		173.9	43.7		171.8	43.3		169.6	42.8
50.0		182.3	43.4		179.6	42.8		176.9	42.2
60.0		190.7	43.0		187.4	42.3		184.1	41.6
70.0		199.1	42.7		195.2	41.8		191.2	40.9
80.0		207.4	42.3		203.0	41.3		198.3	40.2
90.0		215.8	41.9		210.7	40.8		205.3	39.5
100.0		224.1	41.6		218.3	40.2		212.2	38.7
110.0		232.4	41.2		225.9	39.6	0.9	219.1	37.9
120.0		240.7	40.8	6.5	233.5	39.0	14.2	225.8	37.1
130.0	11.1	248.9	40.3	19.0	241.0	38.4	27.5	232.5	36.2
140.0	22.9	257.1	39.9	31.6	248.4	37.8	41.0	239.0	35.3
150.0	34.7	265.3	39.5	44.2	255.8	37.1	54.6	245.4	34.3
160.0	46.5	273.5	39.0	56.8	263.2	36.4	68.3	251.7	33.2
170.0	58.4	281.6	38.6	69.6	270.4	35.6	82.3	257.7	32.1
180.0	70.3	289.7	38.1	82.4	277.6	34.9	96.3	263.7	30.9
190.0	82.2	297.8	37.6	95.3	284.7	34.1	110.6	269.4	29.6
200.0	94.2	305.8	37.1	108.3	291.7	33.2	125.2	274.8	28.1
210.0	106.2	313.8	36.6	121.5	298.5	32.3	140.0	280.0	26.6
220.0	118.2	321.8	36.0	134.7	305.3	31.4	155.2	284.8	24.8
230.0	130.3	329.7	35.5	148.0	312.0	30.4	170.8	289.2	22.9
240.0	142.4	337.6	34.9	161.5	318.5	29.3	187.1	292.9	20.7
250.0	154.6	345.4	34.3	175.2	324.8	28.1	204.2	295.8	18.1
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$\Sigma \gamma k + q$ ( $\text{kN/m}^2$ )	$k_a = 0.30$			$k_a = 0.35$			$k_a = 0.40$		
	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		140.0	45.0		140.0	45.0		140.0	45.0
10.0		147.0	44.4		146.5	44.3		145.9	44.2
20.0		153.9	43.7		152.8	43.5		151.8	43.3
30.0		160.7	43.0		159.1	42.7		157.4	42.3
40.0		167.4	42.3		165.2	41.8		163.0	41.3
50.0		174.1	41.6		171.2	40.9		168.3	40.2
60.0		180.7	40.8		177.1	39.9		173.5	39.0
70.0		187.1	39.9		182.9	38.9		178.4	37.8
80.0		193.5	39.0		188.4	37.8		183.2	36.4
90.0		199.7	38.1		193.8	36.6		187.6	34.9
100.0		205.8	37.1	1.0	199.0	35.3	8.3	191.7	33.2
110.0	8.2	211.8	36.0	16.1	203.9	33.9	24.7	195.3	31.4
120.0	22.4	217.6	34.9	31.5	208.5	32.3	41.5	198.5	29.3
130.0	36.8	223.2	33.6	47.2	212.8	30.6	59.0	201.0	26.9
140.0	51.5	228.5	32.3	63.3	216.7	28.7	77.4	202.6	24.1
150.0	66.3	233.7	30.9	80.0	220.0	26.6	97.1	207.7	20.7
160.0	81.5	238.5	29.3	97.4	222.6	24.1	119.0	213.0	16.3
170.0	97.1	242.9	27.5	115.8	224.2	21.2	146.3	218.0	11.6
180.0	113.1	246.9	25.6	135.7		17.5			6.6
190.0	129.7	250.3	23.3	158.7		12.6			1.6
200.0	147.1	252.9	20.7	200.0		0.0			0.0
210.0	165.7	254.3	17.5						
220.0	186.5		13.4						
230.0	213.3		6.8						

$c = 70.0 \text{ kN/m}^2, c_a = 0 \text{ kN/m}^2$  (その2)

$k_a = 0.45$				$k_a = 0.50$			$k_a = 0.55$		
$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		140.0	45.0		140.0	45.0		140.0	45.0
10.0		145.4	44.0		144.9	43.9		144.4	43.8
20.0		150.7	43.0		149.6	42.8		148.5	42.6
30.0		155.8	41.9		154.1	41.6		152.4	41.2
40.0		160.7	40.8		158.3	40.2		155.9	39.6
50.0		165.3	39.5		162.2	38.7		159.1	37.9
60.0		169.7	38.1		165.8	37.1		161.8	36.0
70.0		173.8	36.6		169.0	35.3		163.9	33.9
80.0		177.6	34.9		171.7	33.2		165.3	31.4
90.0		180.9	33.0	6.3	173.7	30.9	14.2		28.4
100.0	16.3	183.7	30.9	25.2	174.8	28.1	35.2		24.8
110.0	34.2	185.8	28.4	45.2		24.8	58.4		20.2
120.0	53.1	186.9	25.6	67.1		20.7	86.5		13.4
130.0	73.3		22.1	92.6		15.0			
140.0	95.7		17.5	140.0		0.0			
150.0	123.5		10.7						
$k_a = 0.60$				$k_a = 0.65$			$k_a = 0.70$		
0.		140.0	45.0		140.0	45.0		140.0	45.0
10.0		143.9	43.7		143.3	43.6		142.8	43.5
20.0		147.4	42.3		146.3	42.1		145.2	41.8
30.0		150.7	40.8		148.9	40.3		147.1	39.9
40.0		153.5	39.0		151.0	38.4		148.4	37.8
50.0		155.8	37.1		152.5	36.2		149.0	35.3
60.0		157.6	34.9		153.2	33.6			
70.0		158.5	32.3						
80.0	1.5		29.3	9.0		26.9	17.4		24.1
90.0	23.1		25.6	33.3		22.1	45.7		17.5
100.0	47.1		20.7	62.6		15.0			
110.0	76.5		13.4						

表-8・1(8) 粘性土の土圧強度と崩壊角( $c_a = 0$ の場合)

$c = 80.0 \text{ kN/m}^2$ ,  $c_a = 0 \text{ kN/m}^2$  (その1)

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_h = 0$			$k_h = 0.05$			$k_h = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		160.0	45.0		160.0	45.0		160.0	45.0
10.0		170.0	45.0		169.5	44.9		169.0	44.8
20.0		180.0	45.0		179.0	44.8		178.0	44.6
30.0		190.0	45.0		188.5	44.7		187.0	44.5
40.0		200.0	45.0		198.0	44.6		195.9	44.3
50.0		210.0	45.0		207.5	44.5		204.9	44.1
60.0		220.0	45.0		217.0	44.5		213.9	43.9
70.0		230.0	45.0		226.5	44.4		222.8	43.7
80.0		240.0	45.0		235.9	44.3		231.8	43.5
90.0		250.0	45.0		245.4	44.2		240.7	43.3
100.0		260.0	45.0		254.9	44.1		249.7	43.1
110.0		270.0	45.0		264.4	44.0		258.6	42.9
120.0		280.0	45.0		273.9	43.9		267.5	42.7
130.0		290.0	45.0		283.4	43.8		276.4	42.5
140.0		300.0	45.0		292.8	43.7		285.3	42.2
150.0		310.0	45.0		302.3	43.6	5.8	294.2	42.0
160.0	0.	320.0	45.0	8.2	311.8	43.5	16.9	303.1	41.8
170.0	10.0	330.0	45.0	18.7	321.3	43.4	28.0	312.0	41.6
180.0	20.0	340.0	45.0	29.3	330.7	43.3	39.1	320.9	41.4
190.0	30.0	350.0	45.0	39.8	340.2	43.2	50.3	329.7	41.1
200.0	40.0	360.0	45.0	50.3	349.7	43.1	61.4	338.6	40.9
210.0	50.0	370.0	45.0	60.9	359.1	43.0	72.6	347.4	40.7
220.0	60.0	380.0	45.0	71.4	368.6	42.9	83.8	356.2	40.4
230.0	70.0	390.0	45.0	81.9	378.1	42.8	94.9	365.1	40.2
240.0	80.0	400.0	45.0	92.5	387.5	42.7	106.1	373.9	39.9
250.0	90.0	410.0	45.0	103.0	397.0	42.6	117.3	382.7	39.7
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	$k_h = 0.15$			$k_h = 0.20$			$k_h = 0.25$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		160.0	45.0		160.0	45.0		160.0	45.0
10.0		168.5	44.7		168.0	44.6		167.5	44.5
20.0		177.0	44.5		175.9	44.3		174.9	44.1
30.0		185.4	44.2		183.9	43.9		182.3	43.6
40.0		193.9	43.9		191.8	43.5		189.7	43.1
50.0		202.3	43.6		199.7	43.1		197.0	42.6
60.0		210.7	43.3		207.5	42.7		204.2	42.0
70.0		219.1	43.0		215.3	42.2		211.4	41.5
80.0		227.5	42.7		223.1	41.8		218.6	40.9
90.0		235.9	42.4		230.9	41.4		225.6	40.3
100.0		244.2	42.0		238.6	40.9		232.7	39.7
110.0		252.5	41.7		246.2	40.4		239.6	39.0
120.0		260.9	41.4		253.9	39.9		246.5	38.3
130.0		269.1	41.0		261.5	39.4	6.7	253.3	37.6
140.0	2.6	277.4	40.7	11.0	269.0	38.9	20.0	260.0	36.9
150.0	14.4	285.6	40.3	23.5	276.5	38.3	33.4	266.6	36.1
160.0	26.1	293.9	39.9	36.1	283.9	37.8	46.9	273.1	35.3
170.0	37.9	302.1	39.5	48.7	291.3	37.2	60.5	279.5	34.4
180.0	49.8	310.2	39.1	61.3	298.7	36.6	74.2	285.8	33.5
190.0	61.6	318.4	38.7	74.1	305.9	35.9	88.0	292.0	32.5
200.0	73.5	326.5	38.3	86.9	313.1	35.3	102.0	298.0	31.5
210.0	85.4	334.6	37.9	99.7	320.3	34.6	116.2	303.8	30.4
220.0	97.4	342.6	37.5	112.7	327.3	33.9	130.6	309.4	29.2
230.0	109.3	350.7	37.0	125.7	334.3	33.1	145.1	314.9	27.9
240.0	121.3	358.7	36.6	138.8	341.2	32.3	160.0	320.0	26.6
250.0	133.4	366.6	36.1	152.0	348.0	31.5	175.2	324.8	25.1

$c = 80.0 \text{ kN/m}^2, \sigma_a = 0 \text{ kN/m}^2$  (その2)

$k_h = 0.30$				$k_h = 0.35$			$k_h = 0.40$		
$\Sigma 7h+q$ ( $\text{kN/m}^2$ )	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		160.0	45.0		160.0	45.0		160.0	45.0
10.0		167.0	44.5		166.5	44.4		165.9	44.3
20.0		173.9	43.9		172.8	43.7		171.8	43.5
30.0		180.7	43.3		179.1	43.0		177.5	42.7
40.0		187.5	42.7		185.3	42.2		183.1	41.8
50.0		194.2	42.0		191.4	41.5		188.6	40.9
60.0		200.9	41.4		197.4	40.7		193.9	39.9
70.0		207.4	40.7		203.3	39.8		199.0	38.9
80.0		213.9	39.9		209.0	38.9		203.9	37.8
90.0		220.2	39.1		214.6	37.9		208.7	36.6
100.0		226.5	38.3		220.0	36.9		213.1	35.3
110.0		232.6	37.5		225.2	35.8	2.7	217.3	33.9
120.0	1.3	238.7	36.6	9.7	230.3	34.6	18.8	221.2	32.3
130.0	15.5	244.5	35.6	24.9	235.1	33.3	35.3	224.7	30.6
140.0	29.7	250.3	34.6	40.4	239.6	31.9	52.4	227.6	28.7
150.0	44.2	255.8	33.5	56.2	243.8	30.4	70.0	230.0	26.6
160.0	58.8	261.2	32.3	72.4	247.6	28.7	88.4	231.6	24.1
170.0	73.7	266.3	31.1	89.0	251.0	26.8	108.0		21.2
180.0	88.8	271.2	29.7	106.2	253.8	24.7	129.4		17.5
190.0	104.2	275.8	28.2	124.3	255.7	22.3	154.2		12.6
200.0	120.0	280.0	26.6	143.4	256.6	19.5			
210.0	136.2	283.8	24.7	164.4		15.9			
220.0	153.1	286.9	22.7	189.0		11.0			
230.0	170.7	289.3	20.3						
240.0	189.4	290.6	17.5						
250.0	210.0		14.0						
$k_h = 0.45$				$k_h = 0.50$			$k_h = 0.55$		
0.		160.0	45.0		160.0	45.0		160.0	45.0
10.0		165.4	44.2		164.9	44.1		164.4	44.0
20.0		170.7	43.3		169.7	43.1		168.6	42.9
30.0		175.9	42.4		174.2	42.0		172.5	41.7
40.0		180.9	41.4		178.6	40.9		176.2	40.4
50.0		185.6	40.3		182.7	39.7		179.6	39.0
60.0		190.2	39.1		186.5	38.3		182.6	37.5
70.0		194.6	37.9		190.0	36.9		185.2	35.8
80.0		198.7	36.6		193.1	35.3		187.3	33.9
90.0		202.4	35.1		195.8	33.5		188.8	31.7
100.0		205.8	33.5	2.0	198.0	31.5	10.6	189.4	29.2
110.0	11.2	208.8	31.7	20.6	199.4	29.2	31.0		26.3
120.0	28.8	211.2	29.7	40.0		26.6	53.1		22.7
130.0	47.1	212.9	27.4	60.7		23.4	77.8		18.1
140.0	66.2	213.8	24.7	83.4		19.5	109.0		11.0
150.0	86.8		21.6	110.0		14.0			
160.0	109.4		17.5	160.0		0.0			
170.0	136.5		11.8						
$k_h = 0.60$				$k_h = 0.65$			$k_h = 0.70$		
0.		160.0	45.0		160.0	45.0		160.0	45.0
10.0		163.9	43.9		163.4	43.8		162.8	43.7
20.0		167.5	42.7		166.4	42.5		165.3	42.2
30.0		170.9	41.4		169.1	41.0		167.4	40.7
40.0		173.9	39.9		171.5	39.4		169.0	38.9
50.0		176.5	38.3		173.3	37.6		170.0	36.9
60.0		178.7	36.6		174.5	35.6			
70.0		180.3	34.6		175.1	33.3			
80.0		181.2	32.3						
90.0				7.1		27.4	16.2		24.7
100.0	20.0		26.6	30.7		23.4	43.4		19.5
110.0	43.1		22.7	57.8		18.1	79.0		11.0
120.0	69.4		17.5	94.7		9.0			
130.0	104.7		9.0						

表-8・1(9) 粘性土の土圧強度と崩壊角 ( $c_a = 0$  の場合)

$c = 90.0 \text{ kN/m}^2$ ,  $c_a = 0 \text{ kN/m}^2$  (その1)

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_a = 0$			$k_a = 0.05$			$k_a = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		180.0	45.0		180.0	45.0		180.0	45.0
10.0		190.0	45.0		189.5	44.9		189.0	44.8
20.0		200.0	45.0		199.0	44.8		198.0	44.7
30.0		210.0	45.0		208.5	44.8		207.0	44.5
40.0		220.0	45.0		218.0	44.7		216.0	44.3
50.0		230.0	45.0		227.5	44.6		224.9	44.2
60.0		240.0	45.0		237.0	44.5		233.9	44.0
70.0		250.0	45.0		246.5	44.4		242.9	43.8
80.0		260.0	45.0		256.0	44.3		251.8	43.7
90.0		270.0	45.0		265.4	44.3		260.8	43.5
100.0		280.0	45.0		274.9	44.2		269.7	43.3
110.0		290.0	45.0		284.4	44.1		278.6	43.1
120.0		300.0	45.0		293.9	44.0		287.6	43.0
130.0		310.0	45.0		303.4	43.9		296.5	42.8
140.0		320.0	45.0		312.9	43.8		305.4	42.6
150.0		330.0	45.0		322.3	43.8		314.3	42.4
160.0		340.0	45.0		331.8	43.7		323.2	42.2
170.0		350.0	45.0		341.3	43.6		332.1	42.0
180.0	0.	360.0	45.0	9.2	350.8	43.5	7.9	341.0	41.8
190.0	10.0	370.0	45.0	19.8	360.2	43.4	19.0	349.9	41.6
200.0	20.0	380.0	45.0	30.3	369.7	43.3	30.1	358.7	41.4
210.0	30.0	390.0	45.0	40.8	379.2	43.2	41.3	367.6	41.2
220.0	40.0	400.0	45.0	51.4	388.6	43.1	52.4	376.5	41.0
230.0	50.0	410.0	45.0	61.9	398.1	43.0	63.5	385.3	40.8
240.0	60.0	420.0	45.0	72.4	407.6	43.0	74.7	394.1	40.6
250.0	70.0	430.0	45.0	83.0	417.0	42.9	85.9	403.0	40.4
							97.0		
$k_a = 0.15$			$k_a = 0.20$			$k_a = 0.25$			
0.		180.0	45.0		180.0	45.0		180.0	45.0
10.0		188.5	44.8		188.0	44.7		187.5	44.6
20.0		197.0	44.5		196.0	44.3		194.9	44.2
30.0		205.4	44.3		203.9	44.0		202.3	43.8
40.0		213.9	44.0		211.8	43.7		209.7	43.3
50.0		222.3	43.8		219.7	43.3		217.0	42.9
60.0		230.8	43.5		227.6	43.0		224.3	42.4
70.0		239.2	43.2		235.4	42.6		231.6	41.9
80.0		247.6	43.0		243.2	42.2		238.7	41.4
90.0		256.0	42.7		251.0	41.8		245.9	40.9
100.0		264.3	42.4		258.7	41.4		253.0	40.4
110.0		272.7	42.1		266.5	41.0		260.0	39.8
120.0		281.0	41.8		274.1	40.6		267.0	39.2
130.0		289.3	41.5		281.8	40.1		273.9	38.6
140.0		297.6	41.2		289.4	39.7		280.7	38.0
150.0		305.9	40.9	3.0	297.0	39.2	12.5	287.5	37.4
160.0	5.9	314.1	40.6	15.5	304.5	38.9	25.8	294.2	36.7
170.0	17.6	322.4	40.2	28.0	312.0	38.3	39.2	300.8	36.0
180.0	29.4	330.6	39.9	40.6	319.4	37.8	52.7	307.3	35.3
190.0	41.2	338.8	39.6	53.2	326.8	37.2	66.3	313.7	34.5
200.0	53.0	347.0	39.2	65.8	334.2	36.7	80.0	320.0	33.7
210.0	64.9	355.1	38.9	78.5	341.5	36.1	93.8	326.2	32.8
220.0	76.8	363.2	38.5	91.3	348.7	35.6	107.8	332.2	31.9
230.0	88.6	371.4	38.1	104.1	355.9	35.0	121.8	338.2	31.0
240.0	100.6	379.4	37.8	117.0	363.0	34.3	136.1	343.9	30.0
250.0	112.5	387.5	37.4	130.0	370.0	33.7	150.5	349.5	28.9

$c = 90.0 \text{ kN/m}^2, c_a = 0 \text{ kN/m}^2$  (その2)

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_A = 0.30$			$k_A = 0.35$			$k_A = 0.40$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		180.0	45.0		180.0	45.0		180.0	45.0
10.0		187.0	44.5		186.5	44.4		186.0	44.3
20.0		193.9	44.0		192.9	43.8		191.8	43.7
30.0		200.8	43.5		199.2	43.2		197.6	43.0
40.0		207.6	43.0		205.4	42.6		203.2	42.2
50.0		214.3	42.4		211.6	41.9		208.7	41.4
60.0		221.0	41.8		217.6	41.2		214.1	40.6
70.0		227.6	41.2		223.6	40.5		219.4	39.7
80.0		234.1	40.6		229.4	39.7		224.5	38.8
90.0		240.6	39.9		235.1	38.9		229.4	37.8
100.0		247.0	39.2		240.7	38.0		234.2	36.7
110.0		253.2	38.5		246.2	37.1		238.7	35.6
120.0		259.4	37.8		251.5	36.1		243.0	34.3
130.0		265.5	37.0	3.4	256.6	35.1	13.0	247.0	33.0
140.0	8.5	271.5	36.1	18.5	261.5	34.0	29.4	250.6	31.6
150.0	22.7	277.3	35.3	33.8	266.2	32.8	46.1	253.9	30.0
160.0	37.0	283.0	34.3	49.4	270.6	31.6	63.3	256.7	28.3
170.0	51.5	288.5	33.4	65.2	274.8	30.2	81.0	259.0	26.3
180.0	66.2	293.8	32.3	81.4	278.6	28.7	99.5	260.5	24.1
190.0	81.0	299.0	31.2	98.0	282.0	27.1	119.0		21.5
200.0	96.1	303.9	30.0	115.1	284.9	25.2	140.0		18.4
210.0	111.4	308.6	28.7	132.9	287.1	23.2	163.5		14.5
220.0	127.0	313.0	27.3	151.6	288.4	20.8	193.2		8.5
230.0	143.1	316.9	25.8	171.5		18.0			
240.0	159.5	320.5	24.1	193.5		14.5			
250.0	176.5	323.5	22.2	220.0		9.5			
$k_A = 0.45$									
0.		180.0	45.0		180.0	45.0		180.0	45.0
10.0		185.4	44.3		184.9	44.2		184.4	44.1
20.0		190.8	43.5		189.7	43.3		188.6	43.1
30.0		196.0	42.7		194.3	42.4		192.7	42.1
40.0		201.0	41.8		198.7	41.4		196.5	41.0
50.0		205.9	40.9		203.0	40.4		200.0	39.8
60.0		210.6	39.9		207.0	39.2		203.2	38.5
70.0		215.1	38.9		210.7	38.0		206.2	37.1
80.0		219.4	37.8		214.2	36.7		208.7	35.6
90.0		223.5	36.6		217.3	35.3		210.7	33.9
100.0		227.3	35.3		220.0	33.7		212.2	31.9
110.0		230.7	33.9		222.2	31.9	6.9	213.1	29.8
120.0	6.2	233.8	32.3	16.1	223.9	30.0	27.0		27.3
130.0	23.5	236.5	30.6	35.1	224.9	27.8	48.4		24.4
140.0	41.4	238.6	28.7	55.1		25.2	71.6		20.8
150.0	60.0	240.0	26.6	76.5		22.2	98.0		16.1
160.0	79.5		24.1	100.0		18.4	133.2		8.5
170.0	100.3		21.2	127.6		13.3			
180.0	123.1		17.5	180.0		0.0			
190.0	149.8		12.6						
$k_A = 0.60$									
0.		180.0	45.0		180.0	45.0		180.0	45.0
10.0		183.9	44.0		183.4	43.9		182.9	43.8
20.0		187.6	43.0		186.5	42.8		185.4	42.6
30.0		191.0	41.8		189.3	41.5		187.6	41.2
40.0		194.1	40.6		191.8	40.1		189.4	39.7
50.0		197.0	39.2		193.9	38.6		190.7	38.0
60.0		199.4	37.8		195.5	37.0		191.5	36.1
70.0		201.5	36.1		196.6	35.1			
80.0		203.0	34.3						
90.0		203.8	32.3						
100.0				5.1		27.8	15.1		25.2
110.0	17.0		27.3	28.4		24.4	41.6		20.8
120.0	39.5		24.1	54.3		20.1	73.5		14.5
130.0	64.3		20.1	85.5		13.9			
140.0	93.5		14.5						



表-8・1(1) 粘性土の土圧強度と崩壊角 ( $c_a = 0$  の場合)

$c = 100.0 \text{ kN/m}^2, c_a = 0 \text{ kN/m}^2$  (その1)

$k_h = 0$				$k_h = 0.05$			$k_h = 0.10$		
$\sum \gamma h + q$ ( $\text{kN/m}^2$ )	$P_a$ ( $\text{kN/m}^2$ )	$P_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$P_a$	$P_p$	$\alpha$	$P_a$	$P_p$	$\alpha$
0		200.0	45.0		200.0	45.0		200.0	45.0
10.0		210.0	45.0		209.5	44.9		209.0	44.9
20.0		220.0	45.0		219.0	44.9		218.0	44.7
30.0		230.0	45.0		228.5	44.8		227.0	44.6
40.0		240.0	45.0		238.0	44.7		236.0	44.4
50.0		250.0	45.0		247.5	44.6		244.9	44.3
60.0		260.0	45.0		257.0	44.6		253.9	44.1
70.0		270.0	45.0		266.5	44.5		262.9	44.0
80.0		280.0	45.0		276.0	44.4		271.8	43.8
90.0		290.0	45.0		285.4	44.3		280.8	43.6
100.0		300.0	45.0		294.9	44.3		289.7	43.5
110.0		310.0	45.0		304.4	44.2		298.7	43.3
120.0		320.0	45.0		313.9	44.1		307.6	43.2
130.0		330.0	45.0		323.4	44.0		316.5	43.0
140.0		340.0	45.0		332.9	44.0		325.5	42.8
150.0		350.0	45.0		342.4	43.9		334.4	42.7
160.0		360.0	45.0		351.8	43.8		343.3	42.5
170.0		370.0	45.0		361.3	43.7		352.2	42.3
180.0		380.0	45.0		370.8	43.6		361.1	42.2
190.0		390.0	45.0		380.3	43.6	10.0	370.0	42.0
200.0	0	400.0	45.0	10.3	389.7	43.5	21.1	378.9	41.8
210.0	10.0	410.0	45.0	20.8	399.2	43.4	32.2	387.8	41.6
220.0	20.0	420.0	45.0	31.3	408.7	43.3	43.4	396.6	41.5
230.0	30.0	430.0	45.0	41.9	418.1	43.3	54.5	405.5	41.3
240.0	40.0	440.0	45.0	52.4	427.6	43.2	65.6	414.4	41.1
250.0	50.0	450.0	45.0	62.9	437.1	43.1	76.8	423.2	40.9
$k_h = 0.15$				$k_h = 0.20$			$k_h = 0.25$		
0		200.0	45.0		200.0	45.0		200.0	45.0
10.0		208.5	44.8		208.0	44.7		207.5	44.6
20.0		217.0	44.6		216.0	44.4		214.9	44.3
30.0		225.4	44.3		223.9	44.1		222.4	43.9
40.0		233.9	44.1		231.8	43.8		229.7	43.5
50.0		242.4	43.9		239.7	43.5		237.1	43.1
60.0		250.8	43.6		247.6	43.2		244.4	42.7
70.0		259.2	43.4		255.5	42.8		251.7	42.2
80.0		267.6	43.2		263.3	42.5		258.9	41.8
90.0		276.0	42.9		271.1	42.2		266.1	41.4
100.0		284.4	42.7		278.9	41.8		273.2	40.9
110.0		292.8	42.4		286.6	41.5		280.3	40.4
120.0		301.1	42.2		294.4	41.1		287.3	39.9
130.0		309.4	41.9		302.0	40.7		294.3	39.4
140.0		317.8	41.6		309.7	40.3		301.2	38.9
150.0		326.1	41.4		317.3	39.9		308.1	38.3
160.0		334.4	41.1		324.9	39.5	5.1	314.9	37.8
170.0		342.6	40.8	7.5	332.5	39.1	18.3	321.7	37.2
180.0	9.1	350.9	40.5	20.0	340.0	38.7	31.7	328.3	36.6
190.0	20.9	359.1	40.2	32.5	347.5	38.2	45.1	334.9	35.9
200.0	32.7	367.3	39.9	45.1	354.9	37.8	58.6	341.4	35.3
210.0	44.5	375.5	39.6	57.7	362.3	37.3	72.2	347.8	34.6
220.0	56.3	383.7	39.3	70.3	369.7	36.8	85.8	354.2	33.9
230.0	68.1	391.9	39.0	83.0	377.0	36.3	99.6	360.4	33.1
240.0	80.0	400.0	38.7	95.8	384.2	35.8	113.5	366.5	32.3
250.0	91.9	408.1	38.3	108.6	391.4	35.3	127.5	372.5	31.5

$c = 100.0 \text{ kN/m}^2, c_a = 0 \text{ kN/m}^2$  (その2)

$k_A = 0.30$				$k_A = 0.35$			$k_A = 0.40$		
$\Sigma Yk+g$ ( $\text{kN/m}^2$ )	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		200.0	45.0		200.0	45.0		200.0	45.0
10.0		207.0	44.6		206.5	44.5		206.0	44.4
20.0		213.9	44.1		212.9	44.0		211.8	43.8
30.0		220.8	43.6		219.2	43.4		217.6	43.2
40.0		227.6	43.2		225.5	42.8		223.3	42.5
50.0		234.4	42.7		231.7	42.2		228.9	41.8
60.0		241.1	42.2		237.8	41.6		234.4	41.1
70.0		247.8	41.6		243.8	41.0		239.7	40.3
80.0		254.4	41.1		249.7	40.3		244.9	39.5
90.0		260.9	40.5		255.5	39.6		250.0	38.7
100.0		267.3	39.9		261.2	38.9		254.9	37.8
110.0		273.7	39.3		266.8	38.1		259.7	36.8
120.0		280.0	38.7		272.3	37.3		264.2	35.8
130.0		286.2	38.0		277.6	36.4		268.6	34.7
140.0		292.3	37.3		282.8	35.5	7.3	272.7	33.6
150.0	1.7	298.3	36.6	12.2	287.8	34.6	23.5	276.5	32.3
160.0	15.8	304.2	35.8	27.3	292.7	33.6	40.0	280.0	31.0
170.0	30.0	310.0	35.0	42.7	297.3	32.5	56.9	283.1	29.5
180.0	44.4	315.6	34.1	58.3	301.7	31.3	74.2	285.8	27.9
190.0	58.9	321.1	33.3	74.2	305.8	30.1	92.0	288.0	26.1
200.0	73.5	326.5	32.3	90.5	309.5	28.7	110.6	289.4	24.1
210.0	88.3	331.7	31.3	107.0	313.0	27.2	130.0		21.8
220.0	103.4	336.6	30.2	124.1	315.9	25.6	150.7		19.1
230.0	118.6	341.4	29.1	141.7	318.3	23.8	173.4		15.8
240.0	134.2	345.8	27.9	160.0	320.0	21.8	200.0		11.3
250.0	150.0	350.0	26.6	179.3	320.7	19.5			
$k_A = 0.45$				$k_A = 0.50$			$k_A = 0.55$		
0.		200.0	45.0		200.0	45.0		200.0	45.0
10.0		205.4	44.3		204.9	44.3		204.4	44.2
20.0		210.8	43.6		209.7	43.5		208.7	43.3
30.0		216.0	42.9		214.4	42.7		212.8	42.4
40.0		221.1	42.2		218.9	41.8		216.6	41.5
50.0		226.1	41.4		223.2	40.9		220.3	40.4
60.0		230.9	40.5		227.3	39.9		223.7	39.3
70.0		235.5	39.6		231.2	38.9		226.8	38.1
80.0		240.0	38.7		234.9	37.8		229.7	36.8
90.0		244.3	37.6		238.3	36.6		232.1	35.4
100.0		248.3	36.6		241.4	35.3		234.2	33.9
110.0		252.1	35.4		244.2	33.9		235.7	32.1
120.0		255.6	34.1		246.5	32.3	3.4	236.6	30.2
130.0	1.2	258.8	32.8	11.7	248.3	30.6	23.2		28.1
140.0	18.3	261.7	31.3	30.5	249.5	28.7	44.1		25.6
150.0	36.0	264.0	29.7	50.0		26.6	66.3		22.7
160.0	54.2	265.8	27.9	70.6		24.1	90.7		19.1
170.0	73.0	267.0	25.9	92.5		21.2	119.0		14.3
180.0	92.8		23.6	116.8		17.5	160.0		5.7
190.0	113.8		20.8	145.3		12.6			
200.0	136.8		17.5	200.0		0.0			
210.0	163.1		13.2						
220.0	200.0		5.7						
$k_A = 0.60$				$k_A = 0.65$			$k_A = 0.70$		
0.		200.0	45.0		200.0	45.0		200.0	45.0
10.0		203.9	44.1		203.4	44.0		202.9	44.0
20.0		207.6	43.2		206.5	43.0		205.5	42.8
30.0		211.1	42.2		209.4	41.9		207.8	41.6
40.0		214.4	41.1		212.0	40.7		209.7	40.3
50.0		217.3	39.9		214.3	39.4		211.2	38.9
60.0		220.0	38.7		216.2	38.0		212.3	37.3
70.0		222.3	37.3		217.6	36.4		212.8	35.5
80.0		224.2	35.8		218.6	34.7			
90.0		225.6	34.1						
100.0		226.5	32.3						
110.0				3.2		28.1	14.1		25.6
120.0	14.2		27.9	26.2		25.1	40.0		21.8
130.0	36.2		25.1	51.3		21.5	70.0		16.7
140.0	60.0		21.8	80.0		16.7	111.7		8.0
150.0	86.8		17.5	118.4		9.0			
160.0	120.0		11.3						

表-8・2(1) 粘性土の土圧強度と崩壊角 ( $c_a = c$  の場合)

$c = 10 \text{ kN/m}^2, c_a = 10 \text{ kN/m}^2$

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_a = 0$			$k_a = 0.05$			$k_a = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		28.3	35.3		28.3	35.3		28.3	35.3
10.0		38.3	35.3		37.6	34.6		36.8	33.9
20.0		48.3	35.3		46.8	33.9		45.3	32.3
30.0	1.7	58.3	35.3	3.9	56.1	33.1	6.3	53.7	30.6
40.0	11.7	68.3	35.3	14.7	65.3	32.3	18.1	61.9	28.7
50.0	21.7	78.3	35.3	25.5	74.5	31.5	30.0	70.0	26.6
60.0	31.7	88.3	35.3	36.3	83.7	30.6	42.1	77.9	24.1
70.0	41.7	98.3	35.3	47.2	92.8	29.7	54.5	85.5	21.2
80.0	51.7	108.3	35.3	58.1	101.9	28.7	67.4	92.6	17.5
90.0	61.7	118.3	35.3	69.0	111.0	27.7	81.1	98.9	12.6
100.0	71.7	128.3	35.3	80.0	120.0	26.6	100.0		0.0
110.0	81.7	138.3	35.3	91.0	129.0	25.4			
120.0	91.7	148.3	35.3	102.1	137.9	24.1			
130.0	101.7	158.3	35.3	113.3	146.7	22.7			
140.0	111.7	168.3	35.3	124.5	155.5	21.2			
150.0	121.7	178.3	35.3	135.9	164.1	19.5			
160.0	131.7	188.3	35.3	147.4	172.6	17.5			
170.0	141.7	198.3	35.3	159.0	181.0	15.3			
180.0	151.7	208.3	35.3	171.1	188.9	12.6			
190.0	161.7	218.3	35.3	183.7	196.3	9.0			
200.0	171.7	228.3	35.3	200.0		0.0			
210.0	181.7	238.3	35.3						
220.0	191.7	248.3	35.3						
230.0	201.7	258.3	35.3						
240.0	211.7	268.3	35.3						
250.0	221.7	278.3	35.3						
$k_a = 0.15$				$k_a = 0.20$			$k_a = 0.25$		
0.		28.3	35.3		28.3	35.3		28.3	35.3
10.0		36.1	33.1		35.3	32.3		34.5	31.5
20.0		43.7	30.6		41.9	28.7		40.0	26.6
30.0	9.0	51.0	27.7	12.1	47.9	24.1	15.9	44.1	19.5
40.0	22.1	57.9	24.1	27.4	52.6	17.5	40.0		0.0
50.0	35.9	64.1	19.5	50.0		0.0			
60.0	51.1	68.9	12.6						
$k_a = 0.30$				$k_a = 0.35$			$k_a = 0.40$		
0.		28.3	35.3		28.3	35.3		28.3	35.3
10.0		33.7	30.6		32.8	29.7		31.9	28.7
20.0	2.1	37.9	24.1	4.5	35.5	21.2	7.4		17.5
30.0	21.1		12.6						
$k_a = 0.45$				$k_a = 0.50$			$k_a = 0.55$		
0.		28.3	35.3		28.3	35.3		28.3	35.3
10.0		31.0	27.7						
20.0	11.1		12.6						
$k_a = 0.60$				$k_a = 0.65$			$k_a = 0.70$		
0.		28.3	35.3		28.3	35.3		28.3	35.3

表-8・2(2) 粘性土の土圧強度と崩壊角 ( $c_a = c$  の場合)

$c = 20 \text{ kN/m}^2, c_a = 20 \text{ kN/m}^2$

$\sum \gamma h + q$ ( $\text{kN/m}^2$ )	$k_a = 0$			$k_a = 0.05$			$k_a = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		56.6	35.3		56.6	35.3		56.6	35.3
10.0		66.6	35.3		65.9	34.9		65.1	34.6
20.0		76.6	35.3		75.1	34.6		73.7	33.9
30.0		86.6	35.3		84.4	34.2		82.2	33.1
40.0		96.6	35.3		93.7	33.9		90.6	32.3
50.0		106.6	35.3		102.9	33.5		99.0	31.5
60.0	3.4	116.6	35.3	7.8	112.2	33.1	1.0	107.3	30.6
70.0	13.4	126.6	35.3	18.6	121.4	32.7	12.7	115.6	29.7
80.0	23.4	136.6	35.3	29.4	130.6	32.3	24.4	123.8	28.7
90.0	33.4	146.6	35.3	40.2	139.8	31.9	36.2	132.0	27.7
100.0	43.4	156.6	35.3	51.0	149.0	31.5	48.0	140.0	26.6
110.0	53.4	166.6	35.3	61.8	158.2	31.1	60.0	147.9	25.4
120.0	63.4	176.6	35.3	72.7	167.3	30.6	72.1	155.8	24.1
130.0	73.4	186.6	35.3	83.5	176.5	30.2	84.2	163.5	22.7
140.0	83.4	196.6	35.3	94.4	185.6	29.7	96.5	171.0	21.2
150.0	93.4	206.6	35.3	105.3	194.7	29.2	109.0	178.3	19.5
160.0	103.4	216.6	35.3	116.2	203.8	28.7	121.7	185.3	17.5
170.0	113.4	226.6	35.3	127.1	212.9	28.2	134.7	191.9	15.3
180.0	123.4	236.6	35.3	138.0	222.0	27.7	148.1	197.9	12.6
190.0	133.4	246.6	35.3	149.0	231.0	27.1	162.1	202.6	9.0
200.0	143.4	256.6	35.3	160.0	240.0	26.6	177.4		0.0
210.0	153.4	266.6	35.3	171.0	249.0	26.0	200.0		
220.0	163.4	276.6	35.3	182.1	257.9	25.4			
230.0	173.4	286.6	35.3	193.1	266.9	24.7			
240.0	183.4	296.6	35.3	204.2	275.8	24.1			
250.0	193.4	306.6	35.3	215.4	284.6	23.4			
<b><math>k_a = 0.15</math></b>									
0.		56.6	35.3		56.6	35.3		56.6	35.3
10.0		64.4	34.2		63.7	33.9		62.9	33.5
20.0		72.2	33.1		70.6	32.3		69.0	31.5
30.0		79.8	31.9		77.3	30.6		74.7	29.2
40.0		87.3	30.6		83.8	28.7		80.0	26.6
50.0	5.3	94.7	29.2	10.0	90.0	26.6	15.4	84.6	23.4
60.0	18.0	102.0	27.7	24.2	95.8	24.1	31.7	88.3	19.5
70.0	31.0	109.0	26.0	39.0	101.0	21.2	50.0		14.0
80.0	44.2	115.8	24.1	54.7	105.3	17.5	80.0		0.0
90.0	57.8	122.2	22.0	72.1	107.9	12.6			
100.0	71.7	128.3	19.5	100.0		0.0			
110.0	86.3	133.7	16.5						
120.0	102.1	137.9	12.6						
130.0	121.1		6.4						
<b><math>k_a = 0.20</math></b>									
0.		56.6	35.3		56.6	35.3		56.6	35.3
10.0		62.2	33.1		61.4	32.7		60.6	32.3
20.0		67.3	30.6		65.6	29.7		63.8	28.7
30.0		72.0	27.7		69.0	26.0		65.8	24.1
40.0	4.2	75.8	24.1	9.0	71.0	21.2	14.7		17.5
50.0	21.7	78.3	19.5	30.0		14.0			
60.0	42.1		12.6						
<b><math>k_a = 0.25</math></b>									
0.		56.6	35.3		56.6	35.3		56.6	35.3
10.0		59.8	31.9		59.0	31.5		58.2	31.1
20.0		62.0	27.7						
30.0			12.6	1.7		19.5	6.3		16.5
40.0	22.1								
<b><math>k_a = 0.30</math></b>									
0.		56.6	35.3		56.6	35.3		56.6	35.3
10.0		62.2	33.1		61.4	32.7		60.6	32.3
20.0		67.3	30.6		65.6	29.7		63.8	28.7
30.0		72.0	27.7		69.0	26.0		65.8	24.1
40.0	4.2	75.8	24.1	9.0	71.0	21.2	14.7		17.5
50.0	21.7	78.3	19.5	30.0		14.0			
60.0	42.1		12.6						
<b><math>k_a = 0.35</math></b>									
0.		56.6	35.3		56.6	35.3		56.6	35.3
10.0		59.8	31.9		59.0	31.5		58.2	31.1
20.0		62.0	27.7						
30.0			12.6	1.7		19.5	6.3		16.5
40.0	22.1								
<b><math>k_a = 0.40</math></b>									
0.		56.6	35.3		56.6	35.3		56.6	35.3
10.0		59.8	31.9		59.0	31.5		58.2	31.1
20.0		62.0	27.7						
30.0			12.6	1.7		19.5	6.3		16.5
40.0	22.1								
<b><math>k_a = 0.45</math></b>									
0.		56.6	35.3		56.6	35.3		56.6	35.3
10.0		59.8	31.9		59.0	31.5		58.2	31.1
20.0		62.0	27.7						
30.0			12.6	1.7		19.5	6.3		16.5
40.0	22.1								
<b><math>k_a = 0.50</math></b>									
0.		56.6	35.3		56.6	35.3		56.6	35.3
10.0		59.8	31.9		59.0	31.5		58.2	31.1
20.0		62.0	27.7						
30.0			12.6	1.7		19.5	6.3		16.5
40.0	22.1								
<b><math>k_a = 0.55</math></b>									
0.		56.6	35.3		56.6	35.3		56.6	35.3
10.0		59.8	31.9		59.0	31.5		58.2	31.1
20.0		62.0	27.7						
30.0			12.6	1.7		19.5	6.3		16.5
40.0	22.1								
<b><math>k_a = 0.60</math></b>									
0.		56.6	35.3		56.6	35.3		56.6	35.3
10.0		59.8	31.9		59.0	31.5		58.2	31.1
20.0		62.0	27.7						
30.0			12.6	1.7		19.5	6.3		16.5
40.0	22.1								
<b><math>k_a = 0.65</math></b>									
0.		56.6	35.3		56.6	35.3		56.6	35.3
10.0		59.8	31.9		59.0	31.5		58.2	31.1
20.0		62.0	27.7						
30.0			12.6	1.7		19.5	6.3		16.5
40.0	22.1								
<b><math>k_a = 0.70</math></b>									
0.		56.6	35.3		56.6	35.3		56.6	35.3
10.0		59.8	31.9		59.0	31.5		58.2	31.1
20.0		62.0	27.7						
30.0			12.6	1.7		19.5	6.3		16.5
40.0	22.1								

表-8・2(3) 粘性土の土圧強度と崩壊角 ( $c_a = c$ の場合)

$c = 30 \text{ kN/m}^2, c_a = 30 \text{ kN/m}^2$

$k_a = 0$				$k_a = 0.05$			$k_a = 0.10$		
$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		84.9	35.3		84.9	35.3		84.9	35.3
10.0		94.9	35.3		94.1	35.0		93.4	34.8
20.0		104.9	35.3		103.4	34.8		102.0	34.3
30.0		114.9	35.3		112.7	34.6		110.5	33.9
40.0		124.9	35.3		122.0	34.3		119.0	33.4
50.0		134.9	35.3		131.2	34.1		127.5	32.8
60.0		144.9	35.3		140.5	33.9		135.9	32.3
70.0		154.9	35.3		149.7	33.6		144.3	31.8
80.0		164.9	35.3	1.0	159.0	33.4	7.3	152.7	31.2
90.0	5.1	174.9	35.3	11.8	168.2	33.1	19.0	161.0	30.6
100.0	15.1	184.9	35.3	22.5	177.5	32.8	30.7	169.3	30.0
110.0	25.1	194.9	35.3	33.3	186.7	32.6	42.5	177.5	29.4
120.0	35.1	204.9	35.3	44.1	195.9	32.3	54.3	185.7	28.7
130.0	45.1	214.9	35.3	54.9	205.1	32.0	66.1	193.9	28.0
140.0	55.1	224.9	35.3	65.7	214.3	31.8	78.0	202.0	27.3
150.0	65.1	234.9	35.3	76.5	223.5	31.5	90.0	210.0	26.6
160.0	75.1	244.9	35.3	87.3	232.7	31.2	102.0	218.0	25.8
170.0	85.1	254.9	35.3	98.2	241.8	30.9	114.1	225.9	25.0
180.0	95.1	264.9	35.3	109.0	251.0	30.6	126.3	233.7	24.1
190.0	105.1	274.9	35.3	119.9	260.1	30.3	138.6	241.4	23.2
200.0	115.1	284.9	35.3	130.7	269.3	30.0	151.0	249.0	22.2
210.0	125.1	294.9	35.3	141.6	278.4	29.7	163.5	256.5	21.2
220.0	135.1	304.9	35.3	152.5	287.5	29.4	176.2	263.8	20.1
230.0	145.1	314.9	35.3	163.4	296.6	29.0	189.0	271.0	18.9
240.0	155.1	324.9	35.3	174.3	305.7	28.7	202.1	277.9	17.5
250.0	165.1	334.9	35.3	185.2	314.8	28.4	215.4	284.6	16.1
$k_a = 0.15$				$k_a = 0.20$			$k_a = 0.25$		
0.		84.9	35.3		84.9	35.3		84.9	35.3
10.0		92.7	34.6		92.0	34.3		91.2	34.1
20.0		100.5	33.9		99.0	33.4		97.5	32.8
30.0		108.2	33.1		105.9	32.3		103.5	31.5
40.0		115.9	32.3		112.7	31.2		109.3	30.0
50.0		123.5	31.5		119.3	30.0		114.8	28.4
60.0		131.0	30.6		125.7	28.7	0.	120.0	26.6
70.0	1.6	138.4	29.7	8.0	132.0	27.3	15.2	124.8	24.5
80.0	14.3	145.7	28.7	22.0	138.0	25.8	31.0	129.0	22.2
90.0	27.1	152.9	27.7	36.3	143.7	24.1	47.6	132.4	19.5
100.0	40.0	160.0	26.6	51.0	149.0	22.2	65.4	134.6	16.1
110.0	53.1	166.9	25.4	66.2	153.8	20.1	85.5		11.5
120.0	66.3	173.7	24.1	82.1	157.9	17.5	120.0		0.0
130.0	79.8	180.2	22.7	99.0	161.0	14.5			
140.0	93.5	186.5	21.2	118.1		10.3			
150.0	107.6	192.4	19.5	150.0		0.0			
160.0	122.1	197.9	17.5						
170.0	137.1	202.9	15.3						
180.0	153.2	206.8	12.6						
190.0	171.0	209.0	9.0						
200.0	200.0		0.0						
$k_a = 0.30$				$k_a = 0.35$			$k_a = 0.40$		
0.		84.9	35.3		84.9	35.3		84.9	35.3
10.0		90.5	33.9		89.7	33.6		89.0	33.4
20.0		95.9	32.3		94.3	31.8		92.7	31.2
30.0		101.0	30.6		98.4	29.7		95.7	28.7
40.0		105.7	28.7		102.0	27.3		98.0	25.8
50.0		110.0	26.6		104.8	24.5	1.0	99.0	22.2
60.0	6.3	113.7	24.1	13.5	106.5	21.2	22.1		17.5
70.0	23.5	116.5	21.2	33.7		16.8	48.1		10.3
80.0	42.1	117.9	17.5	58.1		10.3			
90.0	63.2		12.6						
$k_a = 0.45$				$k_a = 0.50$			$k_a = 0.55$		
0.		84.9	35.3		84.9	35.3		84.9	35.3
10.0		88.2	33.1		87.5	32.8		86.7	32.6
20.0		91.0	30.6		89.3	30.0		87.5	29.4
30.0		92.9	27.7						
40.0									
50.0	7.6		19.5						
60.0	33.2		12.6	15.4		16.1	25.5		11.5
$k_a = 0.60$				$k_a = 0.65$			$k_a = 0.70$		
0.		84.9	35.3		84.9	35.3		84.9	35.3
10.0		85.9	32.3						
20.0									
30.0									
40.0	2.1		17.5	9.0		14.5	18.1		10.3

表-8・2(4) 粘性土の土圧強度と崩壊角 ( $c_a = c$  の場合)

$c = 40 \text{ kN/m}^2, c_a = 40 \text{ kN/m}^2$  (その1)

$\Sigma Th+q$ ( $\text{kN/m}^2$ )	$k_h = 0$			$k_h = 0.05$			$k_h = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		113.1	35.3		113.1	35.3		113.1	35.3
10.0		123.1	35.3		122.4	35.1		121.7	34.9
20.0		133.1	35.3		131.7	34.9		130.3	34.6
30.0		143.1	35.3		141.0	34.7		138.8	34.2
40.0		153.1	35.3		150.3	34.6		147.3	33.9
50.0		163.1	35.3		159.5	34.4		155.8	33.5
60.0		173.1	35.3		168.8	34.2		164.3	33.1
70.0		183.1	35.3		178.1	34.0		172.8	32.7
80.0		193.1	35.3		187.3	33.9		181.2	32.3
90.0		203.1	35.3		196.6	33.7		189.6	31.9
100.0		213.1	35.3		205.8	33.5	2.0	198.0	31.5
110.0		223.1	35.3	4.9	215.1	33.3	13.7	206.3	31.1
120.0	6.9	233.1	35.3	15.7	224.3	33.1	25.3	214.7	30.6
130.0	16.9	243.1	35.3	26.5	233.5	32.9	37.0	223.0	30.2
140.0	26.9	253.1	35.3	37.2	242.8	32.7	48.8	231.2	29.7
150.0	36.9	263.1	35.3	48.0	252.0	32.5	60.6	239.4	29.2
160.0	46.9	273.1	35.3	58.8	261.2	32.3	72.4	247.6	28.7
170.0	56.9	283.1	35.3	69.6	270.4	32.1	84.2	255.8	28.2
180.0	66.9	293.1	35.3	80.4	279.6	31.9	96.1	263.9	27.7
190.0	76.9	303.1	35.3	91.2	288.8	31.7	108.0	272.0	27.1
200.0	86.9	313.1	35.3	102.0	298.0	31.5	120.0	280.0	26.6
210.0	96.9	323.1	35.3	112.8	307.2	31.3	132.0	288.0	26.0
220.0	106.9	333.1	35.3	123.7	316.3	31.1	144.1	295.9	25.4
230.0	116.9	343.1	35.3	134.5	325.5	30.8	156.2	303.8	24.7
240.0	126.9	353.1	35.3	145.3	334.7	30.6	168.4	311.6	24.1
250.0	136.9	363.1	35.3	156.2	343.8	30.4	180.7	319.3	23.4
<b><math>k_h = 0.15</math></b>									
0.		113.1	35.3		113.1	35.3		113.1	35.3
10.0		121.0	34.7		120.3	34.6		119.5	34.4
20.0		128.8	34.2		127.3	33.9		125.8	33.5
30.0		136.6	33.7		134.3	33.1		132.0	32.5
40.0		144.3	33.1		141.2	32.3		138.0	31.5
50.0		152.0	32.5		148.0	31.5		143.8	30.4
60.0		159.6	31.9		154.7	30.6		149.4	29.2
70.0		167.2	31.3		161.2	29.7		154.9	27.9
80.0		174.7	30.6		167.6	28.7		160.0	26.6
90.0		182.1	29.9	6.1	173.9	27.7	15.2	164.8	25.1
100.0	10.6	189.4	29.2	20.0	180.0	26.6	30.7	169.3	23.4
110.0	23.3	196.7	28.5	34.1	185.9	25.4	46.8	173.2	21.6
120.0	36.1	203.9	27.7	48.4	191.6	24.1	63.4	176.6	19.5
130.0	49.0	211.0	26.8	63.1	196.9	22.7	81.0	179.0	17.0
140.0	62.0	218.0	26.0	78.0	202.0	21.2	100.0	180.0	14.0
150.0	75.2	224.8	25.1	93.4	206.6	19.5	121.7	180.0	10.0
160.0	88.4	231.6	24.1	109.4	210.6	17.5	160.0		0.0
170.0	101.9	238.1	23.1	126.2	213.8	15.3			
180.0	115.5	244.5	22.0	144.2	215.8	12.6			
190.0	129.3	250.7	20.8	164.7		9.0			
200.0	143.4	256.6	19.5	200.0		0.0			
210.0	157.8	262.2	18.1						
220.0	172.7	267.3	16.5						
230.0	188.0	272.0	14.7						
240.0	204.2	275.8	12.6						
250.0	221.7	278.3	10.0						
<b><math>k_h = 0.30</math></b>									
0.		113.1	35.3		113.1	35.3		113.1	35.3
10.0		118.8	34.2		118.1	34.0		117.3	33.9
20.0		124.3	33.1		122.8	32.7		121.2	32.3
30.0		129.6	31.9		127.2	31.3		124.7	30.6
40.0		134.7	30.6		131.2	29.7		127.6	28.7
50.0		139.4	29.2		134.9	27.9		130.0	26.6
60.0		143.9	27.7		138.0	26.0		131.6	24.1
70.0		148.0	26.0		140.4	23.8	8.0	126.0	21.2
80.0	8.4	151.6	24.1	18.0	142.0	21.2	29.4	121.6	17.5
90.0	25.5	154.5	22.0	37.8		18.1	54.2	117.6	12.6
100.0	43.4	156.6	19.5	60.0		14.0			
110.0	62.7		16.5	88.1		7.8			
120.0	84.2		12.6						
130.0	112.1		6.4						

$c = 40 \text{ kN/m}^2, c_o = 40 \text{ kN/m}^2$  (その2)

$k_h = 0.45$				$k_h = 0.50$			$k_h = 0.55$		
$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$p_o$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_o$	$p_p$	$\alpha$	$p_o$	$p_p$	$\alpha$
0.		113.1	35.3		113.1	35.3		113.1	35.3
10.0		116.6	33.7		115.8	33.5		115.1	33.3
20.0		119.6	31.9		118.0	31.5		116.3	31.1
30.0		122.1	29.9		119.4	29.2			
40.0		123.9	27.7						
50.0		124.8	25.1						
60.0				3.4		19.5	12.7		16.5
70.0	17.8		18.1	30.0		14.0	48.1		7.8
80.0	44.2		12.6						
$k_h = 0.60$				$k_h = 0.65$			$k_h = 0.70$		
0.		113.1	35.3		113.1	35.3		113.1	35.3
10.0		114.3	33.1						
20.0									
30.0									
40.0									
50.0				1.0		17.0	10.0		14.0
60.0	24.2		12.6	42.1		6.4			

表-8・2(5) 粘性土の土圧強度と崩壊角 ( $c_a = c$  の場合)

$c = 50.0 \text{ kN/m}^2, c_a = 50.0 \text{ kN/m}^2$  (その1)

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_a = 0$			$k_a = 0.05$			$k_a = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		141.4	35.3		141.4	35.3		141.4	35.3
10.0		151.4	35.3		150.7	35.1		150.0	35.0
20.0		161.4	35.3		160.0	35.0		158.6	34.7
30.0		171.4	35.3		169.3	34.9		167.1	34.4
40.0		181.4	35.3		178.6	34.7		175.6	34.1
50.0		191.4	35.3		187.8	34.6		184.2	33.9
60.0		201.4	35.3		197.1	34.4		192.7	33.6
70.0		211.4	35.3		206.4	34.3		201.1	33.3
80.0		221.4	35.3		215.6	34.1		209.6	32.9
90.0		231.4	35.3		224.9	34.0		218.1	32.6
100.0		241.4	35.3		234.2	33.9		226.5	32.3
110.0		251.4	35.3		243.4	33.7		234.9	32.0
120.0		261.4	35.3		252.7	33.6		243.3	31.7
130.0		271.4	35.3		261.9	33.4	8.3	251.7	31.3
140.0		281.4	35.3	8.9	271.1	33.3	20.0	260.0	31.0
150.0	8.6	291.4	35.3	19.6	280.4	33.1	31.7	268.3	30.6
160.0	18.6	301.4	35.3	30.4	289.6	32.9	43.4	276.6	30.2
170.0	28.6	311.4	35.3	41.2	298.8	32.8	55.1	284.9	29.9
180.0	38.6	321.4	35.3	51.9	308.1	32.6	66.9	293.1	29.5
190.0	48.6	331.4	35.3	62.7	317.3	32.5	78.6	301.4	29.1
200.0	58.6	341.4	35.3	73.5	326.5	32.3	90.5	309.5	28.7
210.0	68.6	351.4	35.3	84.3	335.7	32.1	102.3	317.7	28.3
220.0	78.6	361.4	35.3	95.1	344.9	32.0	114.2	325.8	27.9
230.0	88.6	371.4	35.3	105.9	354.1	31.8	126.1	333.9	27.5
240.0	98.6	381.4	35.3	116.7	363.3	31.7	138.0	342.0	27.0
250.0	108.6	391.4	35.3	127.5	372.5	31.5	150.0	350.0	26.6
<b><math>k_a = 0.15</math></b>									
0.		141.4	35.3		141.4	35.3		141.4	35.3
10.0		149.3	35.9		148.6	34.7		147.8	34.6
20.0		157.1	34.4		155.6	34.1		154.2	33.9
30.0		164.9	34.0		162.7	33.6		160.4	33.1
40.0		172.7	33.6		169.6	32.9		166.5	32.3
50.0		180.4	33.1		176.5	32.3		172.5	31.5
60.0		188.1	32.6		183.3	31.7		178.3	30.6
70.0		195.7	32.1		190.0	31.0		184.0	29.7
80.0		203.3	31.7		196.6	30.2		189.5	28.7
90.0		210.8	31.1		203.1	29.5		194.9	27.7
100.0		218.3	30.6		209.5	28.7	0.	200.0	26.6
110.0		225.8	30.1	4.2	215.8	27.9	15.1	204.9	25.4
120.0	6.9	233.1	29.5	18.0	222.0	37.0	30.6	209.4	24.1
130.0	19.5	240.5	28.9	32.0	228.0	26.1	46.3	213.7	22.7
140.0	32.3	247.7	28.3	46.2	233.8	25.1	62.5	217.5	21.2
150.0	45.1	254.9	27.7	60.6	239.4	24.1	79.3	220.7	19.5
160.0	58.0	262.0	27.0	75.1	244.9	23.0	96.8	223.2	17.5
170.0	71.0	269.0	26.3	90.0	250.0	21.8	115.2	224.8	15.3
180.0	84.1	275.9	25.6	105.2	254.8	20.5	135.3		12.6
190.0	97.3	282.7	24.9	120.7	259.3	19.1	158.4		9.0
200.0	110.6	289.4	24.1	136.8	263.2	17.5	200.0		0.0
210.0	124.0	296.0	23.3	153.4	266.6	15.8			
220.0	137.5	302.5	22.4	171.0	269.0	13.8			
230.0	151.3	308.7	21.5	190.0		11.3			
240.0	165.2	314.8	20.5	211.7		8.0			
250.0	179.3	320.7	19.5	250.0		0.0			
<b><math>k_a = 0.20</math></b>									
0.		141.4	35.3		141.4	35.3		141.4	35.3
10.0		147.1	34.4		146.4	34.3		145.6	34.1
20.0		152.7	33.6		151.1	33.3		149.6	32.9
30.0		158.1	32.6		155.7	32.1		153.3	31.7
40.0		163.3	31.7		160.0	31.0		156.6	30.2
50.0		168.3	30.6		164.0	29.7		159.5	28.7
60.0		173.1	29.5		167.7	28.3		162.0	27.0
70.0		177.7	28.3		171.0	26.8		163.8	25.1
80.0		182.0	27.0		173.8	25.1		164.9	23.0
90.0		185.9	25.6	4.0	176.0	23.3	15.2		20.5
100.0	10.6	189.4	24.1	22.5	177.5	21.2	36.8		17.5
110.0	27.5	192.5	22.4	42.2		18.7	61.0		13.8
120.0	45.2	194.8	20.5	63.4		15.8	91.7		8.0
130.0	63.7	196.3	18.3	87.6		12.0			
140.0	83.4		15.8	120.0		5.7			
150.0	105.3		12.6						
160.0	131.7		8.0						
<b><math>k_a = 0.25</math></b>									
<b><math>k_a = 0.30</math></b>									
<b><math>k_a = 0.35</math></b>									
<b><math>k_a = 0.40</math></b>									



$c = 50.0 \text{ kN/m}^2$ ,  $c_a = 50.0 \text{ kN/m}^2$  (その2)

$k_h = 0.45$				$k_h = 0.50$			$k_h = 0.55$		
$\Sigma 7h+q$ ( $\text{kN/m}^2$ )	$p_h$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		141.4	35.3		141.4	35.3		141.4	35.3
10.0		144.9	34.0		144.2	33.9		143.4	33.7
20.0		148.1	32.6		146.5	32.3		144.9	32.0
30.0		150.8	31.1		148.3	30.6		145.8	30.1
40.0		153.1	29.5		149.5	28.7			
50.0		154.9	27.7						
60.0		155.9	25.6						
70.0							2.2		18.7
80.0	5.2		20.5	16.8		17.5	31.0		13.8
90.0	28.4		17.1	45.3		12.6	75.9		4.0
100.0	55.3		12.6						
110.0	95.9		4.0						
$k_h = 0.60$				$k_h = 0.65$			$k_h = 0.70$		
0.		141.4	35.3		141.4	35.3		141.4	35.3
10.0		142.7	33.6		141.9	33.4			
20.0		143.3	31.7						
30.0									
40.0									
50.0									
60.0							3.4		15.8
70.0	13.4		15.8	27.6		12.0	50.0		5.7
80.0	51.7		8.0						

表一8・2(6) 粘性土の土圧強度と崩壊角 ( $c_e = c$  の場合)

$c = 60.0 \text{ kN/m}^2, c_e = 60.0 \text{ kN/m}^2$  (その1)

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_a = 0$			$k_a = 0.05$			$k_a = 0.10$		
	$P_a$ ( $\text{kN/m}^2$ )	$P_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$P_a$	$P_p$	$\alpha$	$P_a$	$P_p$	$\alpha$
0.		169.7	35.3		169.7	35.3		169.7	35.3
10.0		179.7	35.3		179.0	35.2		178.3	35.0
20.0		189.7	35.3		188.3	35.0		186.9	34.8
30.0		199.7	35.3		197.6	34.9		195.4	34.6
40.0		209.7	35.3		206.9	34.8		204.0	34.3
50.0		219.7	35.3		216.1	34.7		212.5	34.1
60.0		229.7	35.3		225.4	34.6		221.0	33.9
70.0		239.7	35.3		234.7	34.5		229.5	33.6
80.0		249.7	35.3		244.0	34.3		238.0	33.4
90.0		259.7	35.3		253.2	34.2		246.5	33.1
100.0		269.7	35.3		262.5	34.1		254.9	32.8
110.0		279.7	35.3		271.7	34.0		263.4	32.6
120.0		289.7	35.3		281.0	33.9		271.8	32.3
130.0		299.7	35.3		290.2	33.7		280.2	32.0
140.0		309.7	35.3		299.5	33.6		288.6	31.8
150.0		319.7	35.3		308.7	33.5		297.0	31.5
160.0		329.7	35.3	2.0	318.0	33.4	14.7	305.3	31.2
170.0	0.3	339.7	35.3	12.8	327.2	33.2	26.3	313.7	30.9
180.0	10.3	349.7	35.3	23.5	336.5	33.1	38.0	322.0	30.6
190.0	20.3	359.7	35.3	34.3	345.7	33.0	49.7	330.3	30.3
200.0	30.3	369.7	35.3	45.1	354.9	32.8	61.4	338.6	30.0
210.0	40.3	379.7	35.3	55.9	364.1	32.7	73.2	346.8	29.7
220.0	50.3	389.7	35.3	66.6	373.4	32.6	84.9	355.1	29.4
230.0	60.3	399.7	35.3	77.4	382.6	32.4	96.7	363.3	29.0
240.0	70.3	409.7	35.3	88.2	391.8	32.3	108.5	371.5	28.7
250.0	80.3	419.7	35.3	99.0	401.0	32.2	120.4	379.6	28.4
$k_a = 0.15$ $k_a = 0.20$ $k_a = 0.25$									
0.		169.7	35.3		169.7	35.3		169.7	35.3
10.0		177.6	34.9		176.9	34.8		176.1	34.7
20.0		185.4	34.6		184.0	34.3		182.5	34.1
30.0		193.2	34.2		191.0	33.9		188.7	33.5
40.0		201.0	33.9		198.0	33.4		194.9	32.8
50.0		208.7	33.5		204.9	32.8		201.0	32.2
60.0		216.5	33.1		211.8	32.3		207.0	31.5
70.0		224.1	32.7		218.6	31.8		212.8	30.8
80.0		231.8	32.3		225.3	31.2		218.6	30.0
90.0		239.4	31.9		232.0	30.6		224.2	29.2
100.0		247.0	31.5		238.6	30.0		229.6	28.4
110.0		254.5	31.1		245.1	29.4		234.9	27.5
120.0		262.0	30.6		251.5	28.7	0.	240.0	26.6
130.0		269.4	30.2	2.3	257.7	28.0	15.1	244.9	25.6
140.0	3.2	276.8	29.7	16.1	263.9	27.3	30.5	249.5	24.5
150.0	15.8	284.2	29.2	30.0	270.0	26.6	46.1	253.9	23.4
160.0	28.5	291.5	28.7	44.1	275.9	25.8	62.0	258.0	22.2
170.0	41.3	298.7	28.2	58.3	281.7	25.0	78.3	261.7	20.9
180.0	54.1	305.9	27.7	72.7	287.3	24.1	95.1	264.9	19.5
190.0	67.0	313.0	27.1	87.2	292.8	23.2	112.5	267.5	17.9
200.0	80.0	320.0	26.6	102.0	298.0	22.2	130.7	269.3	16.1
210.0	93.0	327.0	26.0	117.0	303.0	21.2	150.0		14.0
220.0	106.2	333.8	25.4	132.4	307.6	20.1	171.0		11.5
230.0	119.4	340.6	24.7	148.0	312.0	18.9	195.4		8.2
240.0	132.7	347.3	24.1	164.1	315.9	17.5	240.0		0.0
250.0	146.1	353.9	23.4	180.7	319.3	16.1			
$k_a = 0.30$ $k_a = 0.35$ $k_a = 0.40$									
0.		169.7	35.3		169.7	35.3		169.7	35.3
10.0		175.4	34.6		174.7	34.5		174.0	34.3
20.0		181.0	33.9		179.5	33.6		178.0	33.4
30.0		186.5	33.1		184.1	32.7		181.8	32.3
40.0		191.8	32.3		188.6	31.8		185.3	31.2
50.0		197.0	31.5		192.8	30.8		188.6	30.0
60.0		202.0	30.6		196.8	29.7		191.5	28.7
70.0		206.8	29.7		200.5	28.5		193.9	27.3
80.0		211.5	28.7		203.9	27.3		195.9	25.8
90.0		215.9	27.7		207.0	26.0		197.3	24.1
100.0		220.0	26.6		209.5	24.5	2.0	198.0	22.2
110.0		223.8	25.4	8.4	211.6	22.9	22.4		20.1
120.0	12.7	227.3	24.1	27.0	213.0	21.2	44.1		17.5
130.0	29.6	230.4	22.7	46.6		19.2	68.0		14.5
140.0	47.0	233.0	21.2	67.3		16.8	96.2		10.3
150.0	65.1	234.9	19.5	90.0		14.0			
160.0	84.1	235.9	17.5	116.2		10.3			
170.0	104.3		15.3	154.5		3.7			
180.0	126.3		12.6						
190.0	152.1		9.0						

$c = 60.0 \text{ kN/m}^2$ ,  $c_p = 60.0 \text{ kN/m}^2$  (その2)

$k_h = 0.45$				$k_h = 0.50$			$k_h = 0.55$		
$\Sigma \tau k + q$ ( $\text{kN/m}^2$ )	$p_u$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_u$	$p_p$	$\alpha$	$p_u$	$p_p$	$\alpha$
0.		169.7	35.3		169.7	35.3		169.7	35.3
10.0		173.2	34.2		172.5	34.1		171.7	34.0
20.0		176.5	33.1		174.9	32.8		173.4	32.6
30.0		179.4	31.9		177.0	31.5		174.5	31.1
40.0		182.0	30.6		178.6	30.0		175.1	29.4
50.0		184.2	29.2		179.6	28.4			
60.0		185.9	27.7						
70.0		187.0	26.0						
80.0									
90.0				5.1		19.5	19.0		16.5
100.0	15.1		19.5	30.7		16.1	51.0		11.5
110.0	39.0		16.5	61.0		11.5			
120.0	66.3		12.6						
130.0	103.2		6.4						
$k_h = 0.60$				$k_h = 0.65$			$k_h = 0.70$		
0.		169.7	35.3		169.7	35.3		169.7	35.3
10.0		171.0	33.9		170.2	33.7			
20.0		171.8	32.3						
30.0									
40.0									
50.0									
60.0									
70.0									
80.0	4.1		17.5	18.0		14.5	36.2		10.3
90.0	36.3		12.6	63.2		6.4			

表-8・2(7) 粘性土の土圧強度と崩壊角 ( $c_u = c$  の場合)

$c = 70.0 \text{ kN/m}^2, c_u = 70.0 \text{ kN/m}^2$  (その1)

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_h = 0$			$k_h = 0.05$			$k_h = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		198.0	35.3		198.0	35.3		198.0	35.3
10.0		208.0	35.3		207.3	35.2		206.6	35.1
20.0		218.0	35.3		216.6	35.1		215.1	34.9
30.0		228.0	35.3		225.9	35.0		223.7	34.7
40.0		238.0	35.3		235.1	34.9		232.2	34.5
50.0		248.0	35.3		244.4	34.8		240.8	34.3
60.0		258.0	35.3		253.7	34.7		249.3	34.1
70.0		268.0	35.3		263.0	34.6		257.8	33.9
80.0		278.0	35.3		272.2	34.5		266.3	33.6
90.0		288.0	35.3		281.5	34.4		274.8	33.4
100.0		298.0	35.3		290.8	34.3		283.3	33.2
110.0		308.0	35.3		300.1	34.2		291.8	33.0
120.0		318.0	35.3		309.3	34.1		300.2	32.8
130.0		328.0	35.3		318.6	34.0		308.7	32.5
140.0		338.0	35.3		327.8	33.9		317.1	32.3
150.0		348.0	35.3		337.1	33.7		325.5	32.1
160.0		358.0	35.3		346.3	33.6		333.9	31.8
170.0		368.0	35.3		355.6	33.5		342.3	31.6
180.0		378.0	35.3		364.8	33.4	9.4	350.6	31.4
190.0		388.0	35.3	5.9	374.1	33.3	21.0	359.0	31.1
200.0	2.0	398.0	35.3	16.7	383.3	33.2	32.7	367.3	30.9
210.0	12.0	408.0	35.3	27.5	392.5	33.1	44.3	375.7	30.6
220.0	22.0	418.0	35.3	38.2	401.8	33.0	56.0	384.0	30.4
230.0	32.0	428.0	35.3	49.0	411.0	32.9	67.8	392.2	30.1
240.0	42.0	438.0	35.3	59.8	420.0	32.8	79.5	400.5	29.8
250.0	52.0	448.0	35.3	70.6	429.4	32.7	91.3	408.7	29.6
<b><math>k_h = 0.15</math></b>									
0.		198.0	35.3		198.0	35.3		198.0	35.3
10.0		205.9	35.0		205.1	34.9		204.4	34.8
20.0		213.7	34.7		212.2	34.5		210.8	34.3
30.0		221.5	34.4		219.3	34.1		217.1	33.7
40.0		229.3	34.1		226.3	33.6		223.3	33.2
50.0		237.1	33.7		233.3	33.2		229.4	32.7
60.0		244.8	33.4		240.2	32.8		235.5	32.1
70.0		252.5	33.1		247.1	32.3		241.5	31.5
80.0		260.2	32.8		253.9	31.8		247.3	30.9
90.0		267.9	32.4		260.6	31.4		253.1	30.2
100.0		275.5	32.1		267.3	30.9		258.7	29.6
110.0		283.1	31.7		274.0	30.4		264.3	28.9
120.0		290.6	31.4		280.5	29.8		269.7	28.1
130.0		298.2	31.0		287.0	29.3		274.9	27.4
140.0		305.7	30.6		293.4	28.7	0.	280.0	26.6
150.0		313.1	30.2	0.3	299.7	28.1	15.1	284.9	25.7
160.0		320.5	29.8	14.1	305.9	27.5	30.4	289.6	24.8
170.0	12.1	327.9	29.4	28.0	312.0	26.9	45.9	294.1	23.9
180.0	24.8	335.2	29.0	42.0	318.0	26.2	61.7	298.3	22.9
190.0	37.6	342.4	28.6	56.1	323.9	25.6	77.8	302.2	21.8
200.0	50.3	349.7	28.1	70.4	329.6	24.8	94.2	305.8	20.7
210.0	63.2	356.8	27.7	84.8	335.2	24.1	111.0	309.0	19.5
220.0	76.1	363.9	27.2	99.3	340.7	23.3	128.3	311.7	18.1
230.0	89.0	371.0	26.7	114.1	345.9	22.5	146.3	313.7	16.6
240.0	102.0	378.0	26.2	129.0	351.0	21.6	165.2	314.8	15.0
250.0	115.1	384.9	25.7	144.2	355.8	20.7	185.2		13.0
<b><math>k_h = 0.20</math></b>									
0.		198.0	35.3		198.0	35.3		198.0	35.3
10.0		203.7	34.7		203.0	34.6		202.2	34.5
20.0		209.3	34.1		207.8	33.9		206.3	33.6
30.0		214.8	33.4		212.5	33.1		210.2	32.8
40.0		220.2	32.8		217.1	32.3		213.9	31.8
50.0		225.5	32.1		221.5	31.5		217.3	30.9
60.0		230.6	31.4		225.7	30.6		220.5	29.8
70.0		235.7	30.6		229.6	29.7		223.4	28.7
80.0		240.5	29.8		233.4	28.7		225.9	27.5
90.0		245.2	29.0		236.8	27.7		228.0	26.2
100.0		249.7	28.1		240.0	26.6		229.6	24.8
110.0		253.9	27.2		242.8	25.4		230.7	23.3
120.0		258.0	26.2		245.2	24.1	9.0		21.6
130.0		261.8	25.2	12.9	247.1	22.7	29.6		19.7
140.0	14.8	265.2	24.1	31.6	248.4	21.2	51.5		17.5
150.0	31.7	268.3	22.9	51.0	249.0	19.5	75.2		15.0
160.0	49.0	271.0	21.6	71.5		17.5	102.0		11.7
170.0	66.8	273.2	20.2	93.3		15.3	136.5		6.8
180.0	85.3	274.7	18.7	117.4		12.6			
190.0	104.7	275.3	16.9	145.7		9.0			
200.0	125.2		15.0	200.0		0.0			
210.0	147.4		12.6						
220.0	172.7		9.6						
230.0	206.3		4.8						

$c = 70.0 \text{ kN/m}^2$ ,  $e_a = 70.0 \text{ kN/m}^2$  (その2)

$\sum \gamma h + q$ ( $\text{kN/m}^2$ )	$k_a = 0.45$			$k_a = 0.50$			$k_a = 0.55$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		198.0	35.3		198.0	35.3		198.0	35.3
10.0		201.5	34.4		200.8	34.3		200.1	34.2
20.0		204.8	33.4		203.3	33.2		201.8	33.0
30.0		207.9	32.4		205.5	32.1		203.1	31.7
40.0		210.6	31.4		207.3	30.9		204.0	30.4
50.0		213.1	30.2		208.7	29.6		204.3	28.9
60.0		215.2	29.0		209.7	28.1			
70.0		216.8	27.7						
80.0		218.0	26.2						
90.0		218.5	24.7						
100.0							8.3		18.1
110.0	2.9		20.9	18.3		18.1	37.1		14.6
120.0	25.3		18.7	45.2		15.0	72.7		9.6
130.0	49.8		16.0	77.1		10.7			
140.0	77.4		12.6						
150.0	112.6		7.6						
$k_a = 0.60$				$k_a = 0.65$			$k_a = 0.70$		
0.		198.0	35.3		198.0	35.3		198.0	35.3
10.0		199.3	34.1		198.6	34.0			
20.0		200.2	32.8						
30.0		200.6	31.4						
40.0									
50.0									
60.0									
70.0									
80.0									
90.0				9.8		16.0	27.4		12.6
100.0	25.2		15.0	47.1		10.7	100.0		0.0
110.0	62.7		9.6						

表-8・2(8) 粘性土の土圧強度と崩壊角 ( $c_a = c$  の場合)

$c = 80.0 \text{ kN/m}^2, c_a = 80.0 \text{ kN/m}^2$  (その1)

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_a = 0$			$k_a = 0.05$			$k_a = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		226.3	35.3		226.3	35.3		226.3	35.3
10.0		236.3	35.3		235.6	35.2		234.9	35.1
20.0		246.3	35.3		244.9	35.1		243.4	34.9
30.0		256.3	35.3		254.1	35.0		252.0	34.7
40.0		266.3	35.3		263.4	34.9		260.5	34.6
50.0		276.3	35.3		272.7	34.8		269.1	34.4
60.0		286.3	35.3		282.0	34.7		277.6	34.2
70.0		296.3	35.3		291.3	34.7		286.1	34.0
80.0		306.3	35.3		300.5	34.6		294.7	33.9
90.0		316.3	35.3		309.8	34.5		303.2	33.7
100.0		326.3	35.3		319.1	34.4		311.7	33.5
110.0		336.3	35.3		328.4	34.3		320.1	33.3
120.0		346.3	35.3		337.6	34.2		328.6	33.1
130.0		356.3	35.3		346.9	34.1		337.1	32.9
140.0		366.3	35.3		356.1	34.0		345.5	32.7
150.0		376.3	35.3		365.4	33.9		354.0	32.5
160.0		386.3	35.3		374.7	33.9		362.4	32.3
170.0		396.3	35.3		383.9	33.8		370.8	32.1
180.0		406.3	35.3		393.2	33.7		379.2	31.9
190.0		416.3	35.3		402.4	33.6		387.6	31.7
200.0		426.3	35.3		411.7	33.5	4.0	396.0	31.5
210.0		436.3	35.3		420.9	33.4	15.7	404.3	31.3
220.0		446.3	35.3	9.9	430.1	33.3	27.3	412.7	31.1
230.0	3.7	456.3	35.3	20.6	439.4	33.2	39.0	421.0	30.8
240.0	13.7	466.3	35.3	31.4	448.6	33.1	50.7	429.3	30.6
250.0	23.7	476.3	35.3	42.2	457.8	33.0	62.4	437.6	30.4
<b><math>k_a = 0.15</math></b>									
0.		226.3	35.3		226.3	35.3		226.3	35.3
10.0		234.1	35.0		233.4	34.9		232.7	34.8
20.0		242.0	34.7		240.5	34.6		239.1	34.4
30.0		249.8	34.5		247.6	34.2		245.4	33.9
40.0		257.6	34.2		254.7	33.9		251.7	33.5
50.0		265.4	33.9		261.7	33.5		257.8	33.0
60.0		273.2	33.7		268.6	33.1		264.0	32.5
70.0		280.9	33.4		275.5	32.7		270.0	32.0
80.0		288.6	33.1		282.4	32.3		276.0	31.5
90.0		296.3	32.8		289.2	31.9		281.8	30.9
100.0		304.0	32.5		296.0	31.5		287.6	30.4
110.0		311.6	32.2		302.7	31.1		293.3	29.8
120.0		319.2	31.9		309.3	30.6		298.9	29.2
130.0		326.8	31.6		315.9	30.2		304.4	28.6
140.0		334.3	31.3		322.4	29.7		309.7	27.9
150.0		341.8	30.9		328.9	29.2		314.9	27.3
160.0		349.3	30.6		335.3	28.7		320.0	26.6
170.0		356.8	30.3		341.6	28.2	15.1	324.9	25.8
180.0		364.2	29.9	12.2	347.8	27.7	30.3	329.7	25.1
190.0	8.5	371.5	29.6	26.0	354.0	27.1	45.8	334.2	24.3
200.0	21.1	378.9	29.2	40.0	360.0	26.6	61.4	338.6	23.4
210.0	33.8	386.2	28.8	54.1	365.9	26.0	77.3	342.7	22.5
220.0	46.6	393.4	28.5	68.2	371.8	25.4	93.5	346.5	21.6
230.0	59.4	400.6	28.1	82.5	377.5	24.7	110.0	350.0	20.6
240.0	72.2	407.8	27.7	96.9	383.1	24.1	126.9	353.1	19.5
250.0	85.1	414.9	27.3	111.4	388.6	23.4	144.2	355.8	18.3

$c = 80.0 \text{ kN/m}^2$ ,  $c_a = 80.0 \text{ kN/m}^2$  (その2)

$\Sigma T_k + q$ ( $\text{kN/m}^2$ )	$k_A = 0.30$			$k_A = 0.35$			$k_A = 0.40$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0		226.3	35.3		226.3	35.3		226.3	35.3
10.0		232.0	34.7		231.3	34.7		230.5	34.6
20.0		237.6	34.2		236.1	34.0		234.7	33.9
30.0		243.2	33.7		240.9	33.4		238.6	33.1
60.0		248.6	33.1		245.5	32.7		242.4	32.3
50.0		254.0	32.5		250.0	32.0		246.0	31.5
60.0		259.2	31.9		254.3	31.3		249.3	30.6
70.0		264.3	31.3		258.5	30.5		252.4	29.7
80.0		269.3	30.6		262.4	29.7		255.3	28.7
90.0		274.2	29.9		266.2	28.8		257.8	27.7
100.0		278.9	29.2		269.7	27.9		260.0	26.6
110.0		283.4	28.5		273.0	27.0		261.8	25.4
120.0		287.8	27.7		275.9	26.0		263.1	24.1
130.0		292.0	26.8		278.6	24.9		263.9	22.7
140.0		295.9	26.0		280.9	23.8	16.1		21.2
150.0	0.3	299.7	25.1	17.3	282.7	22.5	36.9		19.5
160.0	16.9	303.1	24.1	36.1	283.9	21.2	58.8		17.5
170.0	33.8	306.2	23.1	55.5	284.5	19.7	82.4		15.3
180.0	51.0	309.0	22.0	75.7		18.1	108.4		12.6
190.0	68.7	311.3	20.8	97.0		16.2	139.4		9.0
200.0	86.9	313.1	19.5	120.0		14.0			
210.0	105.7	314.3	18.1	145.5		11.4			
220.0	125.3		16.5	176.2		7.8			
230.0	146.1		14.7						
240.0	168.4		12.6						
250.0	193.4		10.0						
<b><math>k_A = 0.45</math></b>									
0		226.3	35.3		226.3	35.3		226.3	35.3
10.0		229.8	34.5		229.1	34.4		228.4	34.3
20.0		233.2	33.7		231.7	33.5		230.1	33.3
30.0		236.3	32.8		234.0	32.5		231.6	32.2
40.0		239.2	31.9		236.0	31.5		232.7	31.1
50.0		241.8	30.9		237.6	30.4		233.3	29.8
60.0		244.2	29.9		238.9	29.2			
70.0		246.2	28.8		239.7	27.9			
80.0		247.8	27.7						
90.0		249.0	26.4						
100.0		249.7	25.1						
110.0									
120.0				6.9		19.5	25.3		16.5
130.0	12.7		20.1	32.0		17.0	56.2		13.0
140.0	35.7		18.1	60.0		14.0	96.2		7.8
150.0	60.6		15.6	93.4		10.0			
160.0	88.4		12.6						
170.0	122.7		8.4						
<b><math>k_A = 0.60</math></b>									
0		226.3	35.3		226.3	35.3		226.3	35.3
10.0		227.6	34.2		226.9	34.1			
20.0		228.6	33.1						
30.0		229.2	31.9						
40.0									
50.0									
60.0									
70.0									
80.0									
90.0									
100.0				2.0		17.0	20.0		14.0
110.0	15.3		16.5	36.2		13.0	66.2		7.8
120.0	48.4		12.6	84.2		6.4			
130.0	94.2		6.4						

表-8・2(9) 粘性土の土圧強度と崩壊角 ( $c_a = c$  の場合)

$c = 90.0 \text{ kN/m}^2, c_a = 90.0 \text{ kN/m}^2$  (その1)

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_h = 0$			$k_h = 0.05$			$k_h = 0.10$		
	$P_a$ ( $\text{kN/m}^2$ )	$P_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$P_a$	$P_p$	$\alpha$	$P_a$	$P_p$	$\alpha$
0.		254.6	35.3		254.6	35.3		254.6	35.3
10.0		264.6	35.3		263.9	35.2		263.1	35.1
20.0		274.6	35.3		273.1	35.1		271.7	35.0
30.0		284.6	35.3		282.4	35.0		280.3	34.8
40.0		294.6	35.3		291.7	35.0		288.8	34.7
50.0		304.6	35.3		301.0	34.9		297.4	34.5
60.0		314.6	35.3		310.3	34.8		305.9	34.3
70.0		324.6	35.3		319.6	34.7		314.5	34.2
80.0		334.6	35.3		328.8	34.7		323.0	34.0
90.0		344.6	35.3		338.1	34.6		331.5	33.9
100.0		354.6	35.3		347.4	34.5		340.0	33.7
110.0		364.6	35.3		356.7	34.4		348.5	33.5
120.0		374.6	35.3		365.9	34.3		357.0	33.4
130.0		384.6	35.3		375.2	34.3		365.5	33.2
140.0		394.6	35.3		384.5	34.2		373.9	33.0
150.0		404.6	35.3		393.7	34.1		382.4	32.8
160.0		414.6	35.3		403.0	34.0		390.8	32.7
170.0		424.6	35.3		412.2	33.9		399.3	32.5
180.0		434.6	35.3		421.5	33.9		407.7	32.3
190.0		444.6	35.3		430.7	33.8		416.1	32.1
200.0		454.6	35.3		440.0	33.7		424.5	31.9
210.0		464.6	35.3		449.2	33.6		432.9	31.8
220.0		474.6	35.3		458.5	33.5		441.3	31.6
230.0		484.6	35.3		467.7	33.4	10.4	449.6	31.4
240.0		494.6	35.3	3.0	477.0	33.4	22.0	458.0	31.2
250.0		504.6	35.3	13.8	486.2	33.3	33.7	466.3	31.0
	$k_h = 0.15$			$k_h = 0.20$			$k_h = 0.25$		
0.		254.6	35.3		254.6	35.3		254.6	35.3
10.0		262.4	35.0		261.7	35.0		261.0	34.9
20.0		270.3	34.8		268.8	34.7		267.4	34.5
30.0		278.1	34.6		275.9	34.3		273.7	34.1
40.0		285.9	34.3		283.0	34.0		280.0	33.7
50.0		293.7	34.1		290.0	33.7		286.2	33.3
60.0		301.5	33.9		297.0	33.4		292.4	32.8
70.0		209.2	33.6		303.9	33.0		298.5	32.4
80.0		317.0	33.4		310.8	32.7		304.5	31.9
90.0		324.7	33.1		317.7	32.3		310.5	31.5
100.0		332.4	32.8		324.5	31.9		316.3	31.0
110.0		340.0	32.6		331.3	31.6		322.1	30.5
120.0		347.7	32.3		338.0	31.2		327.8	30.0
130.0		355.3	32.0		344.7	30.8		333.5	29.5
140.0		362.9	31.8		351.3	30.4		339.0	28.9
150.0		370.5	31.5		357.8	30.0		344.4	28.4
160.0		378.0	31.2		364.4	29.6		349.7	27.8
170.0		385.5	30.9		370.8	29.2		354.9	27.2
180.0		393.0	30.6		377.2	28.7		360.0	26.6
190.0		400.4	30.3		383.5	28.3	15.1	364.9	25.9
200.0		407.8	30.0	10.3	389.7	27.8	30.3	369.7	25.2
210.0	4.8	415.2	29.7	24.1	395.9	27.3	45.7	374.3	24.5
220.0	17.4	422.6	29.4	38.0	402.0	26.8	61.3	378.7	23.8
230.0	30.1	429.9	29.0	52.0	408.0	26.3	77.0	383.0	23.0
240.0	42.8	437.2	28.7	66.1	413.9	25.8	93.0	387.0	22.2
250.0	55.6	444.4	28.4	80.3	419.7	25.2	109.3	390.7	21.3



$c = 90.0 \text{ kN/m}^2$ ,  $c_a = 90.0 \text{ kN/m}^2$  (その2)

$k_h = 0.30$				$k_h = 0.35$			$k_h = 0.40$		
$\Sigma \gamma k + q$ ( $\text{kN/m}^2$ )	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		254.6	35.3		254.6	35.3		254.6	35.3
10.0		260.3	34.8		259.6	34.7		258.8	34.7
20.0		265.9	34.3		264.5	34.2		263.0	34.0
30.0		271.5	33.9		269.2	33.6		267.0	33.4
40.0		277.0	33.4		273.9	33.0		270.8	32.7
50.0		282.4	32.8		278.5	32.4		274.5	31.9
60.0		287.7	32.3		282.9	31.8		278.0	31.2
70.0		292.9	31.8		287.2	31.1		281.3	30.4
80.0		298.0	31.2		291.3	30.4		284.4	29.6
90.0		303.0	30.6		295.2	29.7		287.2	28.7
100.0		207.8	30.0		299.0	28.9		289.7	27.8
110.0		312.6	29.4		302.6	28.1		292.0	26.8
120.0		317.2	28.7		305.9	27.3		293.9	25.8
130.0		321.6	28.0		309.0	26.4		295.4	24.7
140.0		325.9	27.3		311.8	25.5		296.5	23.5
150.0		330.0	26.6		314.3	24.5	3.0	297.0	22.2
160.0		333.9	25.8	3.5	316.5	23.5	23.2		20.8
170.0	2.4	337.6	25.0	21.8	318.2	22.4	44.1		19.3
180.0	19.0	341.0	24.1	40.6	319.4	21.2	66.2		17.5
190.0	35.9	344.1	23.2	59.9	320.1	19.9	89.6		15.6
200.0	53.0	347.0	22.2	80.0		18.4	115.1		13.3
210.0	70.6	349.4	21.2	101.0		16.8	144.3		10.3
220.0	88.5	351.5	20.1	123.3		15.0	182.1		6.0
230.0	107.0	353.0	18.9	147.3		12.9			
240.0	126.2	353.8	17.5	174.3		10.3			
250.0	146.1		16.1	207.6		6.7			
$k_h = 0.45$				$k_h = 0.50$			$k_h = 0.55$		
0.		254.6	35.3		254.6	35.3		254.6	35.3
10.0		258.1	34.6		257.4	34.5		256.7	34.4
20.0		261.5	33.9		260.0	33.7		258.5	33.5
30.0		264.7	33.1		262.4	32.8		260.0	32.6
40.0		267.7	32.3		264.5	31.9		261.3	31.6
50.0		270.5	31.5		266.3	31.0		262.1	30.5
60.0		273.0	30.6		267.8	30.0		262.6	29.4
70.0		275.2	29.7		269.0	28.9			
80.0		277.2	28.7		269.7	27.8			
90.0		278.8	27.7						
100.0		280.0	26.6						
110.0		280.8	25.4						
120.0									
130.0									
140.0	0.6		21.2	20.0		18.4	14.6		17.8
150.0	22.7		19.5	46.1		16.1	43.3		15.0
160.0	46.2		17.5	75.1		13.3	76.5		11.5
170.0	71.4		15.3	110.0		9.5	122.1		6.0
180.0	99.5		12.6						
190.0	133.1		9.0						
200.0	200.0		0.0						
$k_h = 0.60$				$k_h = 0.65$			$k_h = 0.70$		
0.		254.6	35.3		254.6	35.3		254.6	35.3
10.0		255.9	34.3		255.2	34.3			
20.0		257.0	33.4		255.5	33.2			
30.0		257.7	32.3						
40.0		258.0	31.2						
50.0									
60.0									
70.0									
80.0									
90.0									
100.0									
110.0									
120.0	6.2		17.5	27.0		14.5	13.3		15.0
130.0	37.0		14.5	67.1		9.9	54.3		10.3
140.0	74.3		10.3						

表-8・2(II) 粘性土の土圧強度と崩壊角 ( $c_a = c$  の場合)

$\sigma = 100.0 \text{ kN/m}^2$ ,  $c_a = 100.0 \text{ kN/m}^2$  (円の1)

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_h = 0$			$k_h = 0.05$			$k_h = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		282.8	35.3		282.8	35.3		282.8	35.3
10.0		292.8	35.3		292.1	35.2		291.4	35.1
20.0		302.8	35.3		301.4	35.1		300.0	35.0
30.0		312.8	35.3		310.7	35.1		308.6	34.9
40.0		322.8	35.3		320.0	35.0		317.1	34.7
50.0		332.8	35.3		329.3	34.9		325.7	34.6
60.0		342.8	35.3		338.6	34.9		334.2	34.4
70.0		352.8	35.3		347.8	34.8		342.8	34.3
80.0		362.8	35.3		357.1	34.7		351.3	34.1
90.0		372.8	35.3		366.4	34.6		359.8	34.0
100.0		382.8	35.3		375.7	34.6		368.3	33.9
110.0		392.8	35.3		385.0	34.5		376.8	33.7
120.0		402.8	35.3		394.2	34.4		385.3	33.6
130.0		412.8	35.3		403.5	34.4		393.8	33.4
140.0		422.8	35.3		412.8	34.3		402.3	33.3
150.0		432.8	35.3		422.0	34.2		410.8	33.1
160.0		442.8	35.3		431.3	34.1		419.2	32.9
170.0		452.8	35.3		440.6	34.1		427.7	32.8
180.0		462.8	35.3		449.8	34.0		436.1	32.6
190.0		472.8	35.3		459.1	33.9		444.6	32.5
200.0		482.8	35.3		468.3	33.9		453.0	32.3
210.0		492.8	35.3		477.6	33.8		461.4	32.1
220.0		502.8	35.3		486.8	33.7		469.8	32.0
230.0		512.8	35.3		496.1	33.6		478.2	31.8
240.0		522.8	35.3		505.3	33.6		486.6	31.7
250.0		532.8	35.3		514.6	33.5	5.1	494.9	31.5
	$k_h = 0.15$			$k_h = 0.20$			$k_h = 0.25$		
0.		282.8	35.3		282.8	35.3		282.8	35.3
10.0		290.7	35.1		290.0	35.0		289.3	34.9
20.0		298.6	34.9		297.1	34.7		295.7	34.6
30.0		306.4	34.6		304.2	34.4		302.0	34.2
40.0		314.2	34.4		311.3	34.1		308.3	33.9
50.0		322.0	34.2		318.3	33.9		314.6	33.5
60.0		329.8	34.0		325.3	33.6		320.8	33.1
70.0		337.6	33.8		332.3	33.3		326.9	32.7
80.0		345.3	33.6		339.2	32.9		333.0	32.3
90.0		353.1	33.3		346.1	32.6		339.0	31.9
100.0		360.8	33.1		353.0	32.3		344.9	31.5
110.0		368.5	32.9		359.8	32.0		350.8	31.1
120.0		376.1	32.6		366.6	31.7		356.6	30.6
130.0		383.8	32.4		373.3	31.3		362.4	30.2
140.0		391.4	32.1		380.0	31.0		368.0	29.7
150.0		399.0	31.9		386.6	30.6		373.6	29.2
160.0		406.6	31.7		393.2	30.2		379.1	28.7
170.0		414.1	31.4		399.8	29.9		384.5	28.2
180.0		421.7	31.1		406.3	29.5		389.8	27.7
190.0		429.2	30.9		412.7	29.1		394.9	27.1
200.0		436.6	30.6		419.1	28.7	0.	400.0	26.6
210.0		444.1	30.3		425.4	28.3	15.1	404.9	26.0
220.0		451.5	30.1	8.3	431.7	27.9	30.3	409.7	25.4
230.0	1.1	458.9	29.8	22.2	437.8	27.5	45.6	414.4	24.7
240.0	13.7	466.3	29.5	36.0	444.0	27.0	61.1	418.9	24.1
250.0	26.4	473.6	29.2	50.0	450.0	26.6	76.8	423.2	23.4

$c = 100.0 \text{ kN/m}^2, c_a = 100.0 \text{ kN/m}^2$  (その2)

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_A = 0.30$			$k_A = 0.35$			$k_A = 0.40$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		282.8	35.3		282.8	35.3		282.8	35.3
10.0		288.6	34.9		287.8	34.8		287.1	34.7
20.0		294.2	34.4		292.8	34.3		291.3	34.1
30.0		299.8	34.0		297.6	33.8		295.3	33.6
40.0		305.3	33.6		302.3	33.3		299.2	32.9
50.0		310.8	33.1		306.9	32.7		303.0	32.3
60.0		316.1	32.6		311.4	32.1		306.6	31.7
70.0		321.4	32.1		315.8	31.6		310.0	31.0
80.0		326.6	31.7		320.0	31.0		313.2	30.2
90.0		331.7	31.1		324.1	30.3		316.3	29.5
100.0		336.6	30.6		328.0	29.7		319.1	28.7
110.0		341.5	30.1		331.8	29.0		321.7	27.9
120.0		346.3	29.5		335.4	28.3		324.0	27.0
130.0		350.9	28.9		338.8	27.6		326.0	26.1
140.0		355.4	28.3		342.0	26.8		327.6	25.1
150.0		359.8	27.7		344.9	26.0		328.9	24.1
160.0		364.0	27.0		347.6	25.1		329.7	23.0
170.0		368.0	26.3		350.0	24.2			21.8
180.0		371.8	25.6	8.0	352.0	23.3	10.0	30.3	20.5
190.0	4.5	375.5	24.9	26.3	353.7	22.3	51.4		19.1
200.0	21.1	378.9	24.1	45.1	354.9	21.2	73.5		17.5
210.0	38.0	382.0	23.3	64.4	355.6	20.0	96.9		15.8
220.0	55.1	384.9	22.4	84.4		18.7	122.0		13.8
230.0	72.5	387.5	21.5	105.1		17.3	150.0		11.3
240.0	90.3	389.7	20.5	126.9		15.8	183.4		8.0
250.0	108.6	391.4	19.5	150.0		14.0			
$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_A = 0.45$			$k_A = 0.50$			$k_A = 0.55$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		282.8	35.3		282.8	35.3		282.8	35.3
10.0		286.4	34.6		285.7	34.6		285.0	34.5
20.0		289.8	34.0		288.3	33.9		286.8	33.7
30.0		293.1	33.3		290.8	33.1		288.5	32.9
40.0		296.1	32.6		293.0	32.3		289.8	32.0
50.0		299.0	31.9		294.9	31.5		290.8	31.1
60.0		301.7	31.1		296.6	30.6		291.5	30.1
70.0		304.1	30.3		298.0	29.7		291.8	29.0
80.0		306.3	29.5		299.1	28.7			
90.0		308.2	28.6		299.8	27.7			
100.0		309.8	27.7						
110.0		311.0	26.7						
120.0		311.8	25.6						
130.0		312.2	24.5						
140.0									
150.0				8.6		19.5	4.4		18.7
160.0	10.3		20.5	33.5		17.5	62.0		13.8
170.0	32.9		18.9	60.5		15.3	97.9		10.2
180.0	56.7		17.1	90.6		12.6	151.7		4.0
190.0	82.3		15.1	126.8		9.0			
200.0	110.6		12.6						
210.0	143.7		9.4						
220.0	191.7		4.0						
$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_A = 0.60$			$k_A = 0.65$			$k_A = 0.70$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		282.8	35.3		282.8	35.3		282.8	35.3
10.0		284.2	34.4		283.5	34.4			
20.0		285.3	33.6		283.8	33.4			
30.0		286.1	32.6						
40.0		286.6	31.7						
50.0									
60.0									
70.0									
80.0									
90.0									
100.0									
110.0									
120.0									
130.0									
140.0	26.9		15.8	18.6		15.6	6.9		15.8
150.0	60.6		12.6	55.1		12.0	45.1		12.0
160.0	103.4		8.0	105.3		6.4	100.0		5.7

表-8・3(1) 粘性土の土圧強度と崩壊角 ( $c_a = \lambda c$  の場合)

$c = 10.0 \text{ kN/m}^2, c_a = 10.0 \text{ kN/m}^2$

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_a = 0$			$k_a = 0.05$			$k_a = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		28.3	35.3		28.3	35.3		28.3	35.3
10.0		38.3	35.3		37.6	34.6		36.8	33.9
20.0		48.3	35.3		46.8	33.9		45.3	32.3
30.0	1.7	58.3	35.3	3.9	56.1	33.1	6.3	53.7	30.6
40.0	11.7	68.3	35.3	14.7	65.3	32.3	18.1	61.9	28.7
50.0	21.7	78.3	35.3	25.5	74.5	31.5	30.0	70.0	26.6
60.0	31.7	88.3	35.3	36.3	83.7	30.6	42.1	77.9	24.1
70.0	41.7	98.3	35.3	47.2	92.8	29.7	54.5	85.5	21.2
80.0	51.7	108.3	35.3	58.1	101.9	28.7	67.4	92.6	17.5
90.0	61.7	118.3	35.3	69.0	111.0	27.7	81.1	98.9	12.6
100.0	71.7	128.3	35.3	80.0	120.0	26.6	100.0		0.0
110.0	81.7	138.3	35.3	91.0	129.0	25.4			
120.0	91.7	148.3	35.3	102.1	137.9	24.1			
130.0	101.7	158.3	35.3	113.3	146.7	22.7			
140.0	111.7	168.3	35.3	124.5	155.5	21.2			
150.0	121.7	178.3	35.3	135.9	164.1	19.5			
160.0	131.7	188.3	35.3	147.4	172.6	17.5			
170.0	141.7	198.3	35.3	159.0	181.0	15.3			
180.0	151.7	208.3	35.3	171.1	188.9	12.6			
190.0	161.7	218.3	35.3	183.7	196.3	9.0			
200.0	171.7	228.3	35.3	200.0		0.0			
210.0	181.7	238.3	35.3						
220.0	191.7	248.3	35.3						
230.0	201.7	258.3	35.3						
240.0	211.7	268.3	35.3						
250.0	221.7	278.3	35.3						
$k_a = 0.15$				$k_a = 0.20$			$k_a = 0.25$		
0.		28.3	35.3		28.3	35.3		28.3	35.3
10.0		36.1	33.1		35.3	32.3		34.5	31.5
20.0		43.7	30.6		41.9	28.7		40.0	26.6
30.0	9.0	51.0	27.7	12.1	47.9	24.1	15.9	44.1	19.5
40.0	22.1	57.9	24.1	27.4	52.6	17.5	40.0		0.0
50.0	35.9	64.1	19.5	50.0		0.0			
60.0	51.1	68.9	12.6						
$k_a = 0.30$				$k_a = 0.35$			$k_a = 0.40$		
0.		28.3	35.3		28.3	35.3		28.3	35.3
10.0		33.7	30.6		32.8	29.7		31.9	28.7
20.0	2.1	37.9	24.1	4.5	35.5	21.2	7.4		17.5
30.0	21.1		12.6						
$k_a = 0.45$				$k_a = 0.50$			$k_a = 0.55$		
0.		28.3	35.3		28.3	35.3		28.3	35.3
10.0		31.0	27.7						
20.0	11.1		12.6						
$k_a = 0.60$				$k_a = 0.65$			$k_a = 0.70$		
0.		28.3	35.3		28.3	35.3		28.3	35.3

表-8・3(2) 粘性土の土圧強度と崩壊角( $c_a = \lambda c$ の場合)

$c = 20.0 \text{ kN/m}^2, c_a = 19.6 \text{ kN/m}^2$

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_a = 0$			$k_a = 0.05$			$k_a = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0		56.3	35.4		56.3	35.4		56.3	35.4
10.0		66.3	35.4		65.6	35.1		64.9	34.7
20.0		76.3	35.4		74.9	34.7		73.4	34.0
30.0		86.3	35.4		84.1	34.4		81.9	33.2
40.0		96.3	35.4		93.4	34.0		90.3	32.4
50.0		106.3	35.4		102.6	33.6	1.3	98.7	31.6
60.0	3.7	116.3	35.4	8.1	111.9	33.2	12.9	107.1	30.7
70.0	13.7	126.3	35.4	18.9	121.1	32.8	24.6	115.4	29.8
80.0	23.7	136.3	35.4	29.7	130.3	32.4	36.4	123.6	28.8
90.0	33.7	146.3	35.4	40.5	139.5	32.0	48.3	131.7	27.8
100.0	43.7	156.3	35.4	51.3	148.7	31.6	60.2	139.8	26.7
110.0	53.7	166.3	35.4	62.1	157.9	31.2	72.2	147.8	25.5
120.0	63.7	176.3	35.4	72.9	167.1	30.7	84.4	155.6	24.2
130.0	73.7	186.3	35.4	83.8	176.2	30.3	96.7	163.3	22.8
140.0	83.7	196.3	35.4	94.6	185.4	29.8	109.2	170.8	21.3
150.0	93.7	206.3	35.4	105.5	194.5	29.3	121.9	178.1	19.6
160.0	103.7	216.3	35.4	116.4	203.6	28.8	134.8	185.2	17.6
170.0	113.7	226.3	35.4	127.3	212.7	28.3	148.2	191.8	15.4
180.0	123.7	236.3	35.4	138.3	221.7	27.8	162.2	197.8	12.7
190.0	133.7	246.3	35.4	149.2	230.8	27.2	177.4	202.6	9.0
200.0	143.7	256.3	35.4	160.2	239.8	26.7	200.0		0.0
210.0	153.7	266.3	35.4	171.2	248.8	26.1			
220.0	163.7	276.3	35.4	182.2	257.8	25.5			
230.0	173.7	286.3	35.4	193.3	266.7	24.9			
240.0	183.7	296.3	35.4	204.4	275.6	24.2			
250.0	193.7	306.3	35.4	215.5	284.5	23.5			
<b><math>k_a = 0.15</math></b>									
0		56.3	35.4		56.3	35.4		56.3	35.4
10.0		64.1	34.4		63.4	34.0		62.6	33.6
20.0		71.9	33.2		70.3	32.4		68.7	31.6
30.0		79.5	32.0		77.1	30.7		74.5	29.3
40.0		87.1	30.7		83.6	28.8	0.2	79.8	26.7
50.0	5.5	94.5	29.3	10.2	89.8	26.7	15.5	86.5	23.5
60.0	18.3	101.7	27.8	24.4	95.6	24.2	31.9	88.1	19.6
70.0	31.2	108.8	26.1	39.2	100.8	21.3	50.1	89.9	14.1
80.0	44.4	115.6	24.2	54.8	105.2	17.6	80.0		0.0
90.0	57.9	122.1	22.1	72.2	107.8	12.7			
100.0	71.9	128.1	19.6	100.0		0.0			
110.0	86.5	133.5	16.6						
120.0	102.2	137.8	12.7						
130.0	121.1		6.4						
<b><math>k_a = 0.30</math></b>									
0		56.3	35.4		56.3	35.4		56.3	35.4
10.0		61.9	33.2		61.1	32.8		60.3	32.4
20.0		67.1	30.7		65.4	29.8		63.6	28.8
30.0		71.7	27.8		68.8	26.1		65.6	24.2
40.0	4.4	75.6	24.2	9.2	70.8	21.3	14.8		17.6
50.0	21.9	78.1	19.6	30.1		14.1			
60.0	42.2		12.7						
<b><math>k_a = 0.45</math></b>									
0		56.3	35.4		56.3	35.4		56.3	35.4
10.0		59.5	32.0		58.7	31.6		57.9	31.2
20.0		61.7	27.8		59.8	26.7			
30.0				1.9		19.6	6.5		16.6
40.0	22.2		12.7	40.0		0.0			
<b><math>k_a = 0.60</math></b>									
0		56.3	35.4		56.3	35.4		56.3	35.4
10.0									
20.0									
30.0	12.2		12.7	21.1		6.4			
<b><math>k_a = 0.70</math></b>									
0		56.3	35.4		56.3	35.4		56.3	35.4
10.0									
20.0									
30.0									

表一 8・3(3) 粘性土の土圧強度と崩壊角 ( $c_a = \lambda c$  の場合)

$c = 30.0 \text{ kN/m}^2, c_a = 28.8 \text{ kN/m}^2$

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_A = 0$			$k_A = 0.05$			$k_A = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		84.0	35.5		84.0	35.5		84.0	35.5
10.0		94.0	35.5		93.3	35.3		92.6	35.1
20.0		104.0	35.5		102.6	35.1		101.2	34.6
30.0		114.0	35.5		111.9	34.8		109.7	34.1
40.0		124.0	35.5		121.2	34.6		118.2	33.6
50.0		134.0	35.5		130.4	34.4		126.7	33.1
60.0		144.0	35.5		139.7	34.1		135.1	32.6
70.0		154.0	35.5		148.9	33.9		143.5	32.0
80.0		164.0	35.5	1.8	158.2	33.6	8.1	151.9	31.5
90.0	6.0	174.0	35.5	12.6	167.4	33.4	19.7	160.3	30.9
100.0	16.0	184.0	35.5	23.3	176.7	33.1	31.4	168.6	30.3
110.0	26.0	194.0	35.5	34.1	185.9	32.8	43.2	176.8	29.6
120.0	36.0	204.0	35.5	44.9	195.1	32.6	54.9	185.1	29.0
130.0	46.0	214.0	35.5	55.7	204.3	32.3	66.8	193.2	28.3
140.0	56.0	224.0	35.5	66.5	213.5	32.0	78.7	201.3	27.5
150.0	66.0	234.0	35.5	77.3	222.7	31.7	90.6	209.4	26.8
160.0	76.0	244.0	35.5	88.1	231.9	31.5	102.6	217.4	26.0
170.0	86.0	254.0	35.5	98.9	241.1	31.2	114.7	225.3	25.2
180.0	96.0	264.0	35.5	109.7	250.3	30.9	126.9	233.1	24.3
190.0	106.0	274.0	35.5	120.6	259.4	30.6	139.1	240.9	23.4
200.0	116.0	284.0	35.5	131.4	268.6	30.3	151.3	248.5	22.4
210.0	126.0	294.0	35.5	142.3	277.7	29.9	164.0	256.0	21.4
220.0	136.0	304.0	35.5	153.2	286.8	29.6	176.6	263.4	20.2
230.0	146.0	314.0	35.5	164.0	296.0	29.3	189.4	270.6	19.0
240.0	156.0	324.0	35.5	174.9	305.1	29.0	202.4	277.6	17.7
250.0	166.0	334.0	35.5	185.8	314.2	28.6	215.7	284.3	16.3
<b><math>k_A = 0.15</math></b>									
0.		84.0	35.5		84.0	35.5		84.0	35.5
10.0		91.9	34.8		91.2	34.6		90.4	34.4
20.0		99.7	34.1		98.2	33.6		96.7	33.1
30.0		107.4	33.4		105.1	32.6		102.7	31.7
40.0		115.1	32.6		111.9	31.5		108.6	30.3
50.0		122.7	31.7		118.6	30.3		114.2	28.6
60.0		130.3	30.9		125.1	29.0	0.6	119.4	26.8
70.0	2.3	137.7	29.9	8.7	131.3	27.5	15.8	124.2	24.8
80.0	14.9	145.1	29.0	22.6	137.4	26.0	31.5	128.5	22.4
90.0	27.7	152.3	27.9	36.9	143.1	24.3	48.0	132.0	19.7
100.0	40.6	159.4	26.8	51.5	148.5	22.4	65.7	134.3	16.3
110.0	53.7	166.3	25.6	66.6	153.4	20.2	85.8		11.7
120.0	66.9	173.1	24.3	82.4	157.6	17.7	120.0		0.0
130.0	80.3	179.7	22.9	99.3	160.7	14.6			
140.0	94.0	186.0	21.4	118.3		10.4			
150.0	108.0	192.0	19.7	150.0		0.0			
160.0	122.4	197.6	17.7						
170.0	137.5	202.5	15.5						
180.0	153.4	206.6	12.7						
190.0	171.2	208.8	9.1						
200.0	200.0		0.0						
<b><math>k_A = 0.30</math></b>									
0.		84.0	35.5		84.0	35.5		84.0	35.5
10.0		89.7	34.1		88.9	33.9		88.2	33.6
20.0		95.1	32.6		93.5	32.0		91.9	31.5
30.0		100.3	30.9		97.7	29.9		95.1	29.0
40.0		105.1	29.0		101.3	27.5		97.4	26.0
50.0		109.4	26.8		104.2	24.8	1.5	98.5	22.4
60.0	6.9	113.1	24.3	14.0	106.0	21.4	22.4		17.7
70.0	24.0	116.0	21.4	34.0		17.0	48.3		10.4
80.0	42.4	117.6	17.7	58.3		10.4			
90.0	63.4		12.7						
<b><math>k_A = 0.45</math></b>									
0.		84.0	35.5		84.0	35.5		84.0	35.5
10.0		87.4	33.4		86.7	33.1		85.9	32.8
20.0		90.3	30.9		88.6	30.3		86.8	29.6
30.0		92.3	27.9		89.4	26.8			
40.0		93.1	24.3						
50.0	8.0		19.7	15.7		16.3	25.8		11.7
60.0	33.4		12.7	60.0		0.0			
<b><math>k_A = 0.60</math></b>									
0.		84.0	35.5		84.0	35.5		84.0	35.5
10.0		85.1	32.6						
20.0									
30.0									
40.0	2.4		17.7	9.3		14.6	18.3		10.4

表-8・3(4) 粘性土の土圧強度と崩壊角 ( $c_a = \lambda c$  の場合)

$c = 40.0 \text{ kN/m}^2$ ,  $c_a = 36.8 \text{ kN/m}^2$  (その1)

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_a = 0$			$k_a = 0.05$			$k_a = 0.10$		
	$P_a$ ( $\text{kN/m}^2$ )	$P_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$P_a$	$P_p$	$\alpha$	$P_a$	$P_p$	$\alpha$
0.		110.9	35.8		110.9	35.8		110.9	35.8
10.0		120.9	35.8		120.2	35.6		119.5	35.5
20.0		130.9	35.8		129.5	35.5		128.0	35.1
30.0		140.9	35.8		138.8	35.3		136.6	34.8
40.0		150.9	35.8		148.0	35.1		145.2	34.4
50.0		160.9	35.8		157.3	34.9		153.7	34.0
60.0		170.9	35.8		166.6	34.8		162.2	33.6
70.0		180.9	35.8		175.9	34.6		170.7	33.2
80.0		190.9	35.8		185.2	34.4		179.1	32.8
90.0		200.9	35.8		194.4	34.2		187.6	32.4
100.0		210.9	35.8		203.7	34.0	4.0	196.0	32.0
110.0		220.9	35.8	7.1	212.9	33.8	15.6	204.4	31.6
120.0	9.1	230.9	35.8	17.8	222.2	33.6	27.3	212.7	31.1
130.0	19.1	240.9	35.8	28.6	231.4	33.4	38.9	221.1	30.7
140.0	29.1	250.9	35.8	39.3	240.7	33.2	50.6	229.4	30.2
150.0	39.1	260.9	35.8	50.1	249.9	33.0	62.4	237.6	29.7
160.0	49.1	270.9	35.8	60.9	259.1	32.8	74.1	245.9	29.2
170.0	59.1	280.9	35.8	71.6	268.4	32.6	85.9	254.1	28.7
180.0	69.1	290.9	35.8	82.4	277.6	32.4	97.8	262.2	28.2
190.0	79.1	300.9	35.8	93.2	286.8	32.2	109.7	270.3	27.6
200.0	89.1	310.9	35.8	104.0	296.0	32.0	121.6	278.4	27.0
210.0	99.1	320.9	35.8	114.8	305.2	31.8	133.6	286.4	26.4
220.0	109.1	330.9	35.8	125.6	314.4	31.6	145.6	294.4	25.8
230.0	119.1	340.9	35.8	136.4	323.6	31.3	157.7	302.3	25.2
240.0	129.1	350.9	35.8	147.3	332.7	31.1	169.9	310.1	24.5
250.0	139.1	360.9	35.8	158.1	341.9	30.9	182.1	317.9	23.8
<b><math>k_a = 0.15</math></b>									
0.		110.9	35.8		110.9	35.8		110.9	35.8
10.0		118.8	35.3		118.0	35.1		117.3	34.9
20.0		126.6	34.8		125.2	34.4		123.7	34.0
30.0		134.4	34.2		132.2	33.6		129.9	33.0
40.0		142.2	33.6		139.1	32.8		136.0	32.0
50.0		149.9	33.0		146.0	32.0		141.9	30.9
60.0		157.6	32.4		152.7	31.1		147.6	29.7
70.0		165.2	31.8		159.4	30.2		153.1	28.4
80.0		172.7	31.1		165.9	29.2	1.6	158.4	27.0
90.0		180.2	30.4	7.8	172.2	28.2	16.7	163.3	25.5
100.0	12.4	187.6	29.7	21.6	178.4	27.0	32.1	167.9	23.8
110.0	25.0	195.0	28.9	35.6	184.4	25.8	48.0	172.0	22.0
120.0	37.8	202.2	28.2	49.9	190.1	24.5	64.6	175.4	19.8
130.0	50.6	209.4	27.3	64.4	195.6	23.1	82.0	178.0	17.4
140.0	63.6	216.4	26.4	79.3	200.7	21.6	100.8	179.2	14.3
150.0	76.7	223.3	25.5	94.6	205.4	19.8	122.3		10.2
160.0	89.9	230.1	24.5	110.4	209.6	17.9			
170.0	103.3	236.7	23.5	127.1	212.9	15.6			
180.0	116.8	243.2	22.4	144.9	215.1	12.9			
190.0	130.6	249.4	21.2	165.2		9.2			
200.0	144.6	255.4	19.8	200.0		0.0			
210.0	158.9	261.1	18.4						
220.0	173.6	266.4	16.8						
230.0	188.9	271.1	15.0						
240.0	204.9	275.1	12.9						
250.0	222.3	277.7	10.2						
<b><math>k_a = 0.30</math></b>									
0.		110.9	35.8		110.9	35.8		110.9	35.8
10.0		116.6	34.8		115.9	34.6		115.2	34.4
20.0		122.2	33.6		120.7	33.2		119.1	32.8
30.0		127.6	32.4		125.2	31.8		122.7	31.1
40.0		132.7	31.1		129.4	30.2		125.9	29.2
50.0		137.6	29.7		133.1	28.4		128.4	27.0
60.0		142.2	28.2		136.4	26.4		130.1	24.5
70.0		146.4	26.4	1.0	139.0	24.2	9.3		21.6
80.0	9.9	150.1	24.5	19.3	140.7	21.6	30.4		17.9
90.0	26.8	153.2	22.4	38.9		18.4	54.9		12.9
100.0	44.6	155.4	19.8	60.8		14.3			
110.0	63.6	156.4	16.8	88.5		8.0			
120.0	84.9		12.9						
130.0	112.5		6.5						
<b><math>k_a = 0.35</math></b>									
0.		110.9	35.8		110.9	35.8		110.9	35.8
10.0		116.6	34.8		115.9	34.6		115.2	34.4
20.0		122.2	33.6		120.7	33.2		119.1	32.8
30.0		127.6	32.4		125.2	31.8		122.7	31.1
40.0		132.7	31.1		129.4	30.2		125.9	29.2
50.0		137.6	29.7		133.1	28.4		128.4	27.0
60.0		142.2	28.2		136.4	26.4		130.1	24.5
70.0		146.4	26.4	1.0	139.0	24.2	9.3		21.6
80.0	9.9	150.1	24.5	19.3	140.7	21.6	30.4		17.9
90.0	26.8	153.2	22.4	38.9		18.4	54.9		12.9
100.0	44.6	155.4	19.8	60.8		14.3			
110.0	63.6	156.4	16.8	88.5		8.0			
120.0	84.9		12.9						
130.0	112.5		6.5						
<b><math>k_a = 0.40</math></b>									
0.		110.9	35.8		110.9	35.8		110.9	35.8
10.0		116.6	34.8		115.9	34.6		115.2	34.4
20.0		122.2	33.6		120.7	33.2		119.1	32.8
30.0		127.6	32.4		125.2	31.8		122.7	31.1
40.0		132.7	31.1		129.4	30.2		125.9	29.2
50.0		137.6	29.7		133.1	28.4		128.4	27.0
60.0		142.2	28.2		136.4	26.4		130.1	24.5
70.0		146.4	26.4	1.0	139.0	24.2	9.3		21.6
80.0	9.9	150.1	24.5	19.3	140.7	21.6	30.4		17.9
90.0	26.8	153.2	22.4	38.9		18.4	54.9		12.9
100.0	44.6	155.4	19.8	60.8		14.3			
110.0	63.6	156.4	16.8	88.5		8.0			
120.0	84.9		12.9						
130.0	112.5		6.5						

$c = 40.0 \text{ kN/m}^2$ ,  $c_a = 36.8 \text{ kN/m}^2$  (その2)

$k_h = 0.45$				$k_h = 0.50$			$k_h = 0.55$		
$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		110.9	35.8		110.9	35.8			
10.0		114.4	34.2		113.7	34.0		110.9	35.8
20.0		117.6	32.4		116.0	32.0		112.9	33.8
30.0		120.2	30.4		117.6	29.7		114.4	31.6
40.0		122.2	28.2		118.4	27.0		115.0	28.9
50.0		123.3	25.5						
60.0				4.6		19.8	13.6		16.8
70.0	18.9		18.4	30.8		14.3	48.5		8.0
80.0	44.9		12.9	80.0		0.0			
$k_h = 0.60$				$k_h = 0.65$			$k_h = 0.70$		
0.		110.9	35.8		110.9	35.8			
10.0		112.2	33.6		111.4	33.4		110.9	35.8
20.0		112.7	31.1						
30.0									
40.0									
50.0				2.0		17.4	10.8		14.3
60.0	24.9		12.9	42.5		6.5			



表-8・3(5) 粘性土の土圧強度と崩壊角 ( $c_a = \lambda c$  の場合)

$c = 50.0 \text{ kN/m}^2, c_a = 38.5 \text{ kN/m}^2$  (その1)

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_a = 0$			$k_a = 0.05$			$k_a = 0.10$		
	$P_a$ ( $\text{kN/m}^2$ )	$P_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$P_a$	$P_p$	$\alpha$	$P_a$	$P_p$	$\alpha$
0		133.0	36.9		133.0	36.9		133.0	36.9
10.0		143.0	36.9		142.4	36.8		141.7	36.7
20.0		153.0	36.9		151.7	36.7		150.4	36.4
30.0		163.0	36.9		161.0	36.5		159.0	36.1
40.0		173.0	36.9		170.4	36.4		167.6	35.8
50.0		183.0	36.9		179.7	36.2		176.2	35.5
60.0		193.0	36.9		189.0	36.1		184.8	35.2
70.0		203.0	36.9		198.3	35.9		193.4	34.9
80.0		213.0	36.9		207.6	35.8		201.9	34.6
90.0		223.0	36.9		216.9	35.6		210.5	34.2
100.0		233.0	36.9		226.2	35.5		219.0	33.9
110.0		243.0	36.9		235.5	35.3		227.5	33.6
120.0		253.0	36.9		244.8	35.2	4.0	236.0	33.2
130.0		263.0	36.9	5.9	254.1	35.0	15.6	244.4	32.9
140.0	7.0	273.0	36.9	16.6	263.4	34.9	27.1	252.9	32.5
150.0	17.0	283.0	36.9	27.3	272.7	34.7	38.7	261.3	32.2
160.0	27.0	293.0	36.9	38.1	281.9	34.6	50.3	269.7	31.8
170.0	37.0	303.0	36.9	48.8	291.2	34.4	61.9	278.1	31.4
180.0	47.0	313.0	36.9	59.5	300.5	34.2	73.6	286.4	31.0
190.0	57.0	323.0	36.9	70.3	309.7	34.1	85.2	294.8	30.6
200.0	67.0	333.0	36.9	81.0	319.0	33.9	96.9	303.1	30.2
210.0	77.0	343.0	36.9	91.8	328.2	33.7	108.7	311.3	29.8
220.0	87.0	353.0	36.9	102.5	337.5	33.6	120.4	319.6	29.4
230.0	97.0	363.0	36.9	113.3	346.7	33.4	132.2	327.8	28.9
240.0	107.0	373.0	36.9	124.0	356.0	33.2	144.1	335.9	28.5
250.0	117.0	383.0	36.9	134.8	365.2	33.1	155.9	344.1	28.0
<b><math>k_a = 0.15</math></b>									
0		133.0	36.9		133.0	36.9		133.0	36.9
10.0		141.0	36.5		140.4	36.4		139.7	36.2
20.0		149.0	36.1		147.6	35.8		146.2	35.5
30.0		156.9	35.6		154.8	35.2		152.7	34.7
40.0		164.8	35.2		161.9	34.6		159.0	33.9
50.0		172.7	34.7		169.0	33.9		165.2	33.1
60.0		180.5	34.2		176.0	33.2		171.3	32.2
70.0		188.2	33.7		182.9	32.5		177.3	31.2
80.0		196.0	33.2		189.7	31.8		183.1	30.2
90.0		203.7	32.7		196.4	31.0		188.7	29.1
100.0		211.3	32.2		203.1	30.2	5.9	194.1	28.0
110.0	1.1	218.9	31.6	10.4	209.6	29.4	20.8	199.2	26.8
120.0	13.6	226.4	31.0	24.1	215.9	28.5	35.9	204.1	25.4
130.0	26.1	233.9	30.4	37.8	222.2	27.5	51.3	208.7	24.0
140.0	38.7	241.3	29.8	51.8	228.2	26.5	67.1	212.9	22.4
150.0	51.3	248.7	29.1	65.9	234.1	25.4	83.5	216.5	20.6
160.0	64.1	255.9	28.5	80.2	239.8	24.3	100.5	219.5	18.6
170.0	76.9	263.1	27.8	94.7	245.3	23.0	118.5	221.5	16.2
180.0	89.8	270.2	27.0	109.6	250.4	21.7	137.9	223.0	13.4
190.0	102.8	277.2	26.2	124.8	255.2	20.2	160.3	224.0	9.5
200.0	115.9	284.1	25.4	140.5	259.5	18.6			
210.0	129.1	290.9	24.6	156.8	263.2	16.7			
220.0	142.4	297.6	23.7	173.9	266.1	14.6			
230.0	155.9	304.1	22.7	192.4	267.6	12.0			
240.0	169.6	310.4	21.7	213.4		8.5			
250.0	183.5	316.5	20.6						
<b><math>k_a = 0.20</math></b>									
0		133.0	36.9		133.0	36.9		133.0	36.9
10.0		141.0	36.5		140.4	36.4		139.7	36.2
20.0		149.0	36.1		147.6	35.8		146.2	35.5
30.0		156.9	35.6		154.8	35.2		152.7	34.7
40.0		164.8	35.2		161.9	34.6		159.0	33.9
50.0		172.7	34.7		169.0	33.9		165.2	33.1
60.0		180.5	34.2		176.0	33.2		171.3	32.2
70.0		188.2	33.7		182.9	32.5		177.3	31.2
80.0		196.0	33.2		189.7	31.8		183.1	30.2
90.0		203.7	32.7		196.4	31.0		188.7	29.1
100.0		211.3	32.2		203.1	30.2	5.9	194.1	28.0
110.0	1.1	218.9	31.6	10.4	209.6	29.4	20.8	199.2	26.8
120.0	13.6	226.4	31.0	24.1	215.9	28.5	35.9	204.1	25.4
130.0	26.1	233.9	30.4	37.8	222.2	27.5	51.3	208.7	24.0
140.0	38.7	241.3	29.8	51.8	228.2	26.5	67.1	212.9	22.4
150.0	51.3	248.7	29.1	65.9	234.1	25.4	83.5	216.5	20.6
160.0	64.1	255.9	28.5	80.2	239.8	24.3	100.5	219.5	18.6
170.0	76.9	263.1	27.8	94.7	245.3	23.0	118.5	221.5	16.2
180.0	89.8	270.2	27.0	109.6	250.4	21.7	137.9	223.0	13.4
190.0	102.8	277.2	26.2	124.8	255.2	20.2	160.3	224.0	9.5
200.0	115.9	284.1	25.4	140.5	259.5	18.6			
210.0	129.1	290.9	24.6	156.8	263.2	16.7			
220.0	142.4	297.6	23.7	173.9	266.1	14.6			
230.0	155.9	304.1	22.7	192.4	267.6	12.0			
240.0	169.6	310.4	21.7	213.4		8.5			
250.0	183.5	316.5	20.6						
<b><math>k_a = 0.25</math></b>									
0		133.0	36.9		133.0	36.9		133.0	36.9
10.0		141.0	36.5		140.4	36.4		139.7	36.2
20.0		149.0	36.1		147.6	35.8		146.2	35.5
30.0		156.9	35.6		154.8	35.2		152.7	34.7
40.0		164.8	35.2		161.9	34.6		159.0	33.9
50.0		172.7	34.7		169.0	33.9		165.2	33.1
60.0		180.5	34.2		176.0	33.2		171.3	32.2
70.0		188.2	33.7		182.9	32.5		177.3	31.2
80.0		196.0	33.2		189.7	31.8		183.1	30.2
90.0		203.7	32.7		196.4	31.0		188.7	29.1
100.0		211.3	32.2		203.1	30.2	5.9	194.1	28.0
110.0	1.1	218.9	31.6	10.4	209.6	29.4	20.8	199.2	26.8
120.0	13.6	226.4	31.0	24.1	215.9	28.5	35.9	204.1	25.4
130.0	26.1	233.9	30.4	37.8	222.2	27.5	51.3	208.7	24.0
140.0	38.7	241.3	29.8	51.8	228.2	26.5	67.1	212.9	22.4
150.0	51.3	248.7	29.1	65.9	234.1	25.4	83.5	216.5	20.6
160.0	64.1	255.9	28.5	80.2	239.8	24.3	100.5	219.5	18.6
170.0	76.9	263.1	27.8	94.7	245.3	23.0	118.5	221.5	16.2
180.0	89.8	270.2	27.0	109.6	250.4	21.7	137.9	223.0	13.4
190.0	102.8	277.2	26.2	124.8	255.2	20.2	160.3	224.0	9.5
200.0	115.9	284.1	25.4	140.5	259.5	18.6			
210.0	129.1	290.9	24.6	156.8	263.2	16.7			
220.0	142.4	297.6	23.7	173.9	266.1	14.6			
230.0	155.9	304.1	22.7	192.4	267.6	12.0			
240.0	169.6	310.4	21.7	213.4		8.5			
250.0	183.5	316.5	20.6						
<b><math>k_a = 0.30</math></b>									
0		133.0	36.9		133.0	36.9		133.0	36.9
10.0		141.0	36.5		140.4	36.4		139.7	36.2
20.0		149.0	36.1		147.6	35.8		146.2	35.5
30.0		156.9	35.6		154.8	35.2		152.7	34.7
40.0		164.8	35.2		161.9	34.6		159.0	33.9
50.0		172.7	34.7		169.0	33.9		165.2	33.1
60.0		180.5	34.2		176.0	33.2		171.3	32.2
70.0		188.2	33.7		182.9	32.5		177.3	31.2
80.0		196.0	33.2		189.7	31.8		183.1	30.2
90.0		203.7	32.7		196.4	31.0		188.7	29.1
100.0		211.3	32.2		203.1	30.2	5.9	194.1	28.0
110.0	1.1	218.9	31.6	10.4	209.6	29.4	20.8	199.2	26.8
120.0	13.6	226.4	31.0	24.1	215.9	28.5	35.9	204.1	25.4
130.0	26.1	233.9	30.4	37.8	222.2	27.5	51.3	208.7	24.0
140.0	38.7	241.3	29.8	51.8	228.2	26.5	67.1	212.9	22.4
150.0	51.3	248.7	29.1	65.9	234.1	25.4	83.5	216.5	20.6
160.0	64.1	255.9	28.5	80.2	239.8	24.3	100.5	219.5	18.6
170.0	76.9	263.1	27.8	94.7	245.3	23.0	118.5	221.5	16.2
180.0	89.8	270.2	27.0	109.6	250.4	21.7	137.9	223.0	13.4
190.0	102.8	277.2	26.2	124.8	255.2	20.2	160.3	224.0	9.5
200.0	115.9	284.1	25.4	140.5	259.5	18.6			
210.0	129.1	290.9	24.6	156.8	263.2	16.7			
220.0	142.4	297.6	23.7	173.9	266.1	14.6			
230.0	155.9	304.1	22.7	192.4	267.6	12.0			
240.0	169.6	310.4	21.7	213.4		8.5			
250.0	183.5	316.5	20.6						
<b><math>k_a = 0.35</math></b>									
0		133.0	36.9		133.0	36.9		133.0	36.9
10.0		141.0	36.5		140.4	36.4		139.7	36.2
20.0		149.0	36.1		147.6	35.8		146.2	35.5

$c = 50.0 \text{ kN/m}^2, e_a = 38.5 \text{ kN/m}^2$  (その2)

$k_h = 0.45$				$k_h = 0.50$			$k_h = 0.55$		
$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$p_s$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_o$	$p_p$	$\alpha$	$p_o$	$p_p$	$\alpha$
0.		133.0	36.9		133.0	36.9		133.0	36.9
10.0		136.9	35.6		136.2	35.5		135.5	35.3
20.0		140.5	34.2		139.0	33.9		137.5	33.6
30.0		143.7	32.7		141.3	32.2		138.9	31.6
40.0		146.4	31.0		143.1	30.2		139.6	29.4
50.0		148.7	29.1		144.1	28.0			
60.0		150.2	27.0						
70.0		150.9	24.6				6.2		19.8
80.0	9.6		21.7	20.5		18.6	33.9		14.6
90.0	32.0		18.1	47.9		13.4	76.7		4.3
100.0	57.9		13.4						
110.0	96.7		4.3						
$k_h = 0.60$				$k_h = 0.65$			$k_h = 0.70$		
0.		133.0	36.9		133.0	36.9		133.0	36.9
10.0		134.8	35.2		134.1	35.0			
20.0		136.0	33.2						
30.0		136.4	31.0						
40.0									
50.0									
60.0									
70.0	16.8		16.7	30.1		12.7	6.8		16.7
80.0	53.4		8.5				51.2		6.1

表-8・3(6) 粘性土の土圧強度と崩壊角( $c_a = \lambda c$ の場合)

$c = 60.0 \text{ kN/m}^2$ ,  $c_a = 41.4 \text{ kN/m}^2$  (その1)

$\Sigma T_k + q$ ( $\text{kN/m}^2$ )	$k_A = 0$			$k_A = 0.05$			$k_A = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.	156.0	37.6	37.6	156.0	37.6	37.6	156.0	37.6	37.6
10.0	166.0	37.6	37.6	165.3	37.5	37.5	164.7	37.3	37.3
20.0	176.0	37.6	37.6	174.7	37.3	37.3	173.4	37.1	37.1
30.0	186.0	37.6	37.6	184.0	37.2	37.2	182.0	36.9	36.9
40.0	196.0	37.6	37.6	193.4	37.1	37.1	190.7	36.6	36.6
50.0	206.0	37.6	37.6	202.7	37.0	37.0	199.4	36.4	36.4
60.0	216.0	37.6	37.6	212.0	36.9	36.9	208.0	36.1	36.1
70.0	226.0	37.6	37.6	221.4	36.7	36.7	216.6	35.9	35.9
80.0	236.0	37.6	37.6	230.7	36.6	36.6	225.2	35.6	35.6
90.0	246.0	37.6	37.6	240.0	36.5	36.5	233.8	35.3	35.3
100.0	256.0	37.6	37.6	249.4	36.4	36.4	242.4	35.1	35.1
110.0	266.0	37.6	37.6	258.7	36.2	36.2	251.0	34.8	34.8
120.0	276.0	37.6	37.6	268.0	36.1	36.1	259.5	34.5	34.5
130.0	286.0	37.6	37.6	277.3	36.0	36.0	268.1	34.2	34.2
140.0	296.0	37.6	37.6	286.6	35.9	35.9	276.6	34.0	34.0
150.0	306.0	37.6	37.6	295.9	35.7	35.7	285.1	33.7	33.7
160.0	4.0	316.0	37.6	14.8	305.2	35.6	26.4	293.6	33.4
170.0	14.0	326.0	37.6	25.5	314.5	35.5	37.9	302.1	33.1
180.0	24.0	336.0	37.6	36.2	323.8	35.3	49.5	310.5	32.8
190.0	34.0	346.0	37.6	46.9	333.1	35.2	61.0	319.0	32.5
200.0	44.0	356.0	37.6	57.6	342.4	35.1	72.6	327.4	32.1
210.0	54.0	366.0	37.6	68.3	351.7	34.9	84.2	335.8	31.8
220.0	64.0	376.0	37.6	79.0	361.0	34.8	95.9	344.1	31.5
230.0	74.0	386.0	37.6	89.7	370.3	34.7	107.5	352.5	31.1
240.0	84.0	396.0	37.6	100.5	379.5	34.5	119.2	360.8	30.8
250.0	94.0	406.0	37.6	111.2	388.8	34.4	130.9	369.1	30.4
<b><math>k_A = 0.15</math></b>									
0.	156.0	37.6	37.6	156.0	37.6	37.6	156.0	37.6	37.6
10.0	164.0	37.2	37.2	163.4	37.1	37.1	162.7	37.0	37.0
20.0	172.0	36.9	36.9	170.7	36.6	36.6	169.4	36.4	36.4
30.0	180.0	36.5	36.5	178.0	36.1	36.1	175.9	35.7	35.7
40.0	188.0	36.1	36.1	185.2	35.6	35.6	182.4	35.1	35.1
50.0	195.9	35.7	35.7	192.4	35.1	35.1	188.8	34.4	34.4
60.0	203.8	35.3	35.3	199.5	34.5	34.5	195.1	33.7	33.7
70.0	211.7	34.9	34.9	206.6	34.0	34.0	201.3	32.9	32.9
80.0	219.5	34.5	34.5	213.6	33.4	33.4	207.4	32.1	32.1
90.0	227.3	34.1	34.1	220.5	32.8	32.8	213.3	31.3	31.3
100.0	235.1	33.7	33.7	227.4	32.1	32.1	219.1	30.4	30.4
110.0	242.8	33.2	33.2	234.1	31.5	31.5	224.8	29.5	29.5
120.0	250.5	32.8	32.8	240.8	30.8	30.8	230.3	28.5	28.5
130.0	1.8	258.2	32.3	12.6	247.4	30.1	24.4	235.6	27.5
140.0	14.2	265.8	31.8	26.1	253.9	29.3	39.3	240.7	26.4
150.0	26.7	273.3	31.3	39.7	260.3	28.5	54.5	245.5	25.2
160.0	39.2	280.8	30.8	53.4	266.6	27.7	69.9	250.1	23.9
170.0	51.7	288.3	30.3	67.3	272.7	26.9	85.8	254.2	22.6
180.0	64.3	295.7	29.7	81.3	278.7	25.9	102.0	258.0	21.0
190.0	77.0	303.0	29.1	95.5	284.5	25.0	118.8	261.2	19.3
200.0	89.7	310.3	28.5	109.9	290.1	23.9	136.3	263.7	17.4
210.0	102.5	317.5	27.9	124.6	295.4	22.8	154.8	265.2	15.2
220.0	115.4	324.6	27.3	139.4	300.6	21.7	175.0	265.2	12.5
230.0	128.3	331.7	26.6	154.6	305.4	20.4	198.2	265.2	8.9
240.0	141.3	338.7	25.9	170.2	309.8	19.0			
250.0	154.5	345.5	25.2	186.3	313.7	17.4			
<b><math>k_A = 0.20</math></b>									
0.	156.0	37.6	37.6	156.0	37.6	37.6	156.0	37.6	37.6
10.0	162.0	36.9	36.9	161.4	36.7	36.7	160.7	36.6	36.6
20.0	168.0	36.1	36.1	166.6	35.9	35.9	165.2	35.6	35.6
30.0	173.8	35.3	35.3	171.7	34.9	34.9	169.5	34.5	34.5
40.0	179.5	34.5	34.5	176.6	34.0	34.0	173.6	33.4	33.4
50.0	185.1	33.7	33.7	181.3	32.9	32.9	177.4	32.1	32.1
60.0	190.5	32.8	32.8	185.8	31.8	31.8	180.8	30.8	30.8
70.0	195.8	31.8	31.8	190.0	30.6	30.6	183.9	29.3	29.3
80.0	200.8	30.8	30.8	193.9	29.3	29.3	186.6	27.7	27.7
90.0	205.7	29.7	29.7	197.5	27.9	27.9	188.7	25.9	25.9
100.0	210.3	28.5	28.5	200.7	26.4	26.4	190.1	23.9	23.9
110.0	5.4	214.6	27.3	16.6	203.4	24.7	29.4	21.7	21.7
120.0	21.3	218.7	25.9	34.6	205.4	22.8	50.2	19.0	19.0
130.0	37.7	222.3	24.5	53.3	206.7	20.7	73.0	15.7	15.7
140.0	54.6	225.4	22.8	73.2		18.2	99.7	11.2	11.2
150.0	72.0	228.0	21.0	94.8		15.2			
160.0	90.2	229.8	19.0	119.7		11.2			
170.0	109.6		16.6	155.8		4.0			
180.0	130.7		13.7						
190.0	155.1		9.8						
<b><math>k_A = 0.25</math></b>									
0.	156.0	37.6	37.6	156.0	37.6	37.6	156.0	37.6	37.6
10.0	162.0	36.9	36.9	161.4	36.7	36.7	160.7	36.6	36.6
20.0	168.0	36.1	36.1	166.6	35.9	35.9	165.2	35.6	35.6
30.0	173.8	35.3	35.3	171.7	34.9	34.9	169.5	34.5	34.5
40.0	179.5	34.5	34.5	176.6	34.0	34.0	173.6	33.4	33.4
50.0	185.1	33.7	33.7	181.3	32.9	32.9	177.4	32.1	32.1
60.0	190.5	32.8	32.8	185.8	31.8	31.8	180.8	30.8	30.8
70.0	195.8	31.8	31.8	190.0	30.6	30.6	183.9	29.3	29.3
80.0	200.8	30.8	30.8	193.9	29.3	29.3	186.6	27.7	27.7
90.0	205.7	29.7	29.7	197.5	27.9	27.9	188.7	25.9	25.9
100.0	210.3	28.5	28.5	200.7	26.4	26.4	190.1	23.9	23.9
110.0	5.4	214.6	27.3	16.6	203.4	24.7	29.4	21.7	21.7
120.0	21.3	218.7	25.9	34.6	205.4	22.8	50.2	19.0	19.0
130.0	37.7	222.3	24.5	53.3	206.7	20.7	73.0	15.7	15.7
140.0	54.6	225.4	22.8	73.2		18.2	99.7	11.2	11.2
150.0	72.0	228.0	21.0	94.8		15.2			
160.0	90.2	229.8	19.0	119.7		11.2			
170.0	109.6		16.6	155.8		4.0			
180.0	130.7		13.7						
190.0	155.1		9.8						
<b><math>k_A = 0.30</math></b>									
0.	156.0	37.6	37.6	156.0	37.6	37.6	156.0	37.6	37.6
10.0	162.0	36.9	36.9	161.4	36.7	36.7	160.7	36.6	36.6
20.0	168.0	36.1	36.1	166.6	35.9	35.9	165.2	35.6	35.6
30.0	173.8	35.3	35.3	171.7	34.9	34.9	169.5	34.5	34.5
40.0	179.5	34.5	34.5	176.6	34.0	34.0	173.6	33.4	33.4
50.0	185.1	33.7	33.7	181.3	32.9	32.9	177.4	32.1	32.1
60.0	190.5	32.8	32.8	185.8	31.8	31.8	180.8	30.8	30.8
70.0	195.8	31.8	31.8	190.0	30.6	30.6	183.9	29.3	29.3
80.0	200.8	30.8	30.8	193.9	29.3	29.3	186.6	27.7	27.7
90.0	205.7	29.7	29.7	197.5	27.9	27.9	188.7	25.9	25.9
100.0	210.3	28.5	28.5	200.7	26.4	26.4	190.1	23.9	23.9
110.0	5.4	214.6	27.3	16.6	203.4	24.7	29.4	21.7	21.7
120.0	21.3	218.7	25.9	34.6	205.4	22.8	50.2	19.0	19.0
130.0	37.7	222.3	24.5	53.3	206.7	20.7	73.0	15.7	15.7
140.0	54.6	225.4	22.8	73.2		18.2	99.7	11.2	11.2
150.0	72.0	228.0	21.0	94.8		15.2			
160.0	90.2	229.8	19.0	119.7		11.2			
170.0	109.6		16.6	155.8		4.0			
180.0	130.7		13.7						
190.0	155.1		9.8						
<b><math>k_A = 0.35</math></b>									
0.	156.0	37.6	37.6	156.0	37.6	37.6	156.0	37.6	37.6
10.0	162.0	36.9	36.9	161.4	36.7	36.7	160.7	36.6	36.6
20.0	168.0	36.1	36.1	166.6	35.9	35.9	165.2	35.6	35.6
30.0	173.8	35.3	35.3	171.7	34.9	34.9	169.5	34.5	34.5
40.0	179.5	34.5	34.5	176.6	34.0	34.0	173.6	33.4	33.4
50.0	185.1	33.7	33.7	181.3	32.9	32.9	177.4	32.1	32.1
60.0	190.5	32.8	32.8	185.8	31.8	31.8	180.8	30.8	30.8
70.0	195.8	31.8	31.8	190.0	30.6	30.6	183.9	29.3	29.3
80.0	200.8	30.8	30.8	193.9	29.3	29.3	186.6	27.7	27.7
90.0	205.7	29.7	29.7	197.5	27.9	27.9	188.7	25.9	25.9
100.0	210.3	28.5	28.5	200.7	26.4	26.4	190.1	23.9	23.9
110.0	5.4	214.6	27.3	16.6	203.4	24.7	29.4	21.7	21.7
120.0	21.3	218.7	25.9	34.6	205.4	22.8	50.2	19.0	19.0</

$c = 60.0 \text{ kN/m}^2$ ,  $e_{\pi} = 41.4 \text{ kN/m}^2$  (その2)

$k_h = 0.45$				$k_h = 0.50$			$k_h = 0.55$		
$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		156.0	37.6		156.0	37.6		156.0	37.6
10.0		160.0	36.5		159.4	36.4		158.7	36.2
20.0		163.8	35.3		162.4	35.1		161.0	34.8
30.0		167.3	34.1		165.1	33.7		162.8	33.2
40.0		170.5	32.8		167.4	32.1		164.1	31.5
50.0		173.3	31.3		169.1	30.4		164.8	29.5
60.0		175.7	29.7		170.3	28.5			
70.0		177.5	27.9						
80.0		178.7	25.9						
90.0	1.1		23.7	12.0		21.0	24.7		17.8
100.0	22.0		21.0	36.3		17.4	55.0		12.5
110.0	44.7		17.8	65.0		12.5			
120.0	70.7		13.7						
130.0	105.3		6.9						
$k_h = 0.60$				$k_h = 0.65$			$k_h = 0.70$		
0.		156.0	37.6		156.0	37.6		156.0	37.6
10.0		158.0	36.1		157.3	36.0		156.6	35.9
20.0		159.5	34.5		158.1	34.2			
30.0		160.5	32.8						
40.0									
50.0									
60.0									
70.0									
80.0	10.2		19.0	23.0		15.7	3.2		18.2
90.0	40.7		13.7	65.3		6.9	39.7		11.2

表-8・3(7) 粘性土の土圧強度と崩壊角( $c_a = \lambda c$ の場合)

$c = 70.0 \text{ kN/m}^2$ ,  $c_a = 44.1 \text{ kN/m}^2$  (その1)

$\Sigma Th + q$ ( $\text{kN/m}^2$ )	$k_a = 0$			$k_a = 0.05$			$k_a = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		178.7	38.1		178.7	38.1		178.7	38.1
10.0		188.7	38.1		188.1	38.0		187.5	37.9
20.0		198.7	38.1		197.5	37.9		196.2	37.7
30.0		208.7	38.1		206.8	37.8		204.9	37.5
40.0		218.7	38.1		216.2	37.7		213.6	37.3
50.0		228.7	38.1		225.5	37.6		222.2	37.0
60.0		238.7	38.1		234.9	37.5		230.9	36.8
70.0		248.7	38.1		244.2	37.4		239.6	36.6
80.0		258.7	38.1		253.6	37.3		248.2	36.4
90.0		268.7	38.1		262.9	37.1		256.9	36.2
100.0		278.7	38.1		272.2	37.0		265.5	35.9
110.0		288.7	38.1		281.6	36.9		274.1	35.7
120.0		298.7	38.1		290.9	36.8		282.7	35.5
130.0		308.7	38.1		300.2	36.7		291.3	35.3
140.0		318.7	38.1		309.6	36.6		299.9	35.0
150.0		328.7	38.1		318.9	36.5		308.4	34.8
160.0		338.7	38.1		328.2	36.4	3.0	317.0	34.5
170.0		348.7	38.1	2.5	337.5	36.3	14.5	325.5	34.3
180.0	1.3	358.7	38.1	13.1	346.9	36.2	25.9	334.1	34.0
190.0	11.3	368.7	38.1	23.8	356.2	36.1	37.4	342.6	33.8
200.0	21.3	378.7	38.1	34.5	365.5	35.9	48.9	351.1	33.5
210.0	31.3	388.7	38.1	45.2	374.8	35.8	60.5	359.5	33.2
220.0	41.3	398.7	38.1	55.9	384.1	35.7	72.0	368.0	33.0
230.0	51.3	408.7	38.1	66.6	393.4	35.6	83.5	376.5	32.7
240.0	61.3	418.7	38.1	77.3	402.7	35.5	95.1	384.9	32.4
250.0	71.3	428.7	38.1	88.0	412.0	35.4	106.7	393.3	32.1
<b><math>k_a = 0.15</math></b>									
0.		178.7	38.1		178.7	38.1		178.7	38.1
10.0		186.8	37.8		186.2	37.7		185.5	37.6
20.0		194.9	37.5		193.6	37.3		192.2	37.0
30.0		202.9	37.1		200.9	36.8		198.9	36.5
40.0		210.9	36.8		208.2	36.4		205.5	35.9
50.0		218.9	36.5		215.5	35.9		212.0	35.4
60.0		226.9	36.2		222.7	35.5		218.4	34.8
70.0		234.8	35.8		229.9	35.0		224.8	34.1
80.0		242.7	35.5		237.0	34.5		231.1	33.5
90.0		250.6	35.1		244.1	34.0		237.2	32.8
100.0		258.4	34.8		251.1	33.5		243.3	32.1
110.0		266.3	34.4		258.0	33.0		249.3	31.4
120.0		274.1	34.0		264.9	32.4		255.1	30.6
130.0		281.8	33.6		271.7	31.8		260.8	29.8
140.0		289.5	33.2	1.5	278.5	31.2	13.6	266.4	29.0
150.0	2.8	297.2	32.8	14.9	285.1	30.6	28.2	271.8	28.1
160.0	15.1	304.9	32.4	28.3	291.7	30.0	43.0	277.0	27.1
170.0	27.5	312.5	32.0	41.8	298.2	29.3	58.0	282.0	26.1
180.0	39.9	320.1	31.5	55.4	304.6	28.6	73.2	286.8	25.1
190.0	52.4	327.6	31.1	69.1	310.9	27.9	88.7	291.3	23.9
200.0	64.9	335.1	30.6	83.0	317.0	27.1	104.5	295.5	22.7
210.0	77.4	342.6	30.2	97.0	323.0	26.4	120.6	299.4	21.4
220.0	90.1	349.9	29.7	111.1	328.9	25.5	137.3	302.7	19.9
230.0	102.7	357.3	29.2	125.3	334.7	24.6	154.5	305.5	18.3
240.0	115.4	364.6	28.6	139.8	340.2	23.7	172.4	307.6	16.5
250.0	128.2	371.8	28.1	154.5	345.5	22.7	191.5	308.5	14.4
<b><math>k_a = 0.20</math></b>									
0.		178.7	38.1		178.7	38.1		178.7	38.1
10.0		184.9	37.5		184.2	37.4		183.6	37.3
20.0		190.9	36.8		189.6	36.6		188.2	36.4
30.0		196.9	36.2		194.8	35.8		192.7	35.5
40.0		202.7	35.5		199.9	35.0		197.0	34.5
50.0		208.4	34.8		204.8	34.1		201.1	33.5
60.0		214.1	34.0		209.5	33.2		204.9	32.4
70.0		219.5	33.2		214.1	32.3		208.5	31.2
80.0		224.9	32.4		218.5	31.2		211.7	30.0
90.0		230.1	31.5		222.6	30.2		214.6	28.6
100.0		235.1	30.6		226.4	29.0		217.0	27.1
110.0		239.9	29.7		229.9	27.7	1.1	218.9	25.5
120.0		244.6	28.6	7.0	233.0	26.4	19.8	220.2	23.7
130.0	11.1	248.9	27.5	24.3	235.7	24.9	39.4		21.7
140.0	27.0	253.0	26.4	42.1	237.9	23.2	60.1		19.3
150.0	43.2	256.8	25.1	60.6	239.4	21.4	82.4		16.5
160.0	59.8	260.2	23.7	80.1	239.9	19.3	107.7		12.9
170.0	76.9	263.1	22.2	100.8		16.9	139.8		7.5
180.0	94.5	265.5	20.5	123.5		13.9			
190.0	113.0	267.0	18.7	150.0		9.9			
200.0	132.4		16.5	200.0		0.0			
210.0	153.5		13.9						
220.0	177.3		10.6						
230.0	208.6		5.3						
<b><math>k_a = 0.30</math></b>									
0.		178.7	38.1		178.7	38.1		178.7	38.1
10.0		184.9	37.5		184.2	37.4		183.6	37.3
20.0		190.9	36.8		189.6	36.6		188.2	36.4
30.0		196.9	36.2		194.8	35.8		192.7	35.5
40.0		202.7	35.5		199.9	35.0		197.0	34.5
50.0		208.4	34.8		204.8	34.1		201.1	33.5
60.0		214.1	34.0		209.5	33.2		204.9	32.4
70.0		219.5	33.2		214.1	32.3		208.5	31.2
80.0		224.9	32.4		218.5	31.2		211.7	30.0
90.0		230.1	31.5		222.6	30.2		214.6	28.6
100.0		235.1	30.6		226.4	29.0		217.0	27.1
110.0		239.9	29.7		229.9	27.7	1.1	218.9	25.5
120.0		244.6	28.6	7.0	233.0	26.4	19.8	220.2	23.7
130.0	11.1	248.9	27.5	24.3	235.7	24.9	39.4		21.7
140.0	27.0	253.0	26.4	42.1	237.9	23.2	60.1		19.3
150.0	43.2	256.8	25.1	60.6	239.4	21.4	82.4		16.5
160.0	59.8	260.2	23.7	80.1	239.9	19.3	107.7		12.9
170.0	76.9	263.1	22.2	100.8		16.9	139.8		7.5
180.0	94.5	265.5	20.5	123.5		13.9			
190.0	113.0	267.0	18.7	150.0		9.9			
200.0	132.4		16.5	200.0		0.0			
210.0	153.5		13.9						
220.0	177.3		10.6						
230.0	208.6		5.3						
<b><math>k_a = 0.35</math></b>									
0.		178.7	38.1		178.7	38.1		178.7	38.1
10.0		184.9	37.5		184.2	37.4		183.6	37.3
20.0		190.9	36.8		189.6	36.6		188.2	36.4
30.0		196.9	36.2		194.8	35.8		192.7	35.5
40.0		202.7	35.5		199.9	35.0		197.0	34.5
50.0		208.4	34.8		204.8	34.1		201.1	33.5
60.0		214.1	34.0		209.5	33.2		204.9	32.4
70.0		219.5	33.2		214.1	32.3		208.5	31.2
80.0		224.9	32.4		218.5	31.2		211.7	30.0
90.0		230.1	31.5		222.6	30.2		214.6	28.6
100.0		235.1	30.6		226.4	29.0		217.0	27.1
110.0		239.9	29.7		229.9	27.7	1.1	218.9	25.5
120.0		244.6	28.6	7.0	233.0	26.4	19.8	220.2	23.7
130.0	11.1	248.9	27.5	24.3	235.7	24.9	39.4		21.7
140.0	27.0	253.0	26.4	42.1	237.9	23.2	60.1		19.3
150.0	43.2	256.8	25.1	60.6	239.4	21.4	82.4		16.5
160.0	59.8	260.2	23.7	80.1	239.9	19.3	107.7		12.9
170.0	76.9	263.1	22.2	100.8		16.9	139.8		7.5
180.0	94.5	265.5	20.5	123.5		13.9			
190.0	113.0	267.0	18.7	150.0		9.9			
200.0	132.4		16.5	200.0		0.0			
210.0	153.5		13.9						
220.0	177.3		10.6						
230.0	208.6		5.3						
<b><math>k_a = 0.40</math></b>									
0.		178.7	38.1		178.7	38.1		178.7	38.1
10.0		184.9	37.5		184.2	37.4		183.6	37.3
20.0		190.9	36.8		189.6	36.6		188.2	36.4
30.0		196.9	36.2		194.8	35.8		192.7	35.5
40.0		202.7	35.5		199.9	35.0		197.0	34.5
50.0		208.4	34.8		204.8	34.1		201.1	33.5
60.0		214.1	34.0		209.5	33.2		204.9	32.4
70.0		219.5	33.2		214.1	32.3		208.5	31.2
80.0		224.9	32.4		218.5	31.2		211.7	30.0
90.0		230.1	31.5		222.6	30.2		214.6	28.6
100.0		235.1	30.6		226.4	29.0		217.0	27.1
110.0		239.9	29.7		229.9	27.7	1.1	218.9	25.5
120.0		244.6	28.6	7.0	233.0	26.4	19.8	220.2	23.7
130.0	11.1	248.9	27.5	24.3	235.7	24.9	39.4		21.7
140.0	27.0	253.0	26.4	42.1	237.9	23.			

$c = 70.0 \text{ kN/m}^2$ ,  $e_a = 44.1 \text{ kN/m}^2$  (その2)

$k_A = 0.45$				$k_A = 0.50$			$k_A = 0.55$		
$\sum \gamma h + q$ ( $\text{kN/m}^2$ )	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		178.7	38.1		178.7	38.1		178.7	38.1
10.0		182.9	37.1		182.2	37.0		181.6	36.9
20.0		186.9	36.2		185.5	35.9		184.1	35.7
30.0		190.6	35.1		188.4	34.8		186.3	34.4
40.0		194.1	34.0		191.1	33.5		188.0	33.0
50.0		197.2	32.8		193.3	32.1		189.3	31.4
60.0		200.1	31.5		195.1	30.6		189.9	29.7
70.0		202.6	30.2		196.4	29.0			
80.0		204.6	28.6		197.0	27.1			
90.0		206.0	27.0						
100.0		206.8	25.1	4.5		22.7	17.3		19.9
110.0	13.3		23.0	27.3		19.9	44.2		16.1
120.0	34.5		20.5	52.4		16.5	77.3		10.6
130.0	57.6		17.6	82.2		11.8			
140.0	83.5		13.9	140.0		0.0			
150.0	116.2		8.4						
$k_A = 0.60$				$k_A = 0.65$			$k_A = 0.70$		
0.		178.7	38.1		178.7	38.1		178.7	38.1
10.0		180.9	36.8		180.2	36.7		179.6	36.6
20.0		182.7	35.5		181.3	35.3		179.9	35.0
30.0		184.1	34.0		181.8	33.6			
40.0		184.9	32.4						
50.0									
60.0									
70.0									
80.0									
90.0	4.5		20.5	17.6		17.6	0.1		19.3
100.0	32.4		16.5	52.2		11.8	33.5		13.9
110.0	67.3		10.6						

表-8・3(8) 粘性土の土圧強度と崩壊角( $c_a = \lambda c$ の場合)

$c = 80.0 \text{ kN/m}^2$ ,  $c_a = 46.4 \text{ kN/m}^2$  (その1)

$\sum \gamma h + q$ ( $\text{kN/m}^2$ )	$k_a = 0$			$k_a = 0.05$			$k_a = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		201.1	38.5		201.1	38.5		201.1	38.5
10.0		211.1	38.5		210.5	38.4		209.9	38.3
20.0		221.1	38.5		219.9	38.3		218.6	38.2
30.0		231.1	38.5		229.2	38.2		227.3	38.0
40.0		241.1	38.5		238.6	38.2		236.0	37.8
50.0		251.1	38.5		247.9	38.1		244.7	37.6
60.0		261.1	38.5		257.3	38.0		253.4	37.4
70.0		271.1	38.5		266.7	37.9		262.1	37.2
80.0		281.1	38.5		276.0	37.8		270.8	37.0
90.0		291.1	38.5		285.4	37.7		279.5	36.9
100.0		301.1	38.5		294.7	37.6		288.1	36.7
110.0		311.1	38.5		304.1	37.5		296.8	36.5
120.0		321.1	38.5		313.4	37.4		305.4	36.3
130.0		331.1	38.5		322.8	37.3		314.1	36.1
140.0		341.1	38.5		332.1	37.2		322.7	35.9
150.0		351.1	38.5		341.5	37.1		331.3	35.6
160.0		361.1	38.5		350.8	37.0		339.9	35.4
170.0		371.1	38.5		360.1	36.9		348.5	35.2
180.0		381.1	38.5		369.5	36.9	2.9	357.1	35.0
190.0		391.1	38.5	1.2	378.8	36.8	14.4	365.6	34.8
200.0		401.1	38.5	11.9	388.1	36.7	25.8	374.2	34.6
210.0	8.9	411.1	38.5	22.5	397.5	36.6	37.3	382.7	34.3
220.0	18.9	421.1	38.5	33.2	406.8	36.5	48.8	391.2	34.1
230.0	28.9	431.1	38.5	43.9	416.1	36.4	60.2	399.8	33.9
240.0	38.9	441.1	38.5	54.6	425.4	36.3	71.7	408.3	33.6
250.0	48.9	451.1	38.5	65.3	434.7	36.2	83.2	416.8	33.4
$k_a = 0.15$			$k_a = 0.20$			$k_a = 0.25$			
0.		201.1	38.5		201.1	38.5		201.1	38.5
10.0		209.2	38.2		208.6	38.2		207.9	38.1
20.0		217.3	38.0		216.0	37.8		214.7	37.6
30.0		225.4	37.7		223.4	37.4		221.5	37.1
40.0		233.4	37.4		230.8	37.0		228.1	36.7
50.0		241.5	37.1		238.1	36.7		234.7	36.2
60.0		249.5	36.9		245.4	36.3		241.3	35.6
70.0		257.5	36.6		252.7	35.9		247.8	35.1
80.0		265.4	36.3		259.9	35.4		254.2	34.6
90.0		273.4	36.0		267.1	35.0		260.5	34.0
100.0		281.3	35.6		274.2	34.6		266.8	33.4
110.0		289.2	35.3		281.2	34.1		272.9	32.8
120.0		297.1	35.0		288.3	33.6		279.0	32.2
130.0		304.9	34.7		295.2	33.2		285.0	31.5
140.0		312.7	34.3		302.1	32.7		290.8	30.8
150.0		320.5	34.0		309.0	32.2	3.4	296.6	30.1
160.0		328.3	33.6	4.2	315.8	31.6	17.8	302.2	29.4
170.0	4.0	336.0	33.3	17.5	322.5	31.1	32.3	307.7	28.6
180.0	16.3	343.7	32.9	30.8	329.2	30.5	47.0	313.0	27.8
190.0	28.6	351.4	32.6	44.3	335.7	30.0	61.8	318.2	26.9
200.0	41.0	359.0	32.2	57.8	342.2	29.4	76.8	323.2	26.0
210.0	53.4	366.6	31.8	71.4	348.6	28.7	92.1	327.9	25.0
220.0	65.8	374.2	31.4	85.1	354.9	28.1	107.6	332.4	24.0
230.0	78.3	381.7	31.0	98.9	361.1	27.4	123.3	336.7	22.9
240.0	90.8	389.2	30.5	112.8	367.2	26.7	139.4	340.6	21.7
250.0	103.4	396.6	30.1	126.8	373.2	26.0	155.9	344.1	20.4

$c = 80.0 \text{ kN/m}^2$ ,  $c_a = 46.4 \text{ kN/m}^2$  (その2)

$\Sigma \gamma A + q$ ( $\text{kN/m}^2$ )	$k_A = 0.30$			$k_A = 0.35$			$k_A = 0.40$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		201.1	38.5		201.1	38.5		201.1	38.5
10.0		207.3	38.0		206.7	37.9		206.0	37.8
20.0		213.4	37.4		212.1	37.2		210.8	37.0
30.0		219.5	36.9		217.5	36.6		215.4	36.3
40.0		225.4	36.3		222.7	35.9		219.9	35.4
50.0		231.3	35.6		227.8	35.1		224.2	34.6
60.0		237.1	35.0		232.7	34.3		228.3	33.6
70.0		242.7	34.3		237.5	33.5		232.1	32.7
80.0		248.3	33.6		242.1	32.7		235.8	31.6
90.0		253.7	32.9		246.6	31.8		239.2	30.5
100.0		259.0	32.2		250.8	30.8		242.2	29.4
110.0		264.2	31.4		254.9	29.8		244.9	28.1
120.0		269.2	30.5		258.6	28.7		247.2	26.7
130.0		274.0	29.7		262.1	27.6	11.0	249.0	25.2
140.0	1.4	278.6	28.7	14.8	265.2	26.3	29.8	250.2	23.5
150.0	17.0	283.0	27.8	32.1	267.9	25.0	49.4		21.7
160.0	32.8	287.2	26.7	49.8	270.2	23.5	70.1		19.6
170.0	48.9	291.1	25.6	68.2	271.8	21.9	92.1		17.1
180.0	65.3	294.7	24.4	87.3	272.7	20.1	116.4		14.1
190.0	82.2	297.8	23.1	107.4		18.1	145.0		10.1
200.0	99.4	300.6	21.7	128.9		15.7			
210.0	117.3	302.7	20.1	152.7		12.8			
220.0	135.9	304.1	18.4	181.1		8.8			
230.0	155.4		16.4						
240.0	176.4		14.1						
250.0	199.7		11.2						
$k_A = 0.45$									
0.		201.1	38.5		201.1	38.5		201.1	38.5
10.0		205.4	37.7		204.7	37.6		204.1	37.5
20.0		209.5	36.9		208.1	36.7		206.8	36.5
30.0		213.4	36.0		211.3	35.6		209.2	35.3
40.0		217.1	35.0		214.2	34.6		211.2	34.1
50.0		220.5	34.0		216.8	33.4		212.9	32.8
60.0		223.7	32.9		219.0	32.2		214.2	31.4
70.0		226.6	31.8		220.8	30.8		214.9	29.8
80.0		229.2	30.5		222.2	29.4			
90.0		231.3	29.2		223.0	27.8			
100.0		233.0	27.8						
110.0		234.2	26.2				10.7		21.4
120.0	5.3	234.7	24.4	19.4		21.7	35.9		18.4
130.0	25.7		22.4	42.9		19.0	64.4		14.5
140.0	47.3		20.1	68.9		15.7	101.1		8.8
150.0	70.5		17.5	99.7		11.2			
160.0	96.4		14.1	160.0		0.0			
170.0	127.9		9.4						
$k_A = 0.50$									
$k_A = 0.55$									
$k_A = 0.60$									
$k_A = 0.65$									
$k_A = 0.70$									
0.		201.1	38.5		201.1	38.5		201.1	38.5
10.0		203.4	37.4		202.8	37.3		202.1	37.2
20.0		205.4	36.3		204.1	36.1		202.7	35.9
30.0		207.1	35.0		204.9	34.7			
40.0		208.3	33.6		205.2	33.2			
50.0		209.0	32.2						
60.0									
70.0									
80.0									
90.0									
100.0				12.9		19.0	28.9		15.7
110.0	25.9		18.4	44.4		14.5	71.1		8.8
120.0	56.4		14.1	88.2		7.2			
130.0	98.2		7.2						



表-8・3(9) 粘性土の土圧強度と崩壊角( $c_a = \lambda c$ の場合)

$c = 90.0 \text{ kN/m}^2$ ,  $c_a = 49.5 \text{ kN/m}^2$  (その1)

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_a = 0$			$k_a = 0.05$			$k_a = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		224.1	38.8		224.1	38.8		224.1	38.8
10.0		234.1	38.8		233.5	38.7		232.8	38.6
20.0		244.1	38.8		242.8	38.6		241.6	38.5
30.0		254.1	38.8		252.2	38.5		250.3	38.3
40.0		264.1	38.8		261.6	38.5		259.1	38.1
50.0		274.1	38.8		271.0	38.4		267.8	38.0
60.0		284.1	38.8		280.3	38.3		276.3	37.8
70.0		294.1	38.8		289.7	38.2		285.2	37.6
80.0		304.1	38.8		299.1	38.1		293.9	37.5
90.0		314.1	38.8		308.4	38.1		302.6	37.3
100.0		324.1	38.8		317.8	38.0		311.3	37.1
110.0		334.1	38.8		327.1	37.9		320.0	37.0
120.0		344.1	38.8		336.5	37.8		328.6	36.8
130.0		354.1	38.8		345.9	37.7		337.3	36.6
140.0		364.1	38.8		355.2	37.6		345.9	36.4
150.0		374.1	38.8		364.6	37.6		354.6	36.3
160.0		384.1	38.8		373.9	37.5		363.2	36.1
170.0		394.1	38.8		383.3	37.4		371.8	35.9
180.0		404.1	38.8		392.6	37.3		380.4	35.7
190.0		414.1	38.8		401.9	37.2		389.0	35.5
200.0		424.1	38.8		411.3	37.1	2.4	397.6	35.3
210.0		434.1	38.8		420.6	37.0	13.8	406.2	35.1
220.0		444.1	38.8	10.0	430.0	37.0	25.2	414.8	34.9
230.0	5.9	454.1	38.8	20.7	439.3	36.9	36.6	423.4	34.7
240.0	15.9	464.1	38.8	31.4	448.6	36.8	48.1	431.9	34.5
250.0	25.9	474.1	38.8	42.0	458.0	36.7	59.6	440.4	34.3
<b><math>k_a = 0.15</math></b>									
0.		224.1	38.8		224.1	38.8		224.1	38.8
10.0		232.2	38.5		231.6	38.5		231.0	38.4
20.0		240.3	38.3		239.1	38.1		237.8	38.0
30.0		248.4	38.1		246.5	37.8		244.6	37.6
40.0		256.5	37.8		253.9	37.5		251.3	37.1
50.0		264.6	37.6		261.3	37.1		258.0	36.7
60.0		272.6	37.3		268.6	36.8		264.6	36.3
70.0		280.6	37.0		275.9	36.4		271.1	35.8
80.0		288.6	36.8		283.2	36.1		277.6	35.3
90.0		296.6	36.5		290.4	35.7		284.1	34.8
100.0		304.6	36.3		297.6	35.3		290.4	34.3
110.0		312.5	36.0		304.8	34.9		296.7	33.8
120.0		320.4	35.7		311.9	34.5		303.0	33.3
130.0		328.3	35.4		319.0	34.1		309.1	32.7
140.0		336.2	35.1		326.0	33.7		315.2	32.1
150.0		344.1	34.8		333.0	33.3		321.2	31.5
160.0		351.9	34.5		339.9	32.8		327.0	30.9
170.0		359.7	34.2		346.8	32.4	7.2	332.8	30.3
180.0		367.5	33.9	6.4	353.6	31.9	21.5	338.5	29.6
190.0	4.8	375.2	33.6	19.7	360.3	31.4	36.0	344.0	28.9
200.0	17.0	383.0	33.3	33.0	367.0	30.9	50.6	349.4	28.2
210.0	29.3	390.7	32.9	46.3	373.7	30.4	65.3	354.7	27.4
220.0	41.7	398.3	32.6	59.8	380.2	29.9	80.3	359.7	26.6
230.0	54.0	406.0	32.2	73.3	386.7	29.3	95.3	364.7	25.8
240.0	66.4	413.6	31.9	86.9	393.1	28.8	110.6	369.4	24.9
250.0	78.8	421.2	31.5	100.6	399.4	28.2	126.1	373.9	23.9

$c = 90.0 \text{ kN/m}^2$ ,  $c_a = 49.5 \text{ kN/m}^2$  (その2)

$\Sigma \gamma h + q$ ( $\text{kN/m}^2$ )	$k_A = 0.30$			$k_A = 0.35$			$k_A = 0.40$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		224.1	38.8		224.1	38.8		224.1	38.8
10.0		230.3	38.3		229.7	38.2		229.1	38.1
20.0		236.5	37.8		235.2	37.6		233.9	37.5
30.0		242.6	37.3		240.6	37.0		238.6	36.8
40.0		248.6	36.8		245.9	36.4		243.2	36.1
50.0		254.6	36.3		251.1	35.8		247.6	35.3
60.0		260.4	35.7		256.2	35.1		251.9	34.5
70.0		266.2	35.1		261.2	34.4		256.0	33.7
80.0		271.9	34.5		266.0	33.7		259.9	32.8
90.0		277.5	33.9		270.7	32.9		263.6	31.9
100.0		283.0	33.3		275.2	32.1		267.0	30.9
110.0		288.3	32.6		279.5	31.3		270.2	29.9
120.0		293.6	31.9		283.7	30.4		273.1	28.8
130.0		298.7	31.2		287.6	29.5		275.6	27.6
140.0		303.7	30.4		291.3	28.5	2.3	277.7	26.3
150.0		308.5	29.6	5.3	294.7	27.4	20.6	279.4	24.9
160.0	6.9	313.1	28.8	22.3	297.7	26.3	39.6	280.4	23.4
170.0	22.5	317.5	27.9	39.5	300.5	25.1	59.2		21.7
180.0	38.3	321.7	26.9	57.3	302.7	23.7	79.8		19.8
190.0	54.3	325.7	25.9	75.5	304.5	22.3	101.6		17.6
200.0	70.6	329.4	24.9	94.4	305.6	20.7	125.3		15.0
210.0	87.3	332.7	23.7	114.0		19.0	152.1		11.7
220.0	104.3	335.7	22.5	134.8		17.0	186.6		6.8
230.0	121.8	338.2	21.2	157.2		14.6			
240.0	139.8	340.2	19.8	182.1		11.7			
250.0	158.5	341.5	18.2	212.7		7.6			
$k_A = 0.45$									
0.		224.1	38.8		224.1	38.8		224.1	38.8
10.0		228.4	38.1		227.8	38.0		227.1	37.9
20.0		232.6	37.3		231.3	37.1		230.0	37.0
30.0		236.6	36.5		234.6	36.3		232.5	36.0
40.0		240.4	35.7		237.6	35.3		234.8	34.9
50.0		244.1	34.8		240.4	34.3		236.7	33.8
60.0		247.5	33.9		243.0	33.3		238.3	32.6
70.0		250.7	32.9		245.2	32.1		239.5	31.3
80.0		253.6	31.9		247.0	30.9		240.2	29.9
90.0		256.2	30.8		248.5	29.6			
100.0		258.5	29.6		249.4	28.2			
110.0		260.3	28.3		249.7	26.6			
120.0		261.7	26.9				4.3		22.5
130.0		262.6	25.4	11.9		22.9	28.4		20.0
140.0	17.3		23.7	34.4		20.7	54.8		17.0
150.0	38.0		21.9	58.5		18.2	85.3		13.1
160.0	59.8		19.8	85.3		15.0	126.6		6.8
170.0	83.2		17.3	117.2		10.7			
180.0	109.1		14.3	180.0		0.0			
190.0	139.9		10.2						
200.0	200.0		0.0						
$k_A = 0.60$									
0.		224.1	38.8		224.1	38.8		224.1	38.8
10.0		226.5	37.8		225.9	37.7		225.2	37.6
20.0		228.6	36.8		227.3	36.6		225.9	36.4
30.0		230.4	35.7		228.3	35.4		226.2	35.1
40.0		231.9	34.5		229.0	34.1			
50.0		233.0	33.3						
60.0		233.6	31.9						
70.0									
80.0									
90.0									
100.0									
110.0				8.4		20.0	24.8		17.0
120.0	19.8		19.8	38.2		16.3	62.1		11.7
130.0	48.2		16.3	74.6					
140.0	82.1		11.7						
$k_A = 0.70$									
0.		224.1	38.8		224.1	38.8		224.1	38.8
10.0		226.5	37.8		225.9	37.7		225.2	37.6
20.0		228.6	36.8		227.3	36.6		225.9	36.4
30.0		230.4	35.7		228.3	35.4		226.2	35.1
40.0		231.9	34.5		229.0	34.1			
50.0		233.0	33.3						
60.0		233.6	31.9						
70.0									
80.0									
90.0									
100.0									
110.0				8.4		20.0	24.8		17.0
120.0	19.8		19.8	38.2		16.3	62.1		11.7
130.0	48.2		16.3	74.6					
140.0	82.1		11.7						

表-8・3(0) 粘性土の土圧強度と崩壊角 ( $c_a = \lambda e$  の場合)

$c = 100.0 \text{ kN/m}^2, c_a = 51.0 \text{ kN/m}^2$  (その1)

$\Sigma T_k + q$ ( $\text{kN/m}^2$ )	$k_a = 0$			$k_a = 0.05$			$k_a = 0.10$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		245.8	39.1		245.8	39.1		245.8	39.1
10.0		255.8	39.1		255.1	39.1		254.5	39.0
20.0		265.8	39.1		264.5	39.0		263.3	38.9
30.0		275.8	39.1		273.9	38.9		272.0	38.7
40.0		285.8	39.1		283.3	38.9		280.8	38.6
50.0		295.8	39.1		292.7	38.8		289.5	38.4
60.0		305.8	39.1		302.0	38.7		298.3	38.3
70.0		315.8	39.1		311.4	38.6		307.0	38.1
80.0		325.8	39.1		320.8	38.6		315.7	38.0
90.0		335.8	39.1		330.2	38.5		324.4	37.8
100.0		345.8	39.1		339.5	38.4		333.2	37.7
110.0		355.8	39.1		348.9	38.3		341.9	37.5
120.0		365.8	39.1		358.3	38.3		350.5	37.4
130.0		375.8	39.1		367.6	38.2		359.2	37.2
140.0		385.8	39.1		377.0	38.1		367.9	37.0
150.0		395.8	39.1		386.4	38.0		376.6	36.9
160.0		405.8	39.1		395.7	38.0		385.2	36.7
170.0		415.8	39.1		405.1	37.9		393.9	36.6
180.0		425.8	39.1		414.4	37.8		402.5	36.4
190.0		435.8	39.1		423.8	37.7		411.2	36.2
200.0		445.8	39.1		433.2	37.7		419.8	36.0
210.0		455.8	39.1		442.5	37.6		428.4	35.9
220.0		465.8	39.1		451.9	37.5	2.9	437.1	35.7
230.0		475.8	39.1		461.2	37.4	14.3	445.7	35.5
240.0		485.8	39.1	9.5	470.5	37.4	25.7	454.3	35.4
250.0	4.2	495.8	39.1	20.1	479.9	37.3	37.2	462.8	35.2
-----									
$\Sigma T_k + q$ ( $\text{kN/m}^2$ )	$k_a = 0.15$			$k_a = 0.20$			$k_a = 0.25$		
	$p_a$ ( $\text{kN/m}^2$ )	$p_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$p_a$	$p_p$	$\alpha$	$p_a$	$p_p$	$\alpha$
0.		245.8	39.1		245.8	39.1		245.8	39.1
10.0		253.9	38.9		253.3	38.9		252.7	38.8
20.0		262.0	38.7		260.8	38.6		259.5	38.4
30.0		270.2	38.5		268.3	38.3		266.4	38.0
40.0		278.3	38.3		275.7	38.0		273.2	37.7
50.0		286.4	38.0		283.2	37.7		279.9	37.3
60.0		294.4	37.8		290.5	37.4		286.6	36.9
70.0		302.5	37.6		297.9	37.0		293.2	36.5
80.0		310.5	37.4		305.2	36.7		299.8	36.0
90.0		318.6	37.1		312.5	36.4		306.4	35.6
100.0		326.6	36.9		319.8	36.0		312.8	35.2
110.0		334.6	36.6		327.1	35.7		319.3	34.7
120.0		342.5	36.4		334.3	35.4		325.6	34.2
130.0		350.5	36.1		341.4	35.0		331.9	33.8
140.0		358.4	35.9		348.5	34.6		338.1	33.3
150.0		366.4	35.6		355.6	34.2		344.3	32.8
160.0		374.3	35.4		362.7	33.9		350.4	32.2
170.0		382.1	35.1		369.7	33.5		356.4	31.7
180.0		390.0	34.8		376.6	33.1		362.3	31.1
190.0		397.8	34.5		383.5	32.7	11.9	368.1	30.5
200.0		405.6	34.2	9.6	390.4	32.2	26.2	373.8	29.9
210.0	6.6	413.4	34.0	22.8	397.2	31.8	40.6	379.4	29.3
220.0	18.8	421.2	33.7	36.1	403.9	31.3	55.1	384.9	28.6
230.0	31.1	428.9	33.4	49.4	410.6	30.9	69.8	390.2	27.9
240.0	43.4	436.6	33.1	62.8	417.2	30.4	84.6	395.4	27.2
250.0	55.7	444.3	32.8	76.2	423.8	29.9	99.5	400.5	26.5

$c = 100.0 \text{ kN/m}^2$ ,  $e_a = 51.0 \text{ kN/m}^2$  ( ㄆㄨㄨ )

$\Sigma \gamma h + g$ ( $\text{kN/m}^2$ )	$k_h = 0.30$			$k_h = 0.35$			$k_h = 0.40$		
	$P_a$ ( $\text{kN/m}^2$ )	$P_p$ ( $\text{kN/m}^2$ )	$\alpha$ (度)	$P_a$	$P_p$	$\alpha$	$P_a$	$P_p$	$\alpha$
0.		245.8	39.1		245.8	39.1		245.8	39.1
10.0		252.0	38.7		251.4	38.6		250.8	38.6
20.0		258.3	38.3		257.0	38.1		255.7	38.0
30.0		264.4	37.8		262.5	37.6		260.5	37.4
40.0		270.5	37.4		267.9	37.0		265.2	36.7
50.0		276.6	36.9		273.2	36.5		269.8	36.0
60.0		282.5	36.4		278.4	35.9		274.3	35.4
70.0		288.4	35.9		283.5	35.3		278.5	34.6
80.0		294.3	35.4		288.5	34.6		282.7	33.9
90.0		300.0	34.8		293.4	34.0		286.6	33.1
100.0		305.6	34.2		298.1	33.3		290.4	32.2
110.0		311.2	33.7		302.7	32.5		293.9	31.9
120.0		316.6	33.1		307.2	31.8		297.2	30.4
130.0		321.9	32.4		311.4	31.0		300.3	29.4
140.0		327.2	31.8		315.5	30.2		303.0	28.4
150.0		332.3	31.1		319.4	29.3		305.4	27.2
160.0		337.2	30.4		323.0	28.4	12.5	307.5	26.0
170.0		342.0	29.7	13.6	326.4	27.4	31.0	309.0	24.7
180.0	13.3	346.7	28.9	30.5	329.5	26.3	50.0	310.0	23.3
190.0	28.8	351.2	28.1	47.8	332.2	25.2	69.6		21.7
200.0	44.6	355.4	27.2	65.4	334.6	24.0	90.1		20.0
210.0	60.5	359.5	26.3	83.5	336.5	22.7	111.7		18.0
220.0	76.7	363.3	25.4	102.1	337.9	21.3	134.9		15.7
230.0	93.2	366.8	24.4	121.5	338.5	19.8	160.5		13.0
240.0	110.0	370.0	23.3	141.7		18.0	190.8		9.2
250.0	127.1	372.9	22.1	163.1		16.1			
$k_h = 0.45$ $k_h = 0.50$ $k_h = 0.55$									
0.		245.8	39.1		245.8	39.1		245.8	39.1
10.0		250.2	38.5		249.5	38.4		248.9	38.3
20.0		254.4	37.8		253.2	37.7		251.9	37.5
30.0		258.6	37.1		256.6	36.9		254.6	36.6
40.0		262.5	36.4		259.8	36.0		257.1	35.7
50.0		266.4	35.6		262.8	35.2		259.3	34.7
60.0		270.0	34.8		265.6	34.2		261.2	33.7
70.0		273.4	34.0		268.1	33.3		262.7	32.5
80.0		276.6	33.1		270.4	32.2		263.9	31.3
90.0		279.6	32.1		272.3	31.1		264.6	30.0
100.0		282.3	31.1		273.8	29.9			
110.0		284.6	30.0		274.9	28.6			
120.0		286.7	28.9		275.4	27.2			
130.0		288.3	27.7						
140.0		289.5	26.3	5.4		24.0	22.1		21.3
150.0	9.9	290.1	24.9	27.1		22.1	47.2		18.8
160.0	30.0		23.3	50.1		20.0	74.9		15.7
170.0	50.9		21.5	74.8		17.5	107.3		11.7
180.0	72.9		19.5	102.3		14.4	155.4		4.7
190.0	96.4		17.2	135.0		10.3			
200.0	122.3		14.4						
210.0	152.4		10.8						
220.0	195.4		4.7						
$k_h = 0.60$ $k_h = 0.65$ $k_h = 0.70$									
0.		245.8	39.1		245.8	39.1		245.8	39.1
10.0		248.3	38.3		247.6	38.2		247.0	38.1
20.0		250.5	37.4		249.2	37.2		247.9	37.0
30.0		252.5	36.4		250.5	36.1		248.4	35.9
40.0		254.3	35.4		251.4	35.0			
50.0		255.6	34.2		251.9	33.8			
60.0		256.6	33.1						
70.0		257.2	31.8						
80.0									
90.0									
100.0									
110.0				4.7		20.9	21.7		18.0
120.0				33.2		17.8	56.3		13.7
130.0	14.7		20.9	66.3		13.7	105.2		6.6
140.0	41.7		14.4	111.1		7.3			
150.0	72.3		9.2						
160.0	110.8								

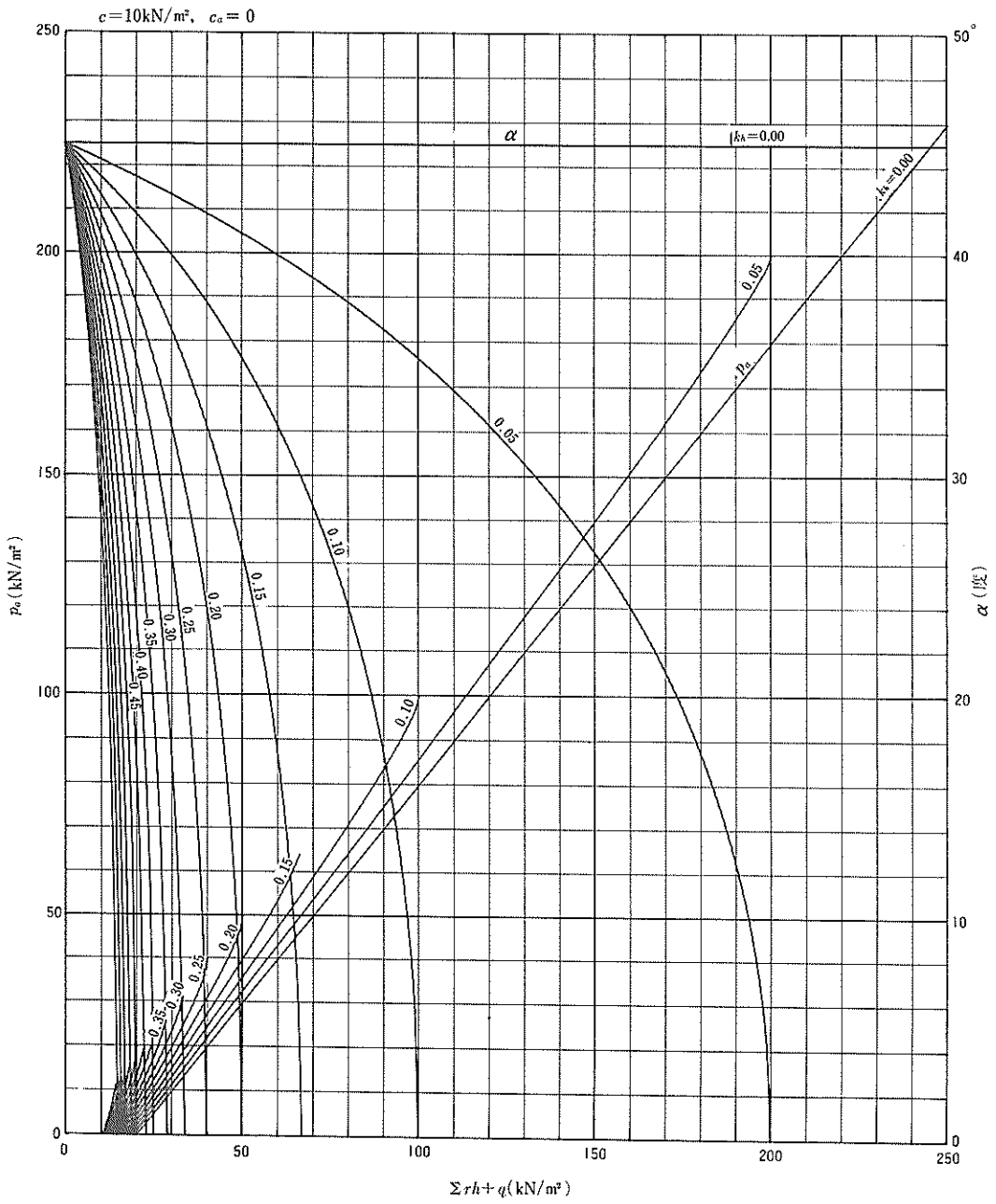


図-5.1(1) 粘性土の主働土圧強度と崩壊角 ( $c_a=0$ の場合)

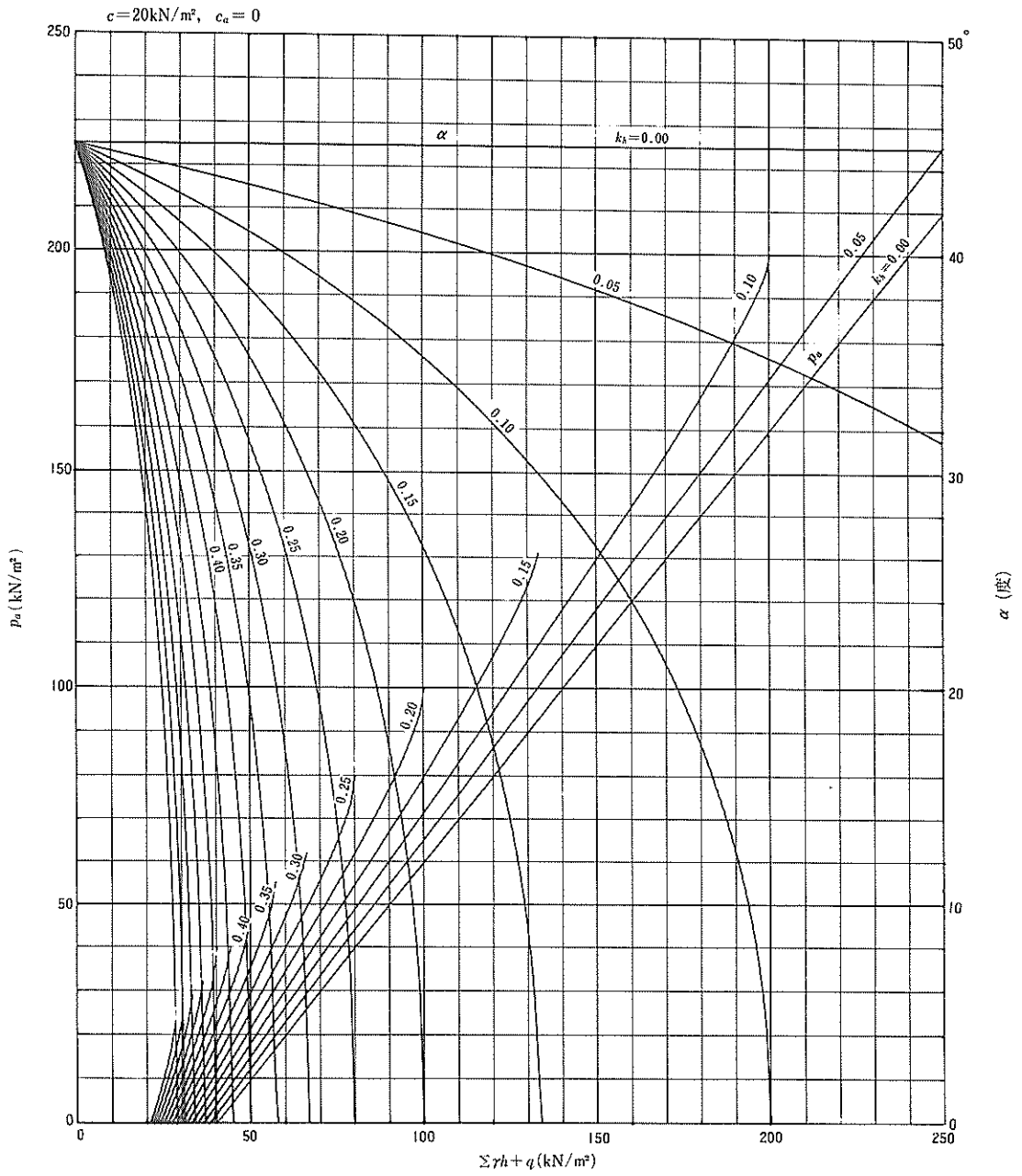


図-5.1(2) 粘性土の主働土圧強度と崩壊角 ( $c_a=0$ の場合)

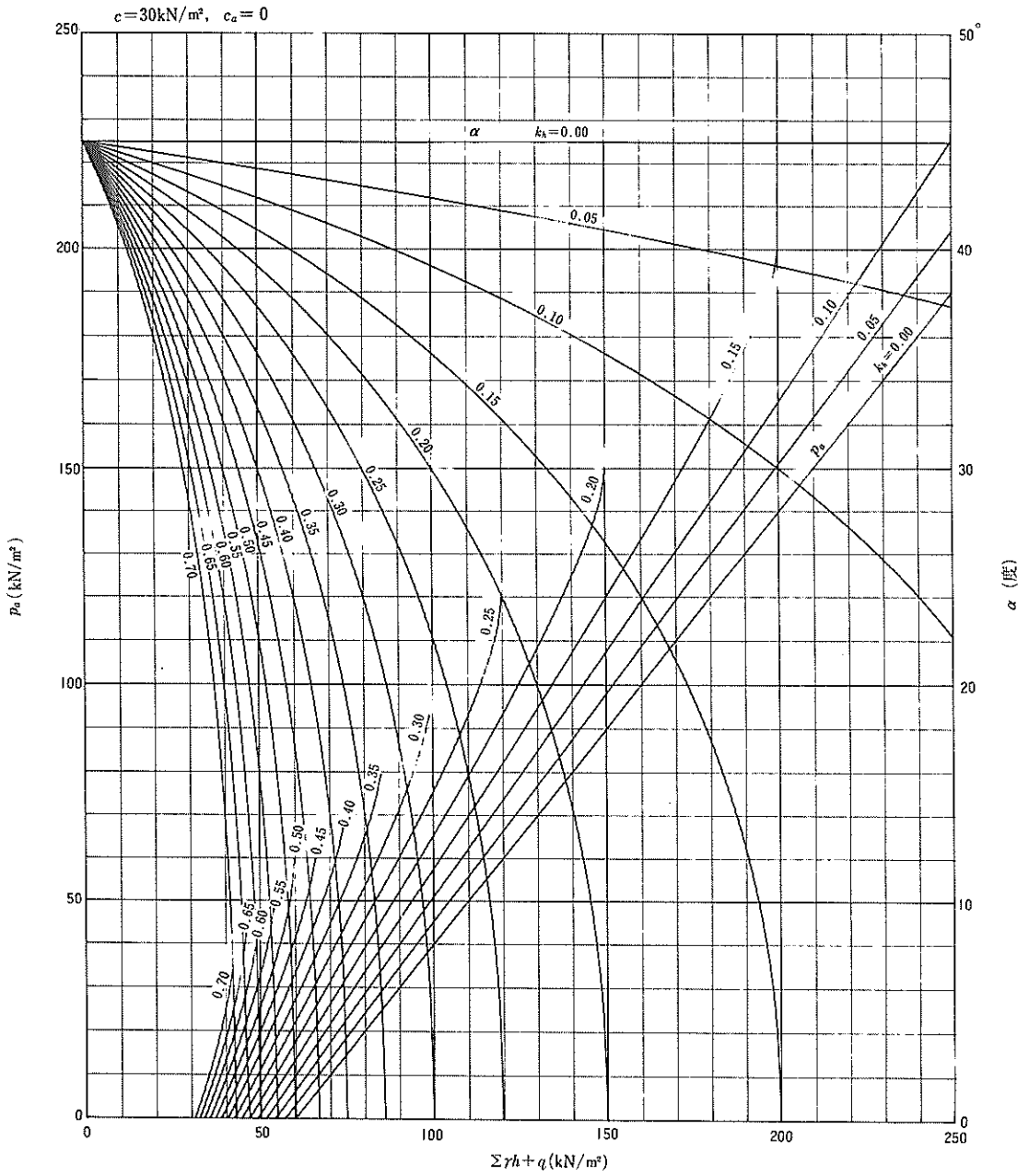


図-5.1(3) 粘性土の主働土圧強度と崩壊角 ( $c_a=0$  の場合)

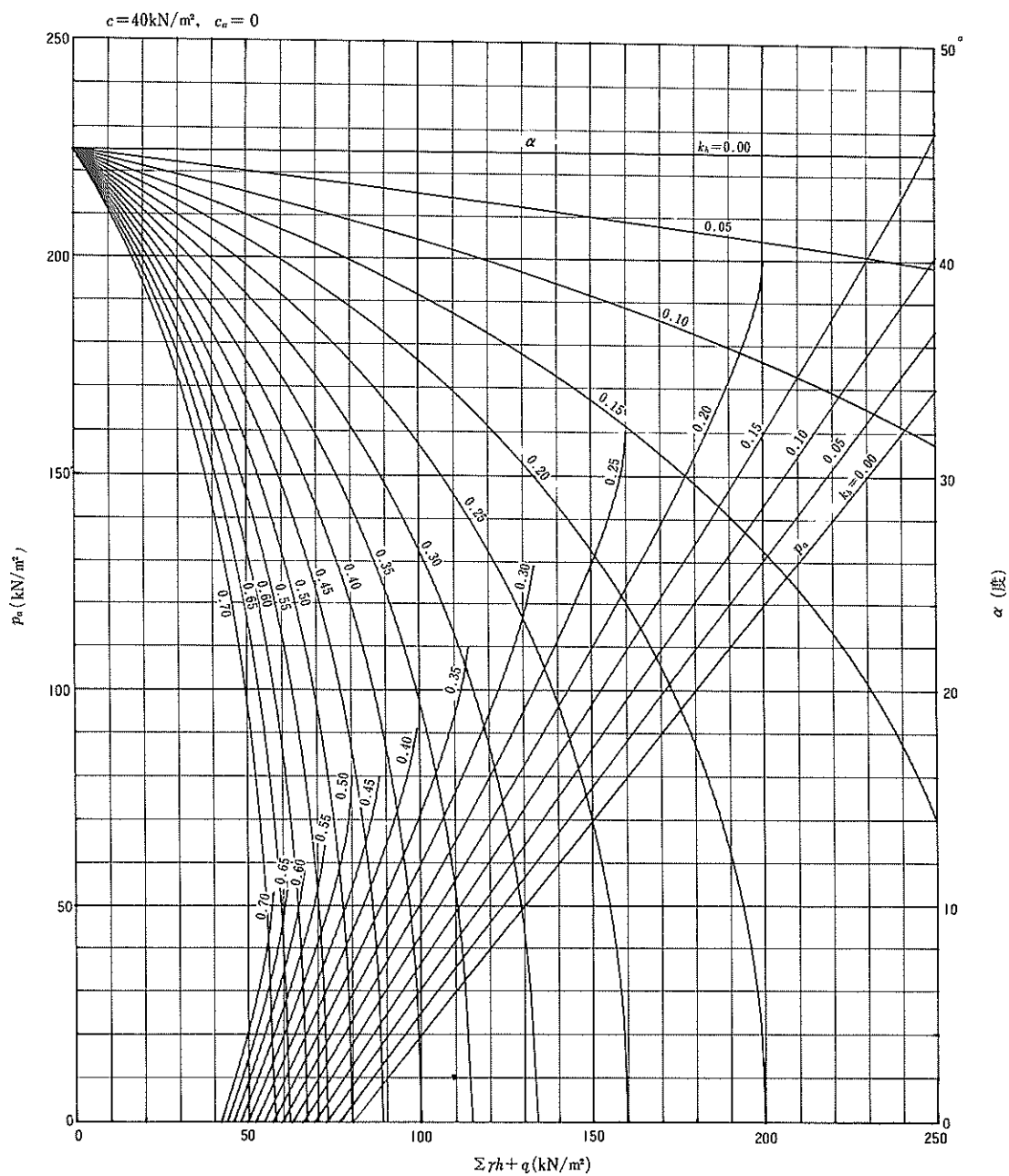


図-5.1(4) 粘性土の主働土圧強度と崩壊角 ( $c_a = 0$  の場合)



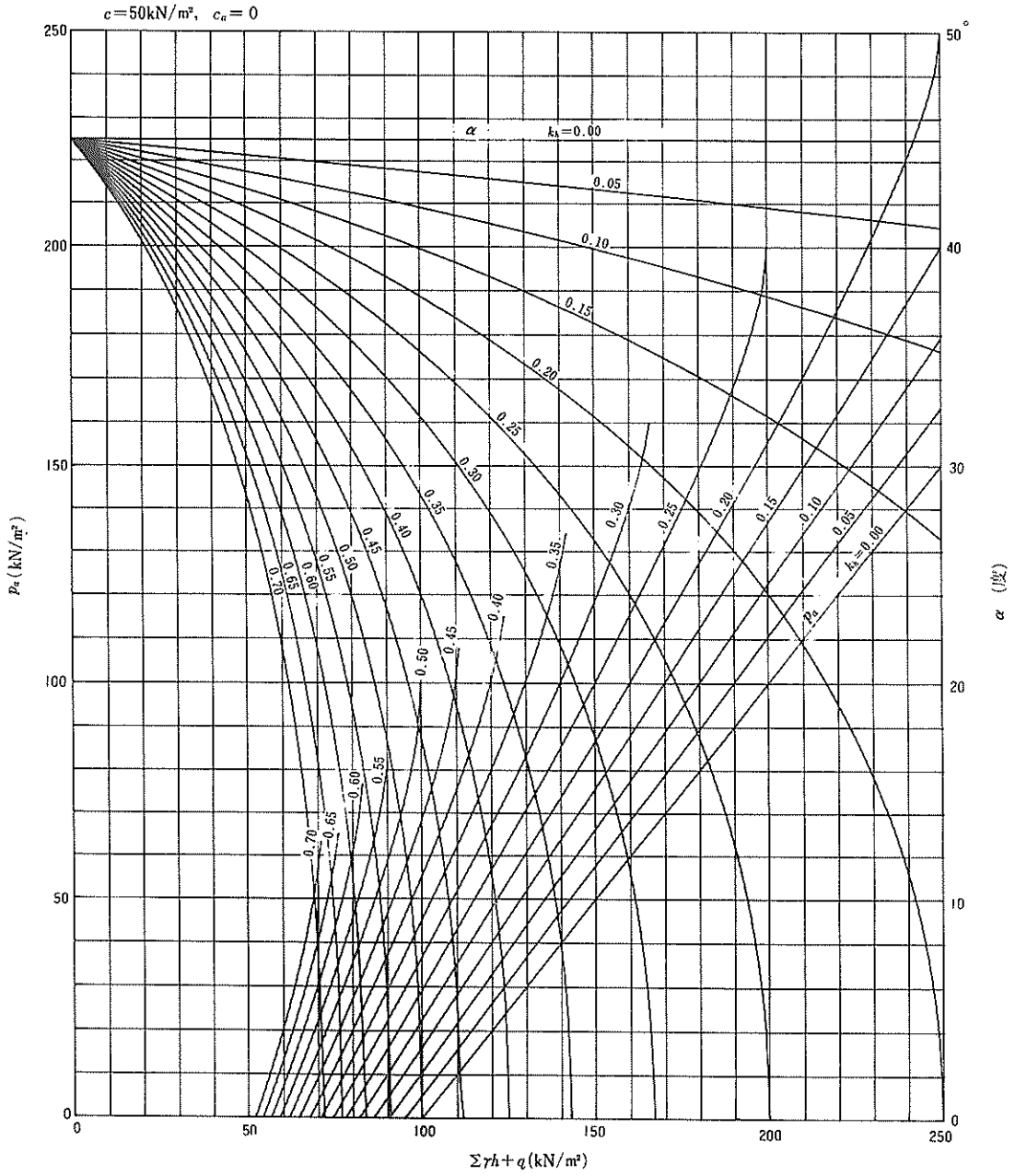


図-5.1(5) 粘性土の主働土圧強度と崩壊角 ( $c_u = 0$  の場合)

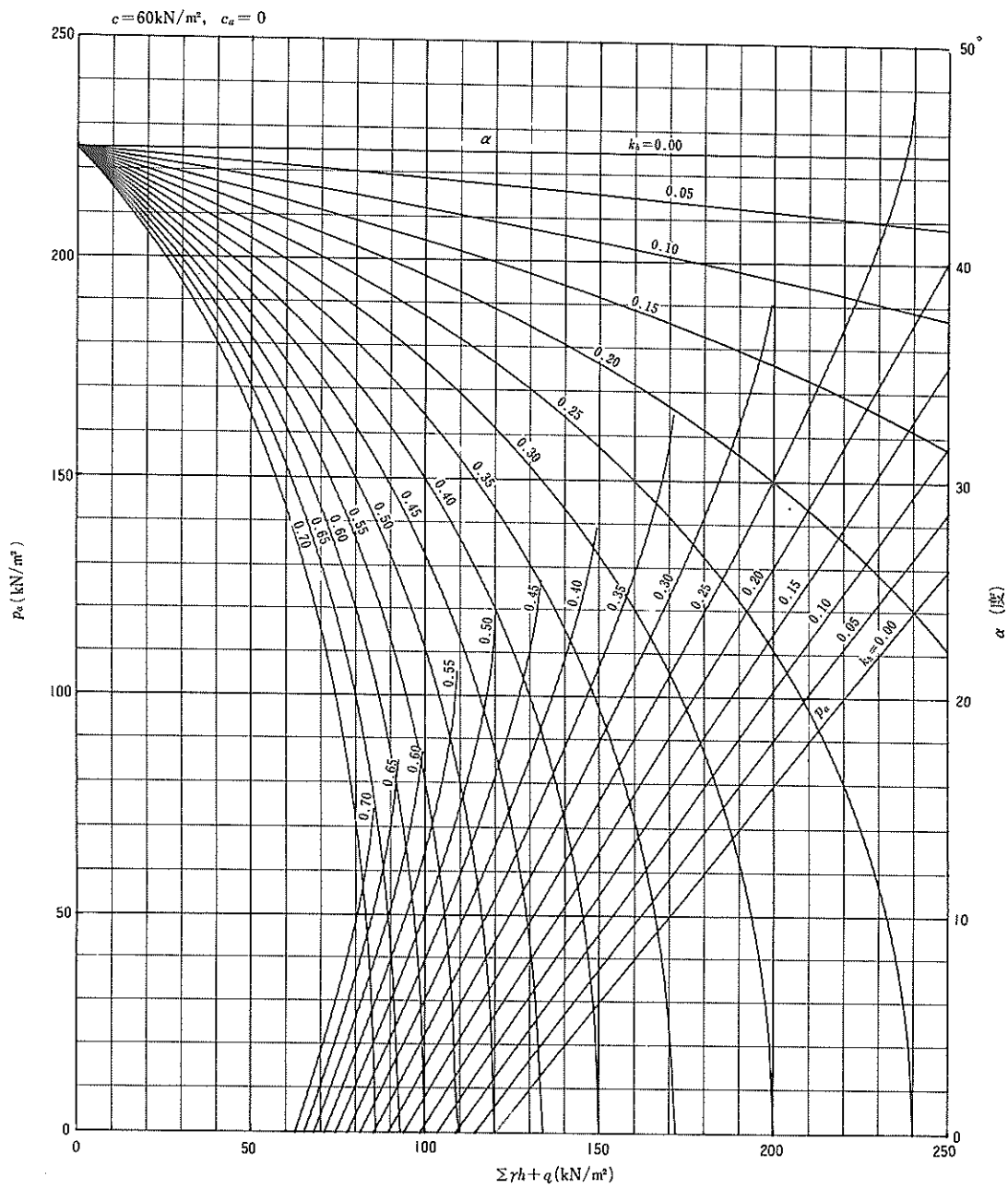


図-5.1(6) 粘性土の主働土圧強度と崩壊角 ( $c_a=0$  の場合)

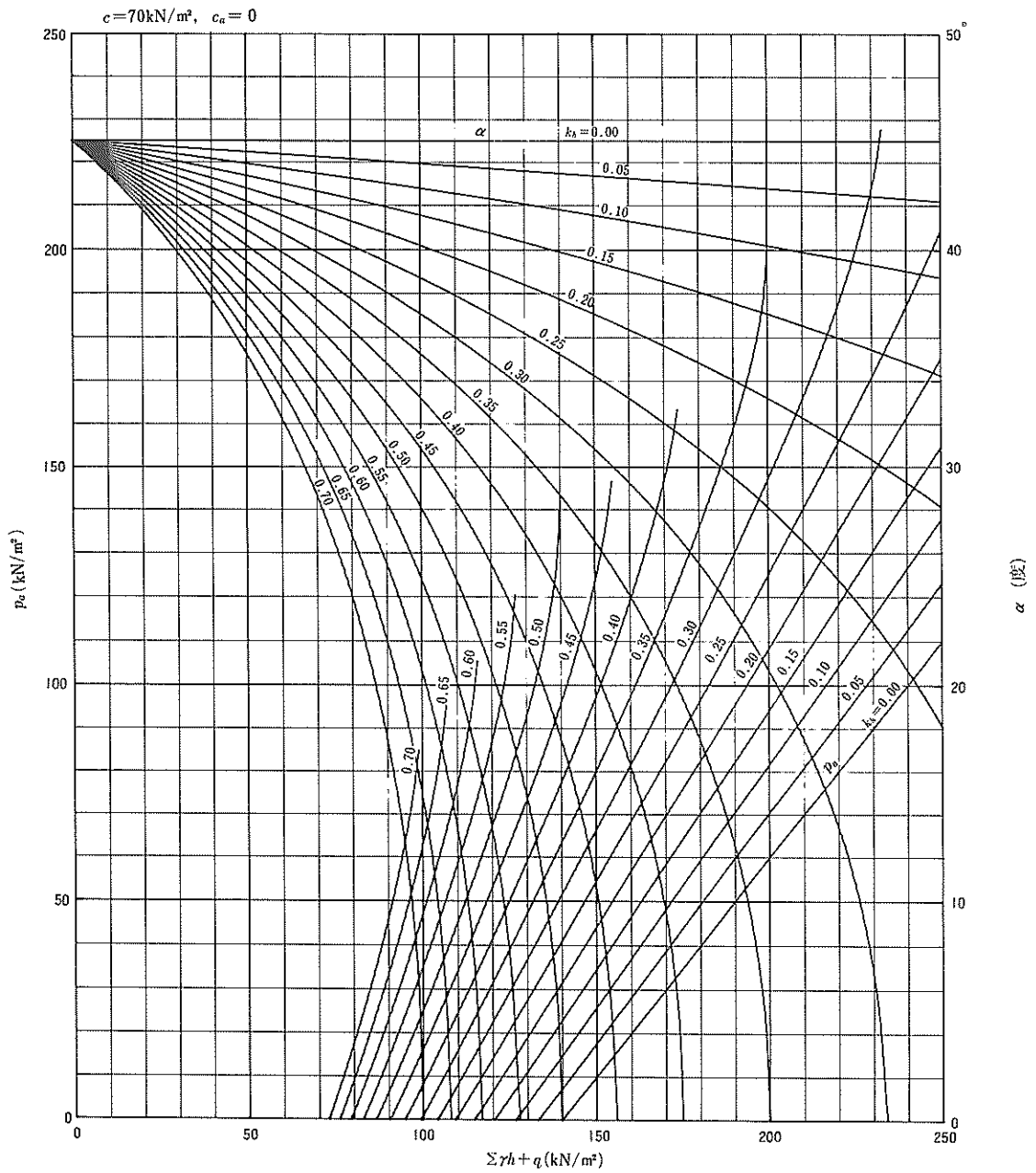


図-5.1(7) 粘性土の主働土圧強度と崩壊角 ( $c_\alpha=0$  の場合)

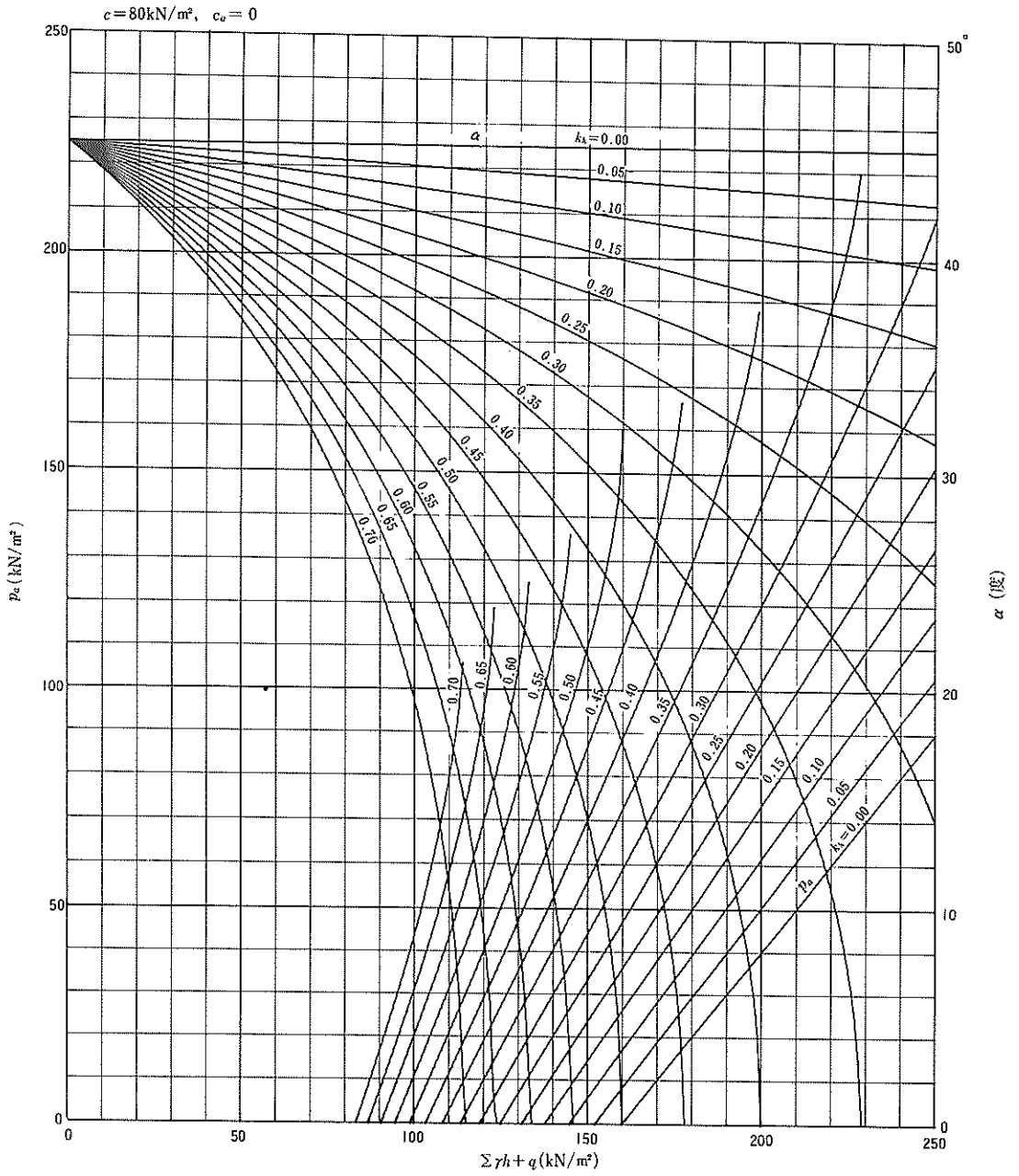


図-5.1(8) 粘性土の主土圧強度と崩壊角 ( $c_a = 0$  の場合)

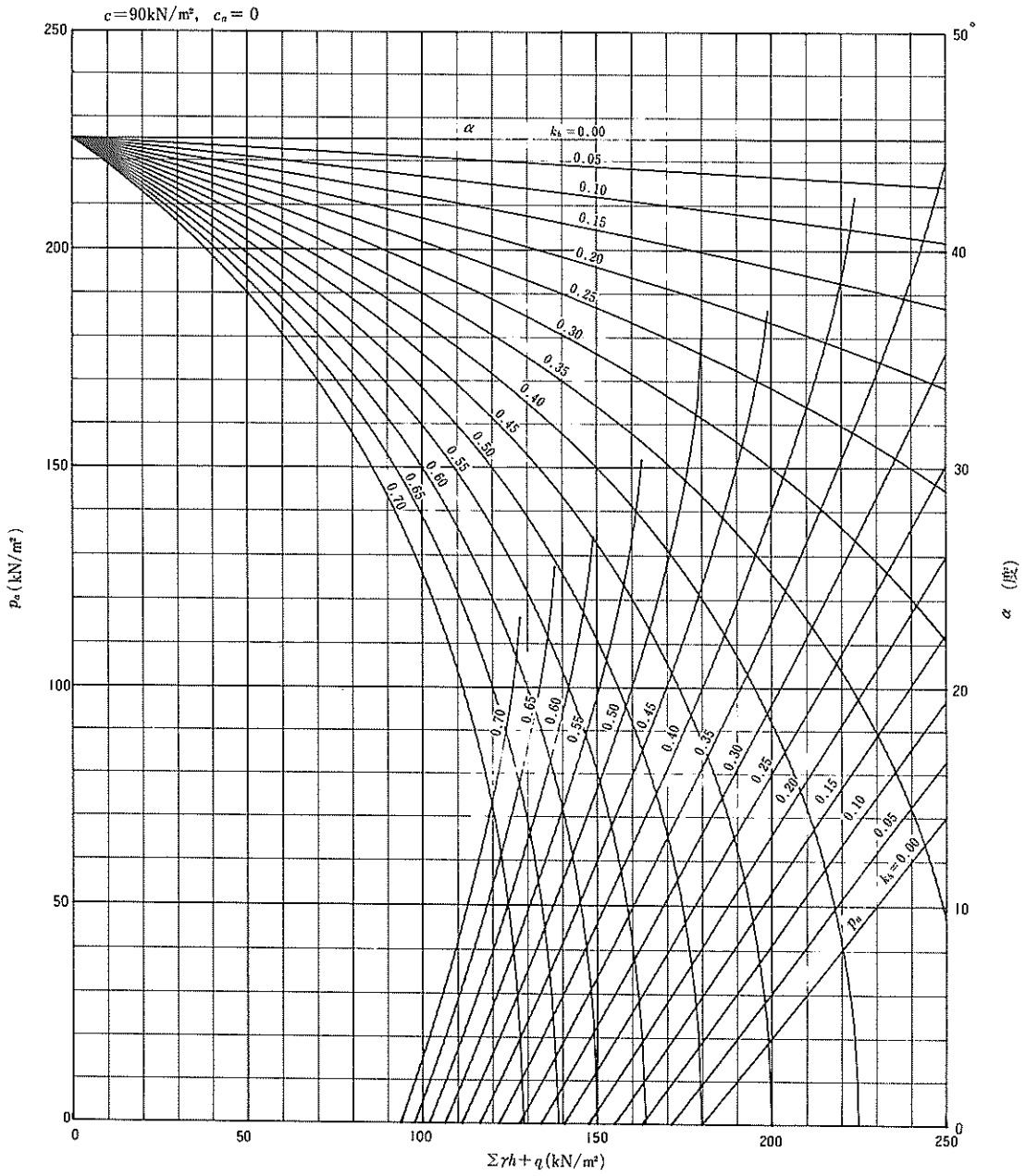


図-5. 1(9) 粘性土の主働土圧強度と崩壊角 ( $c_a=0$ の場合)

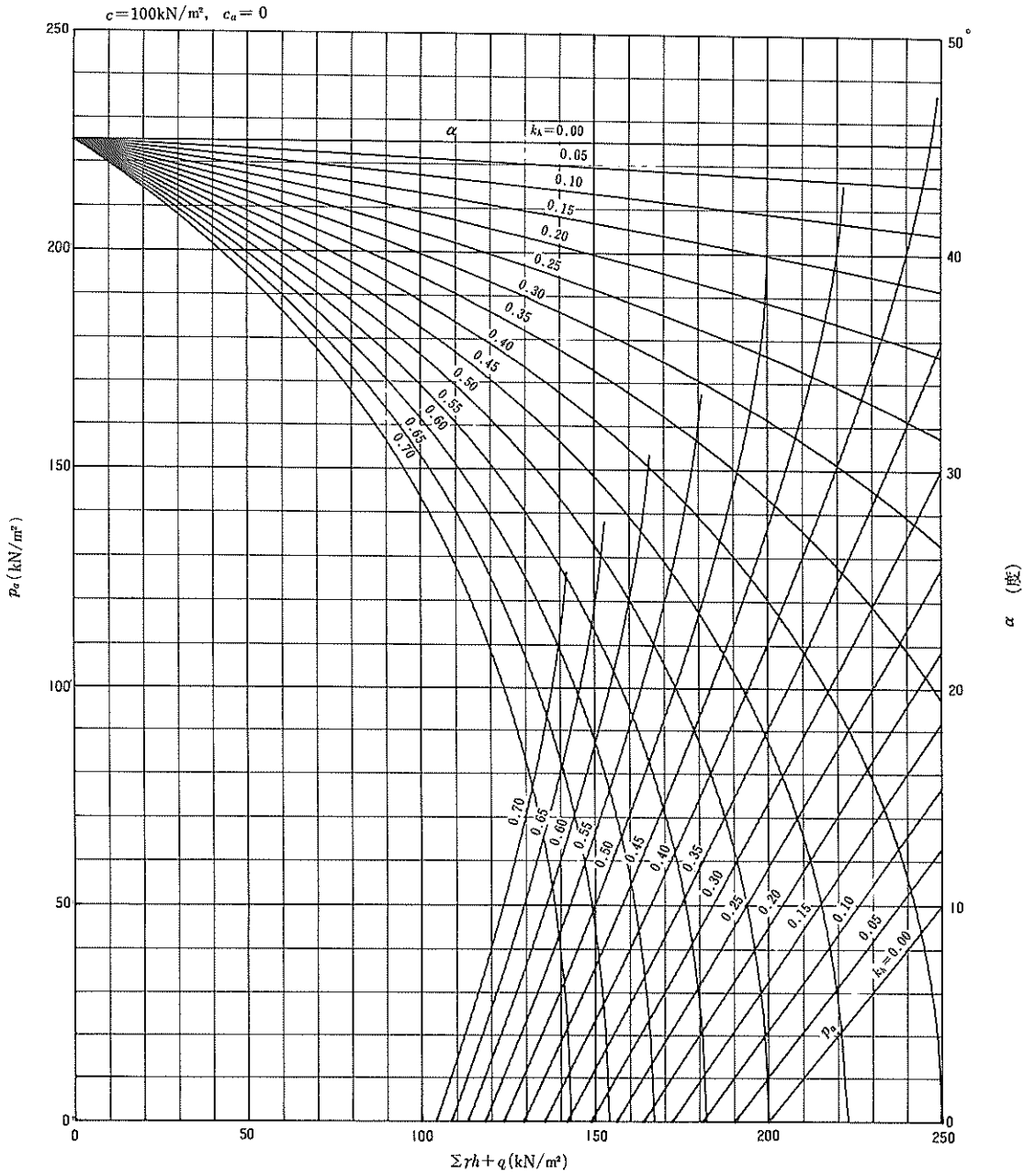


図-5.1(10) 粘性土の主働土圧強度と崩壊角 ( $c_a=0$  の場合)

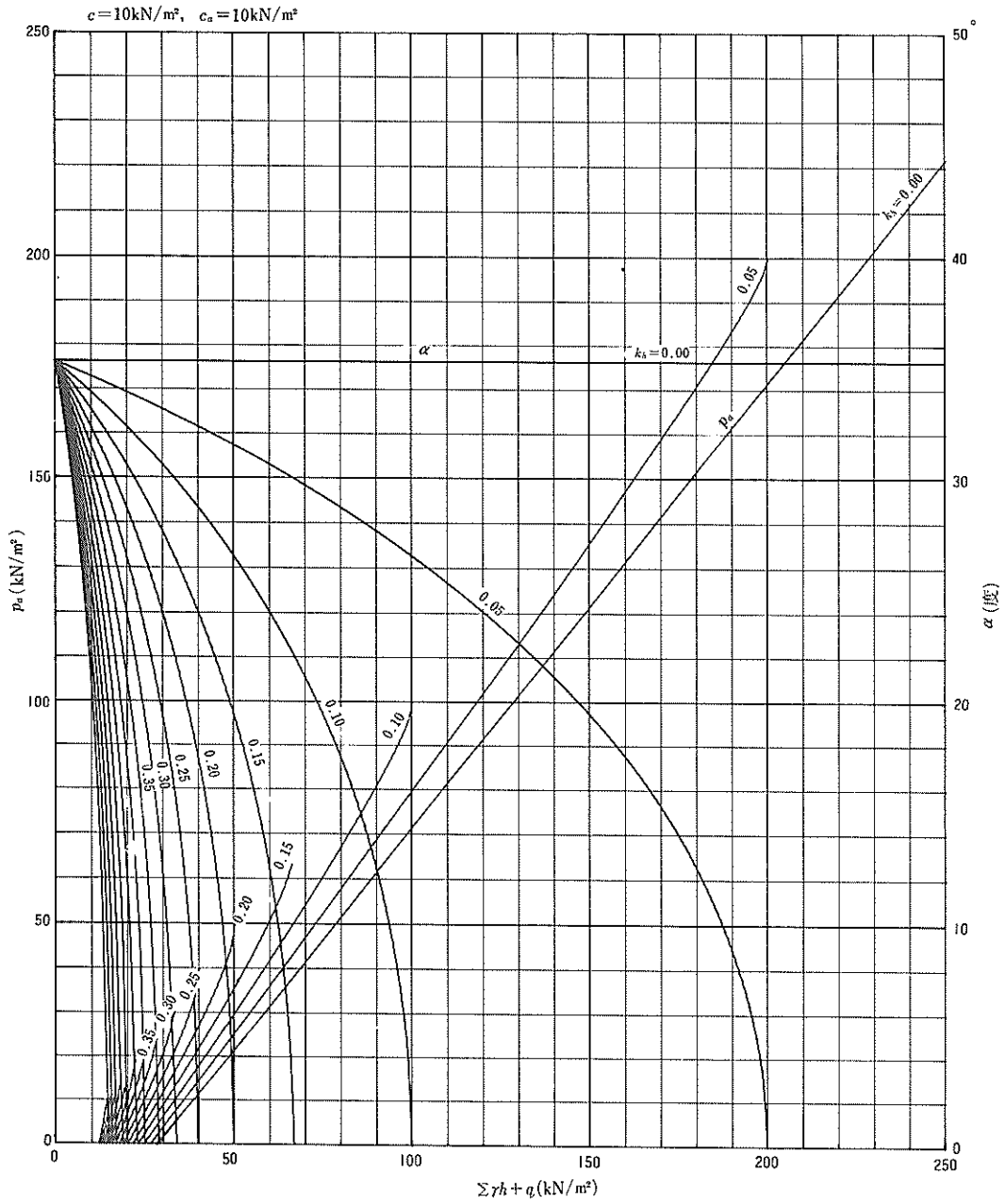


図-5. 2(1) 粘性土の主働土圧強度と崩壊角 ( $c_a = c$  の場合)

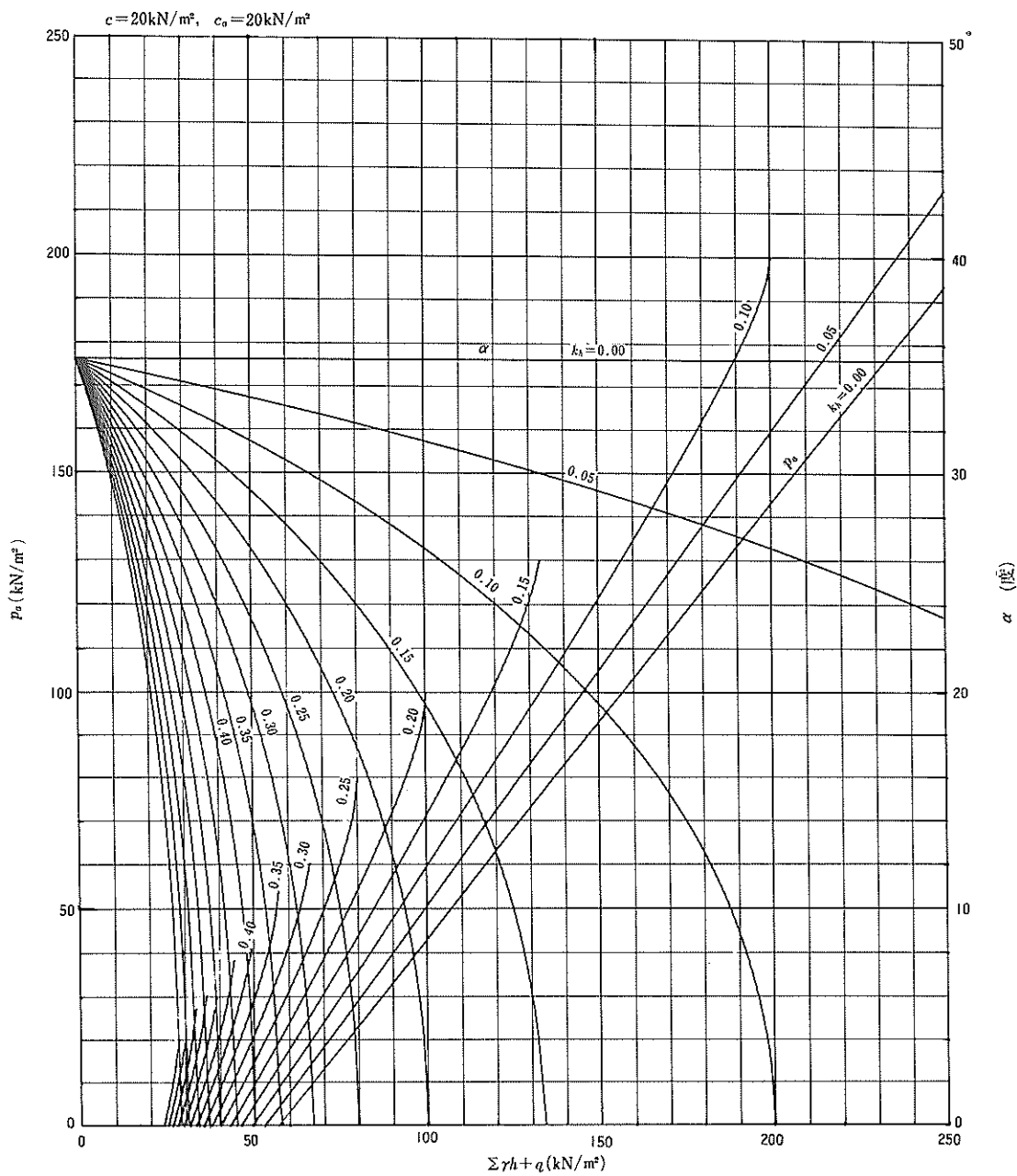


図-5.2(2) 粘性土の主働土圧強度と崩壊角 ( $c_a = c$  の場合)



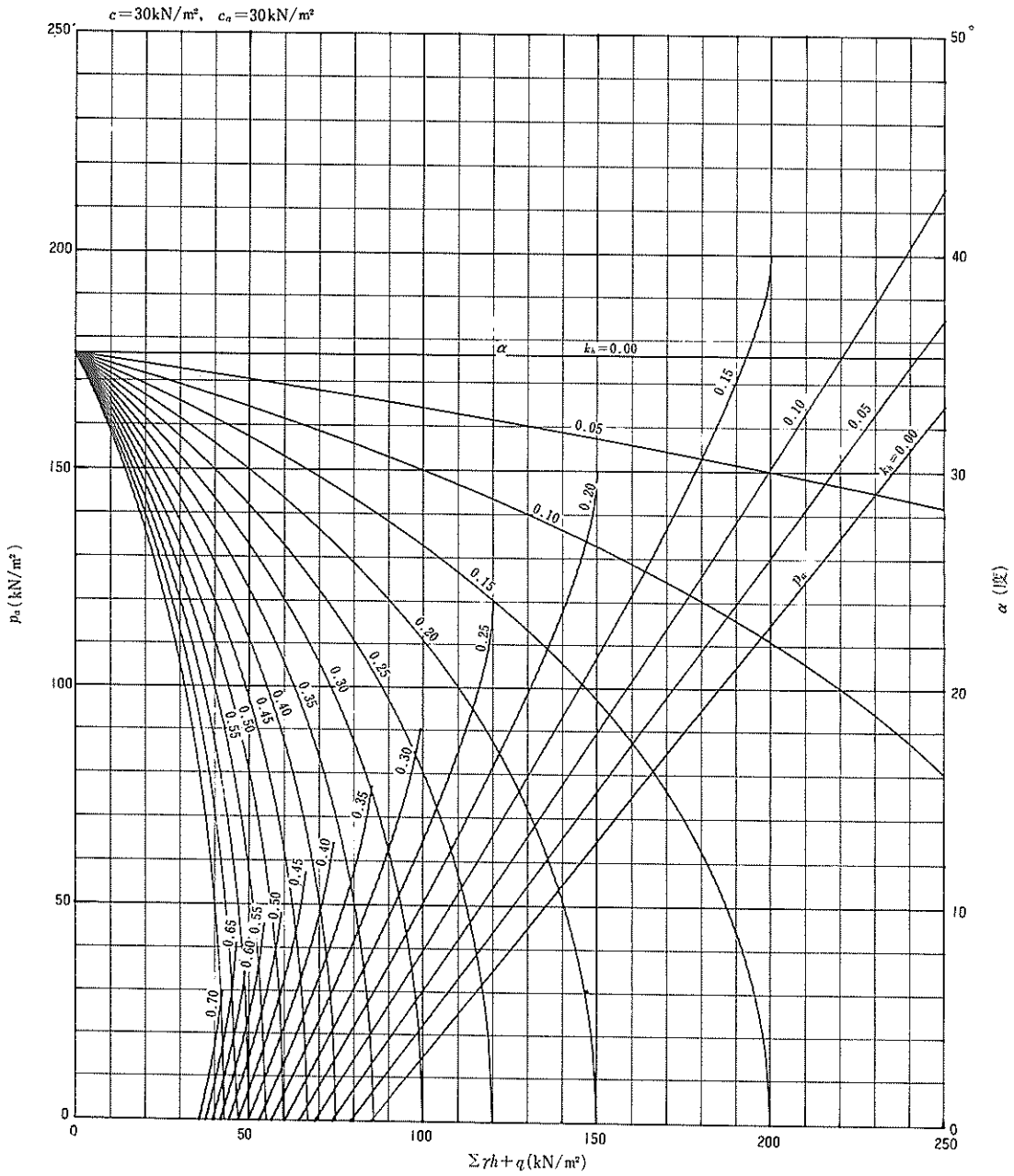


図-5.2(3) 粘性土の主働土圧強度と崩壊角 ( $c_a = c$  の場合)

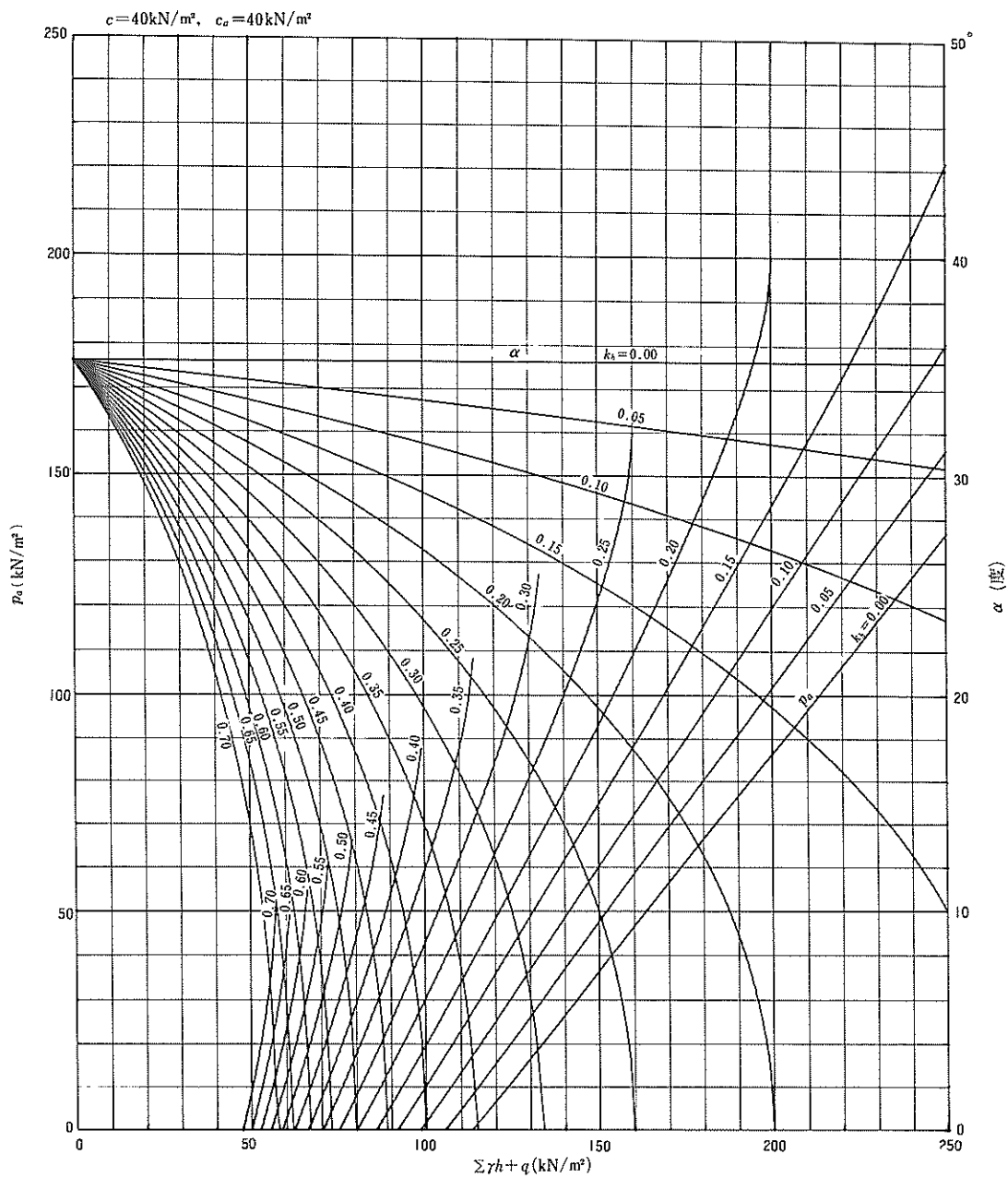


図-5.2(4) 粘性土の主働土圧強度と崩壊角 ( $c_a = c$  の場合)

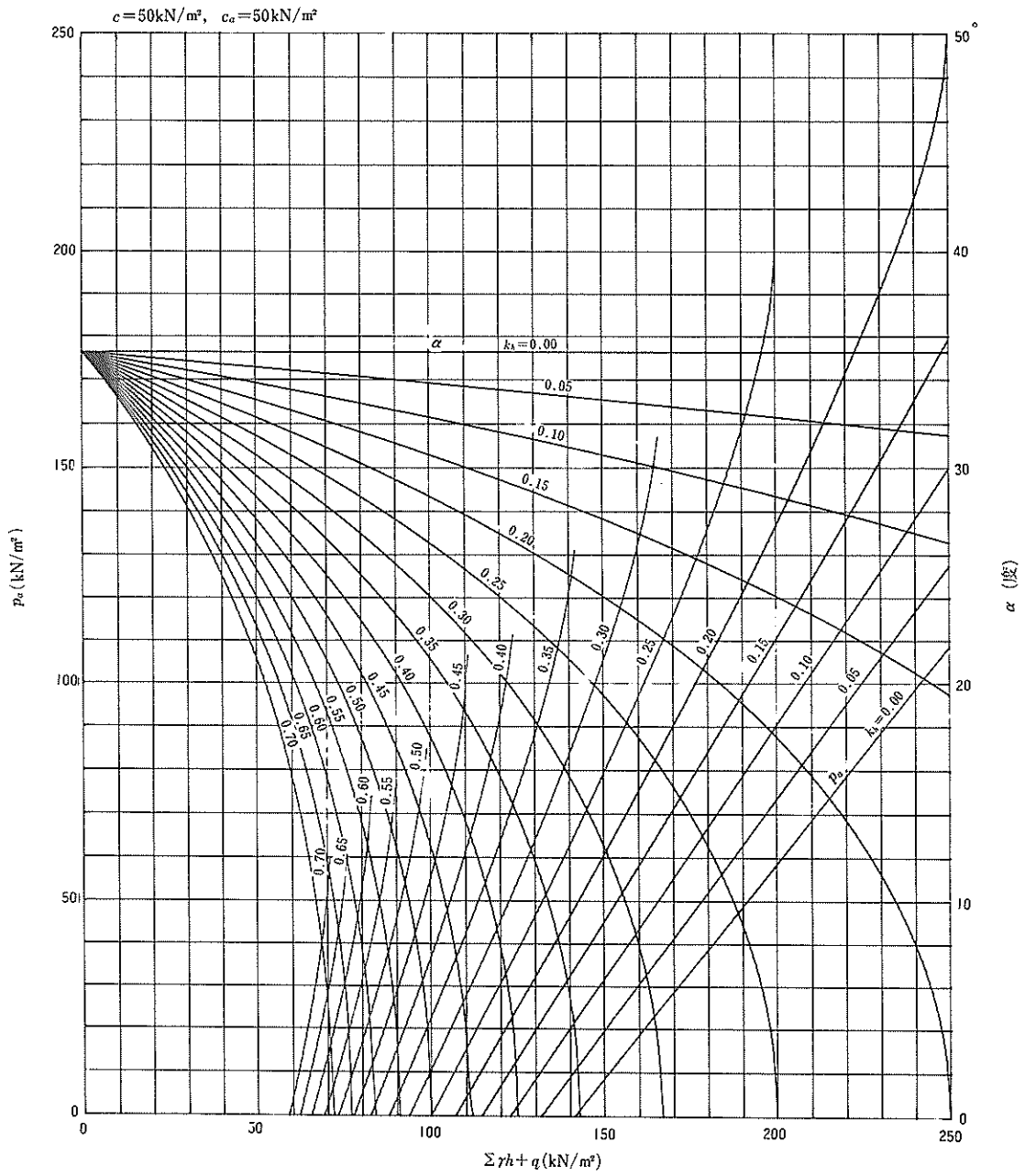


図-5.2(5) 粘性土の主働土圧強度と崩壊角 ( $c_a = c$  の場合)

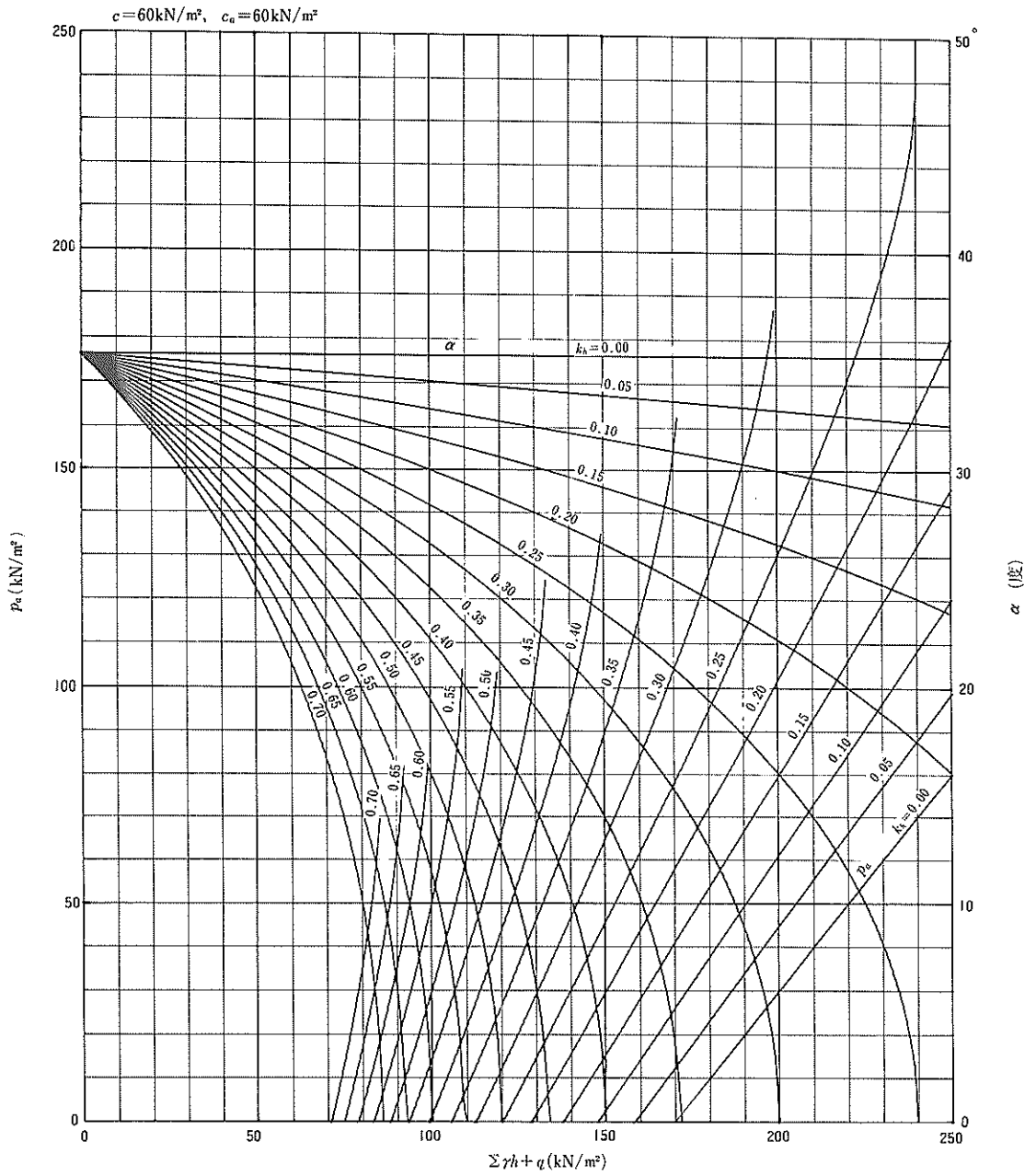


図-5.2(6) 粘性土の主働土圧強度と崩壊角 ( $c_a = c$  の場合)

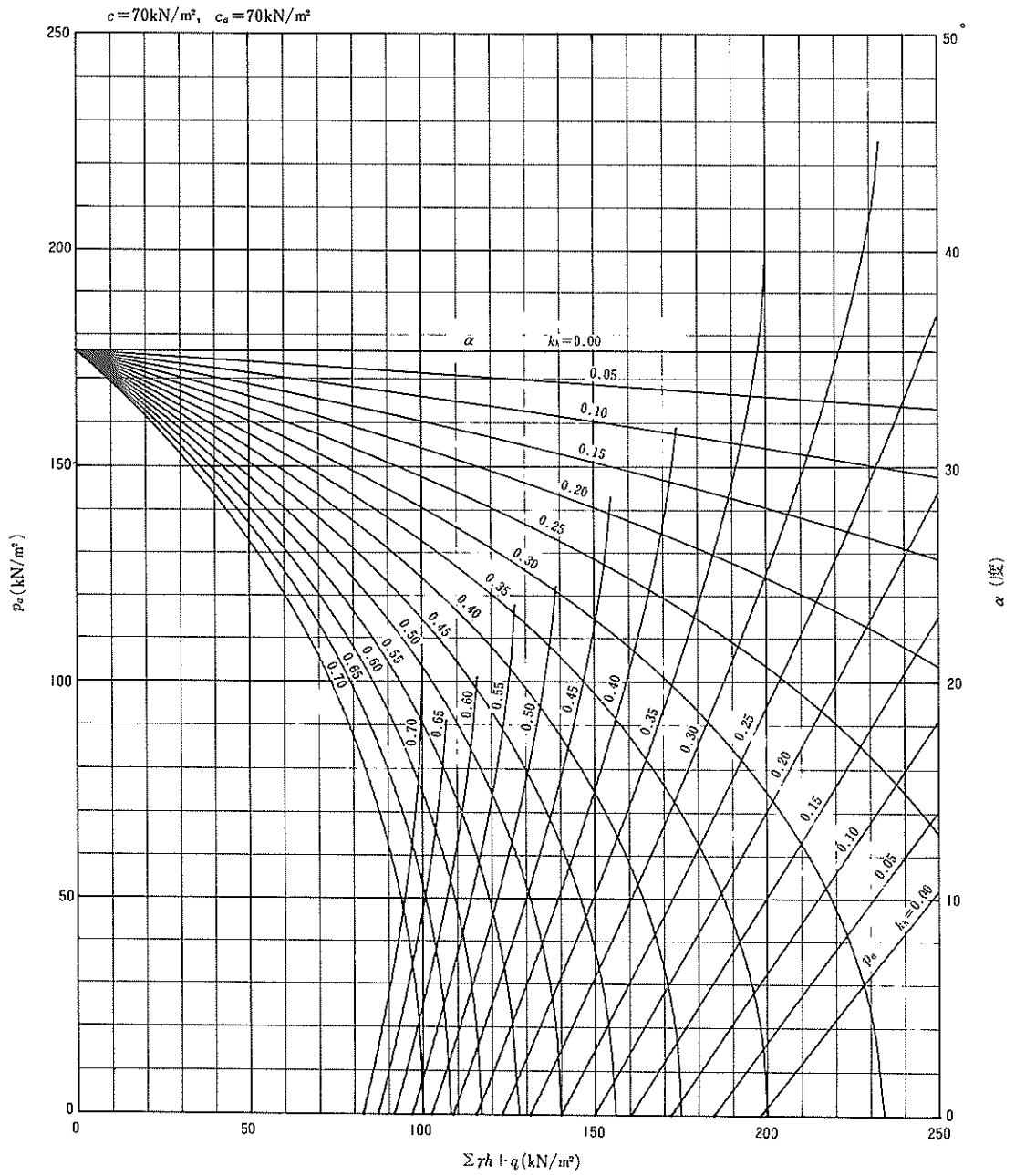


図-5.2(7) 粘性土の主働土圧強度と崩壊角 ( $c_a = c$  の場合)

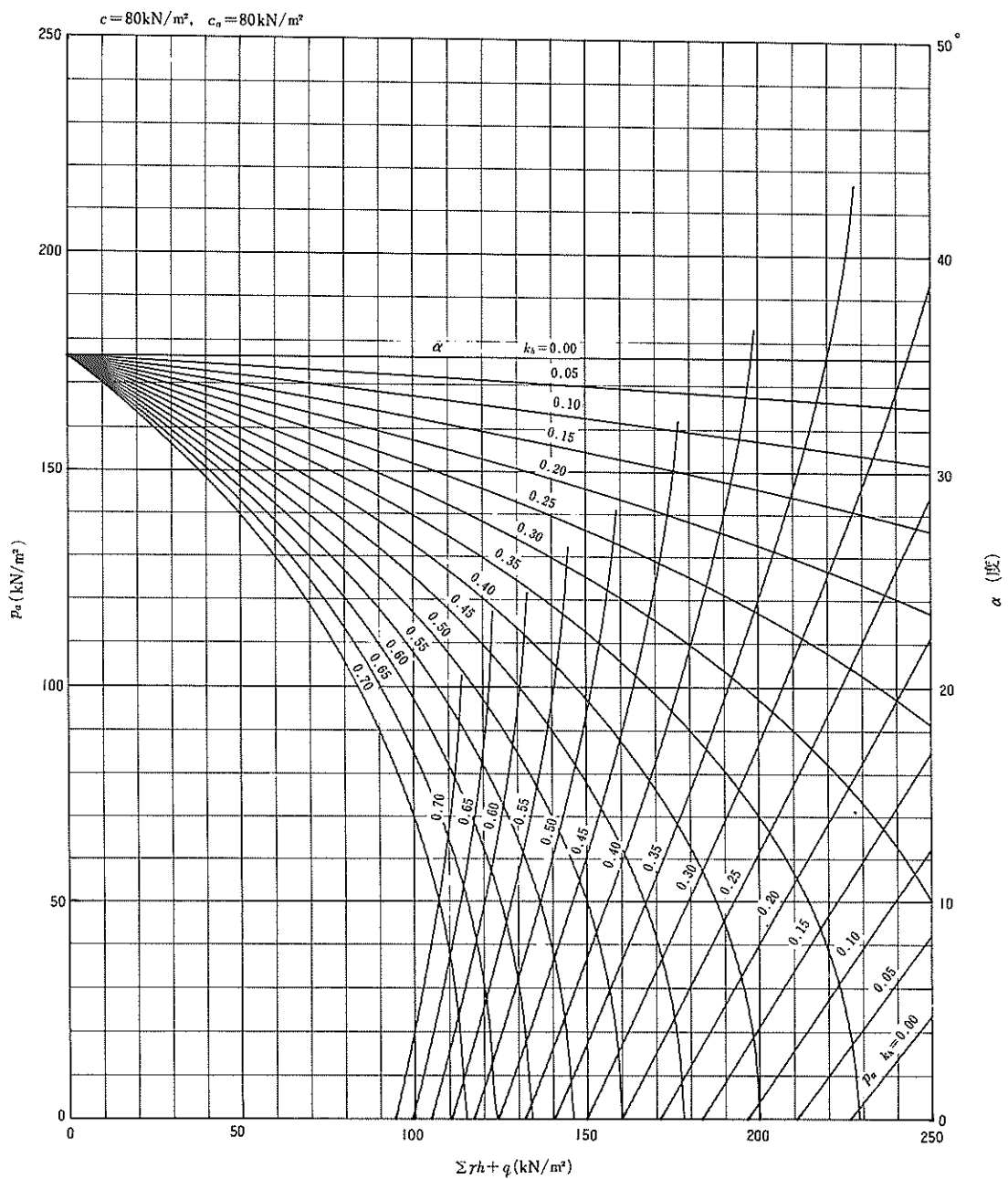


図-5.2(8) 粘性土の主動土圧強度と崩壊角 ( $c_a = c$  の場合)

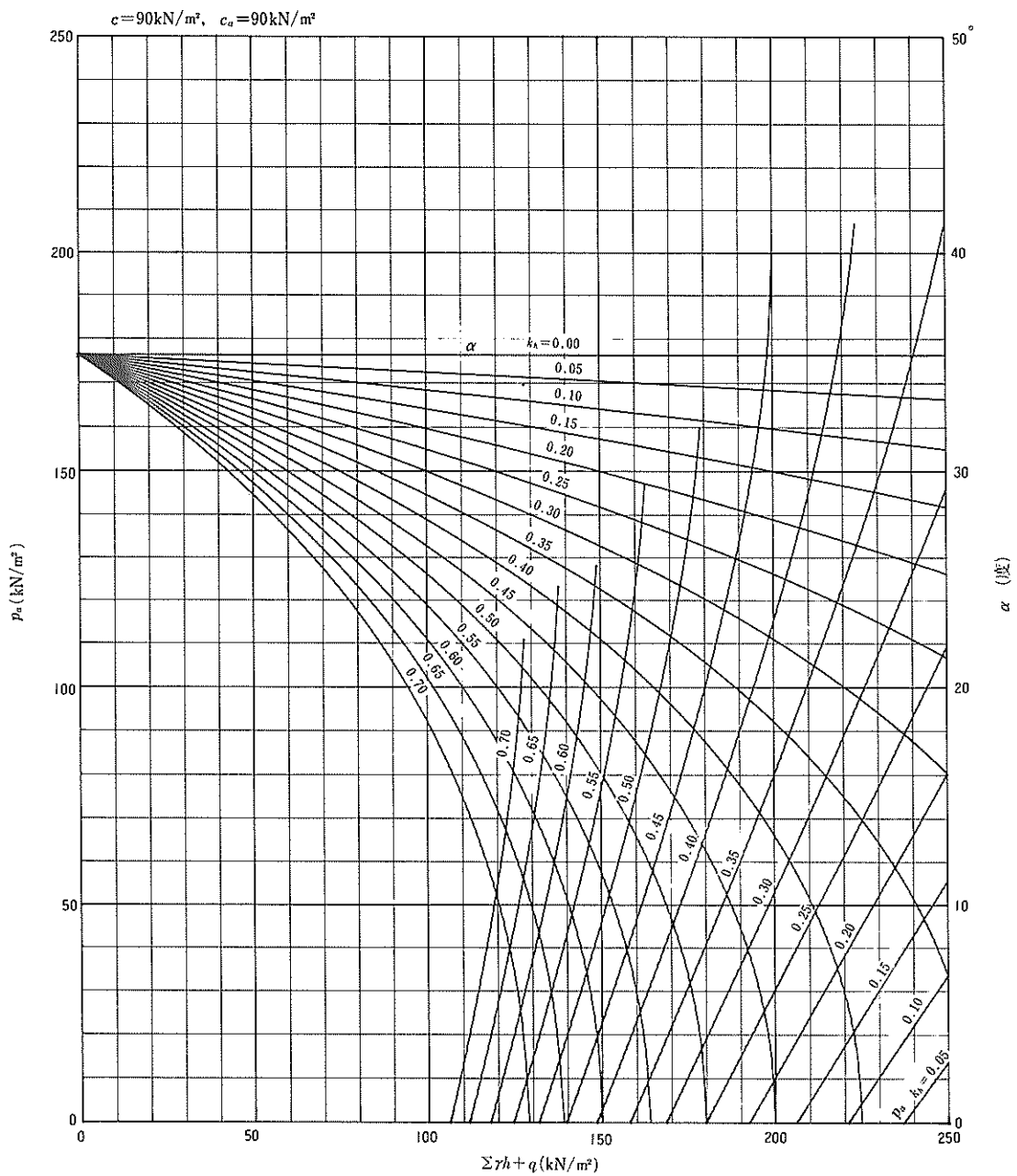


図-5.2(9) 粘性土の主働土圧強度と崩壊角 ( $c_a = c$  の場合)

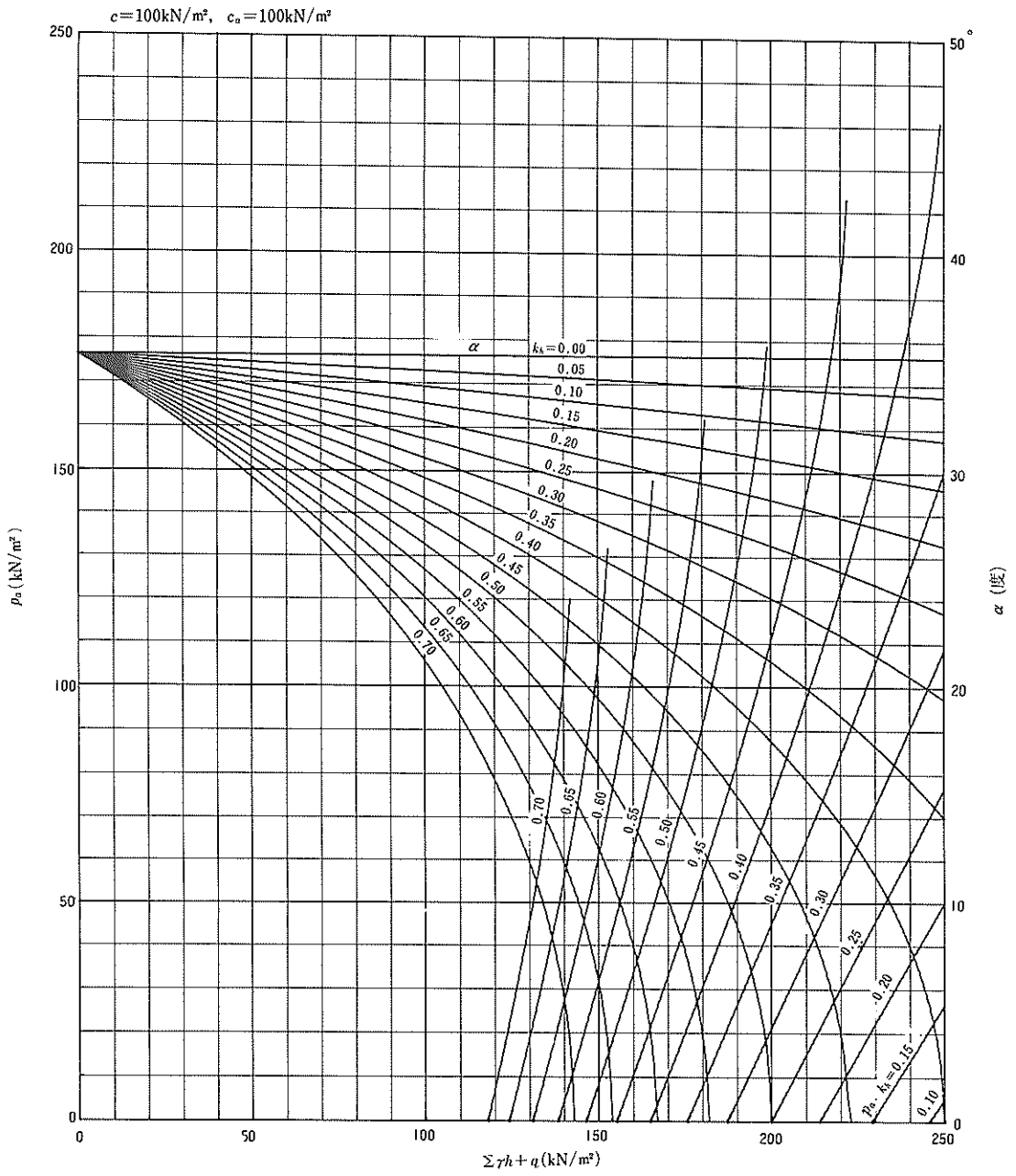


図-5.2(10) 粘性土の主働土圧強度と崩壊角 ( $c_a = c$  の場合)



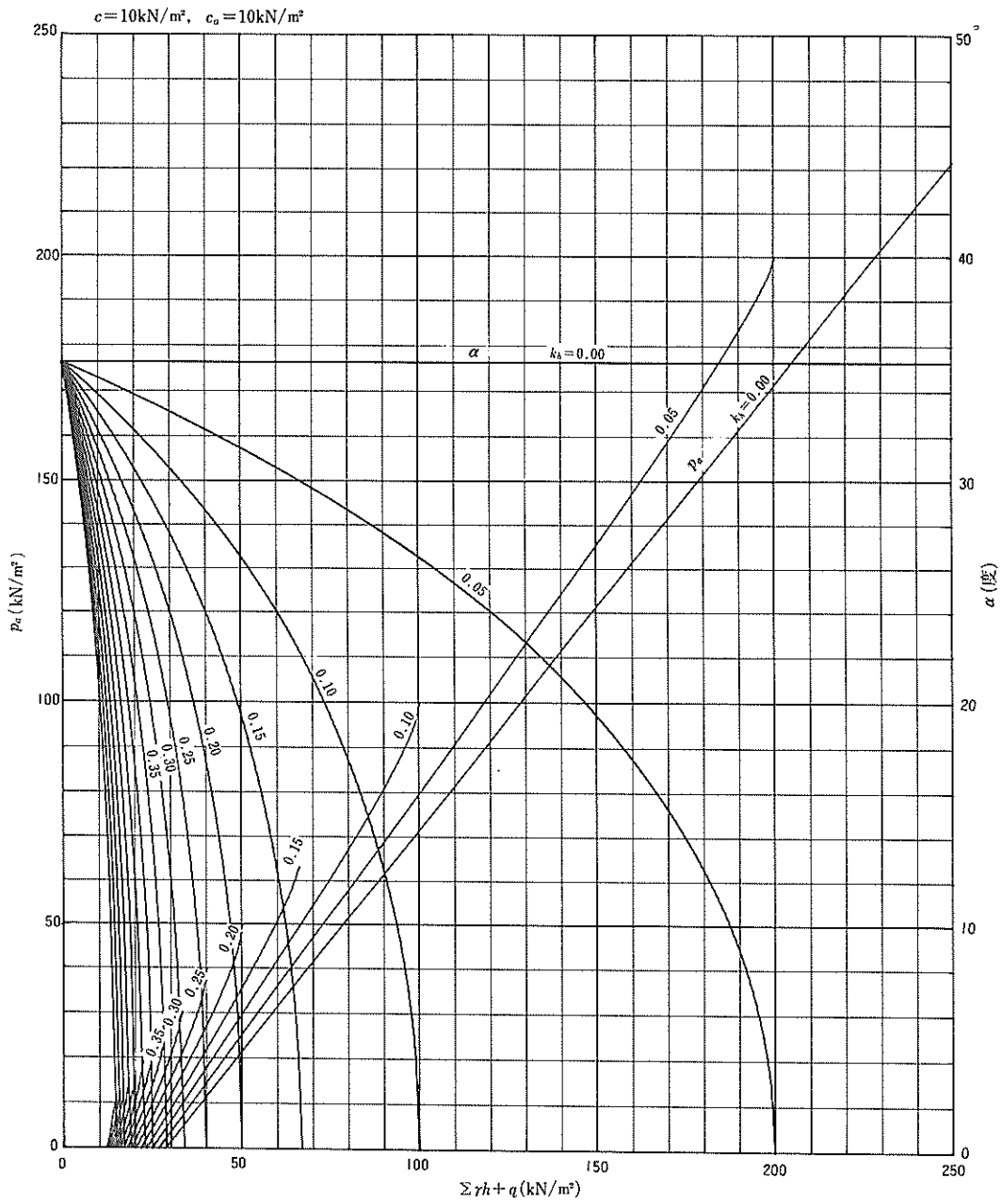


図-5. 3(1) 粘性土の主働土圧強度と崩壊角 ( $c_a = \lambda c$  の場合)

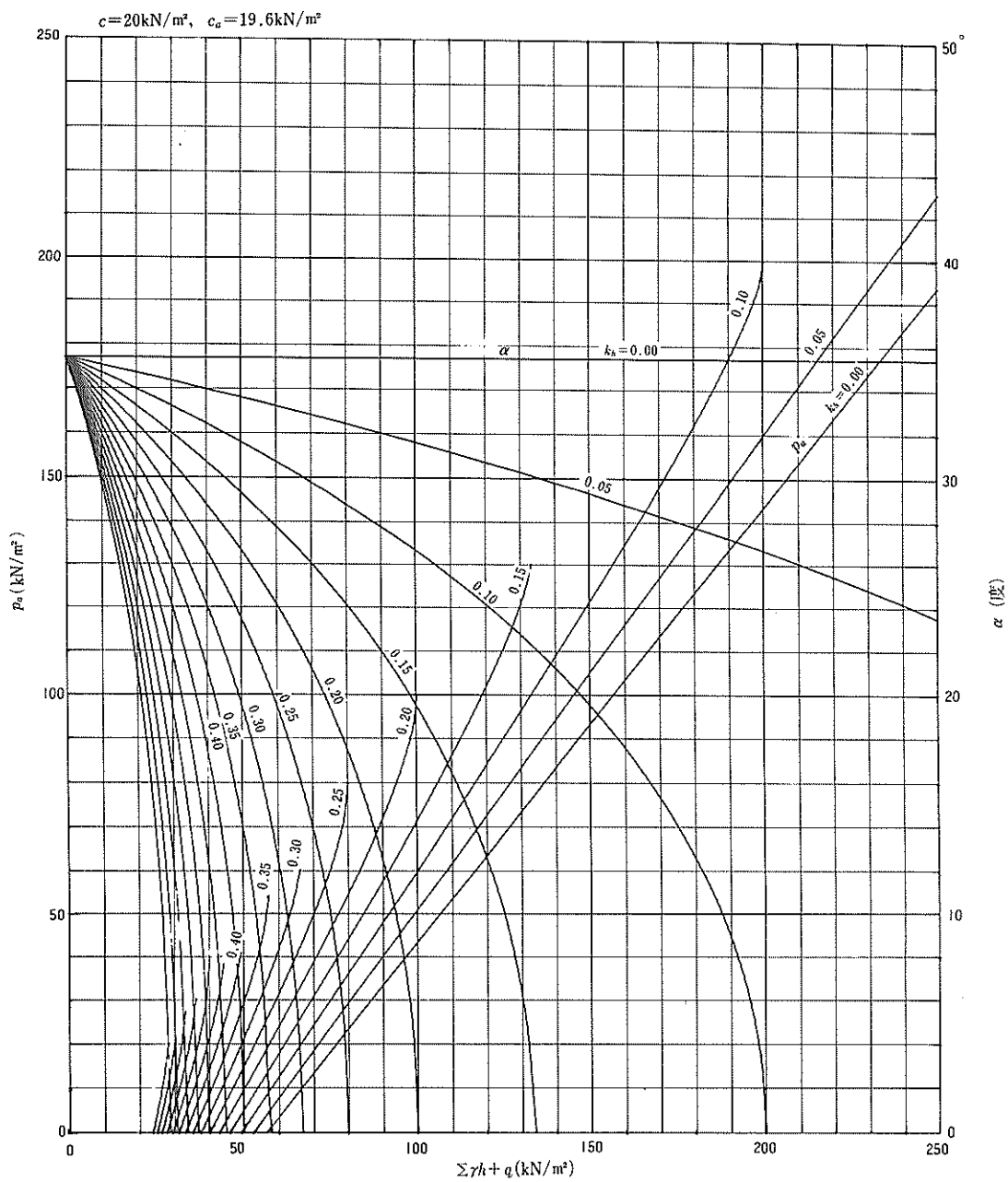


図-5.3(2) 粘性土の主働土圧強度と崩壊角 ( $c_a = \lambda c$  の場合)

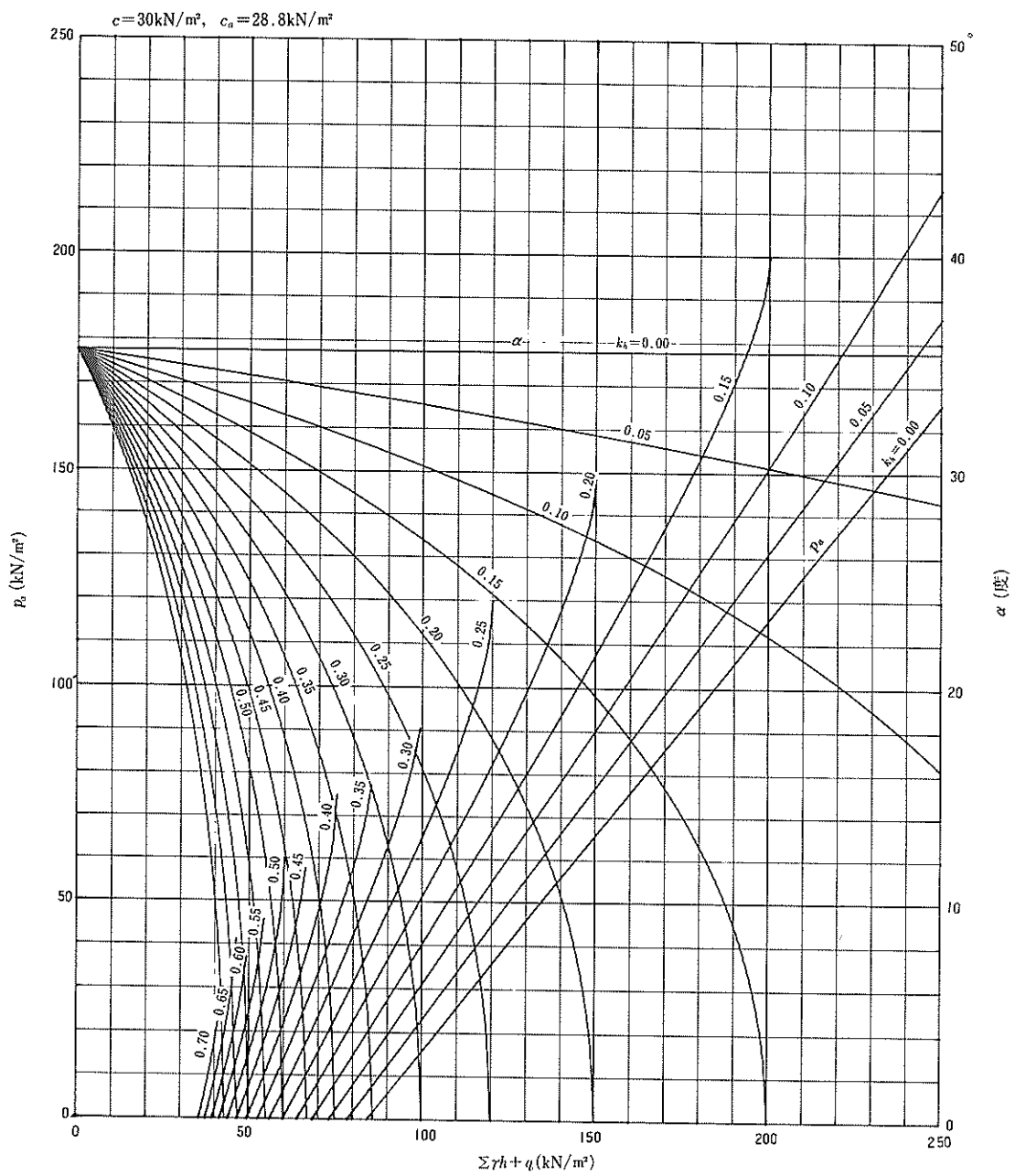


図-5. 3(3) 粘性土の主働土圧強度と崩壊角 ( $c_a = \lambda c$  の場合)

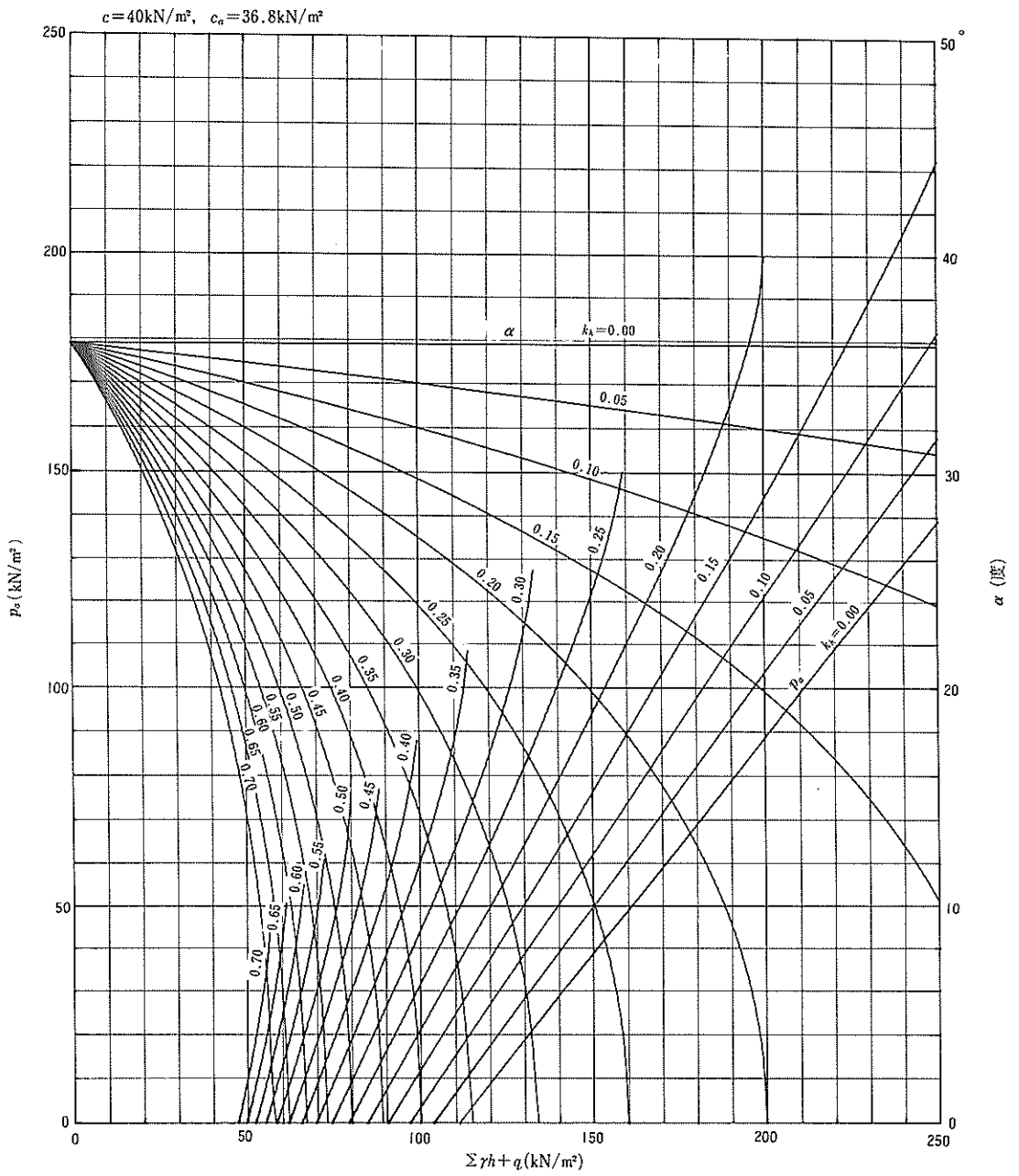


図-5.3(4) 粘性土の主働土圧強度と崩壊角 ( $c_a = \lambda c$  の場合)

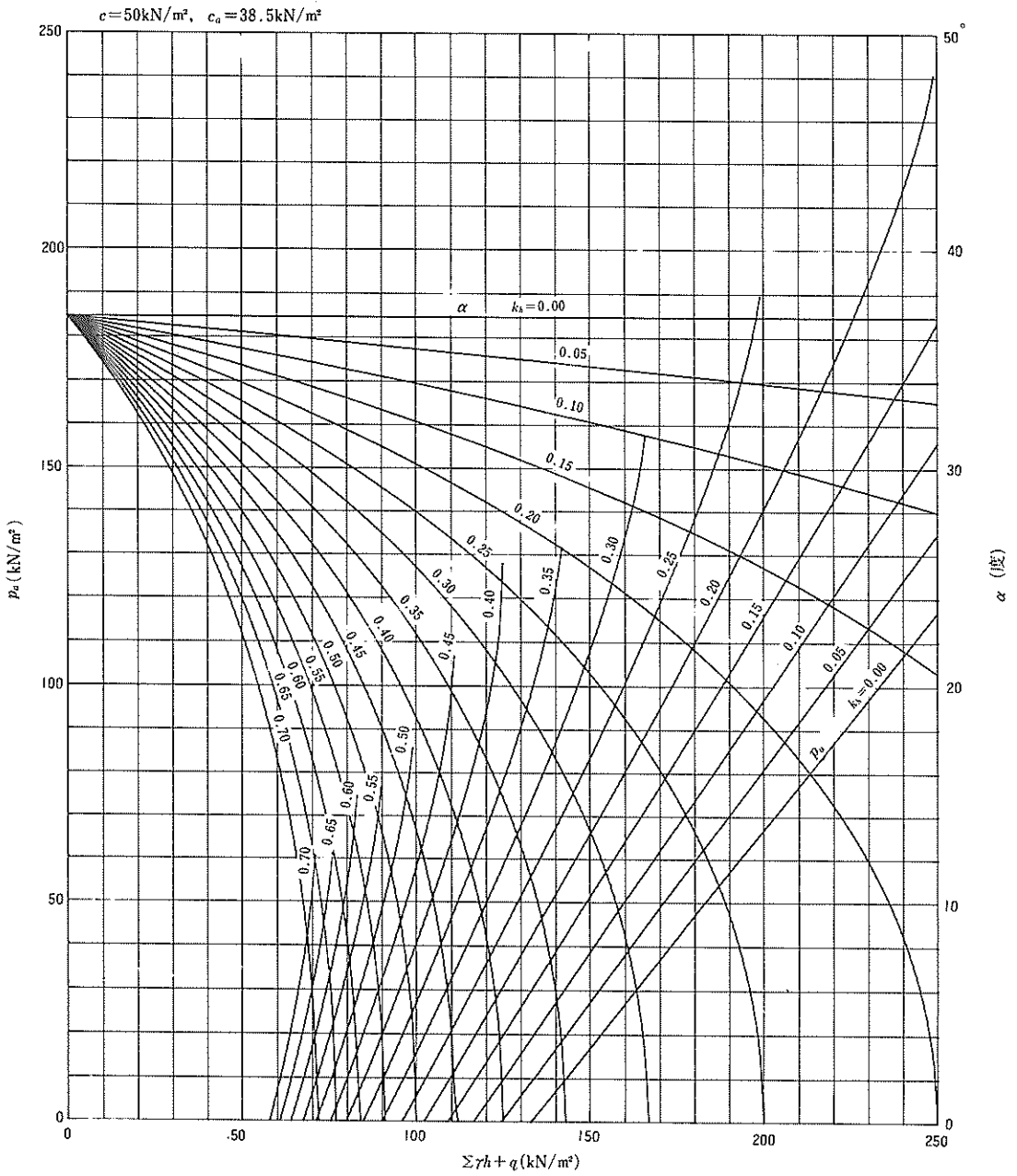


図-5.3(5) 粘性土の主働土圧強度と崩壊角 ( $c_a = \lambda c$  の場合)

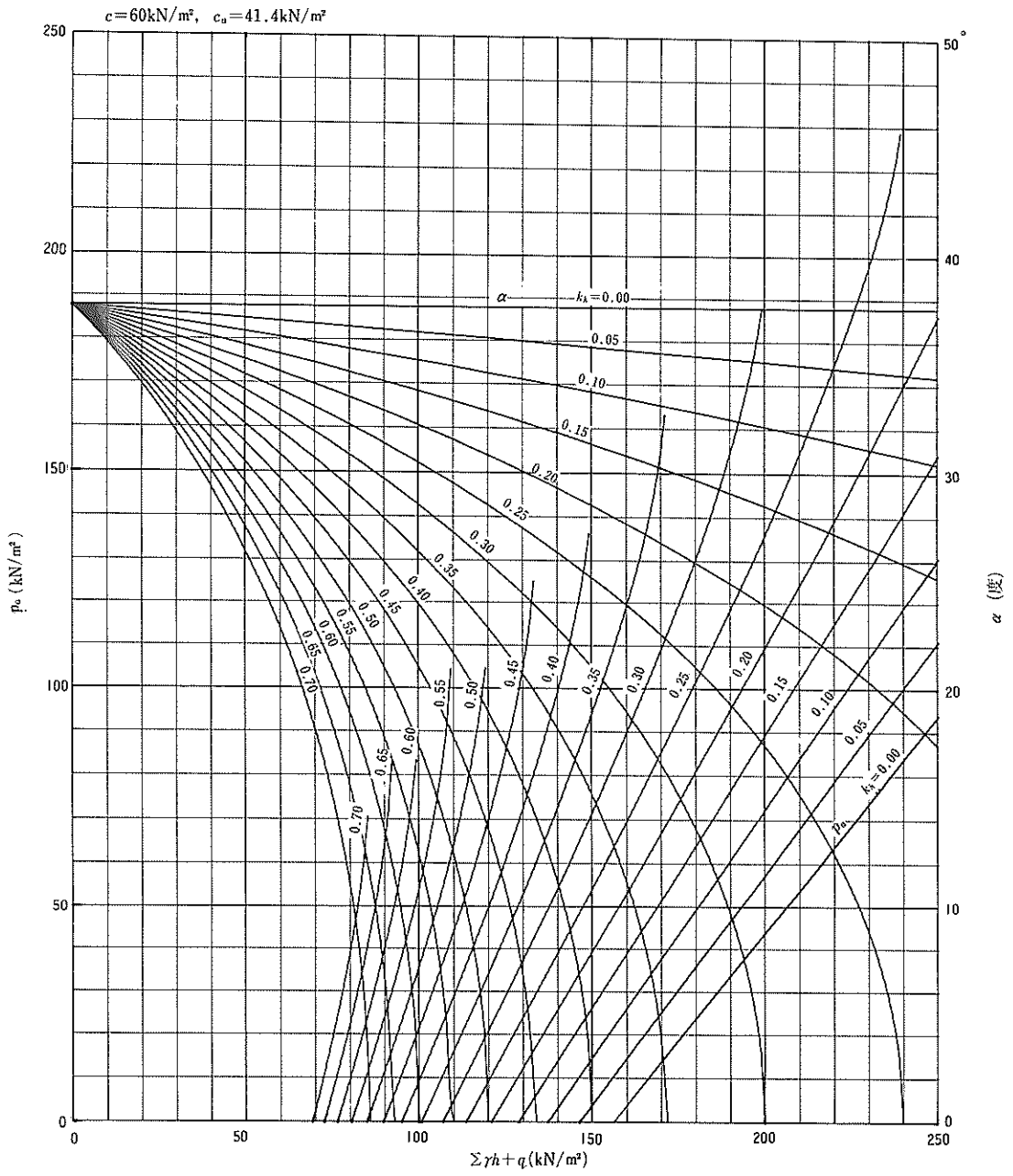


図-5.3(6) 粘性土の主働土圧強度と崩壊角 ( $c_a = \lambda c$  の場合)

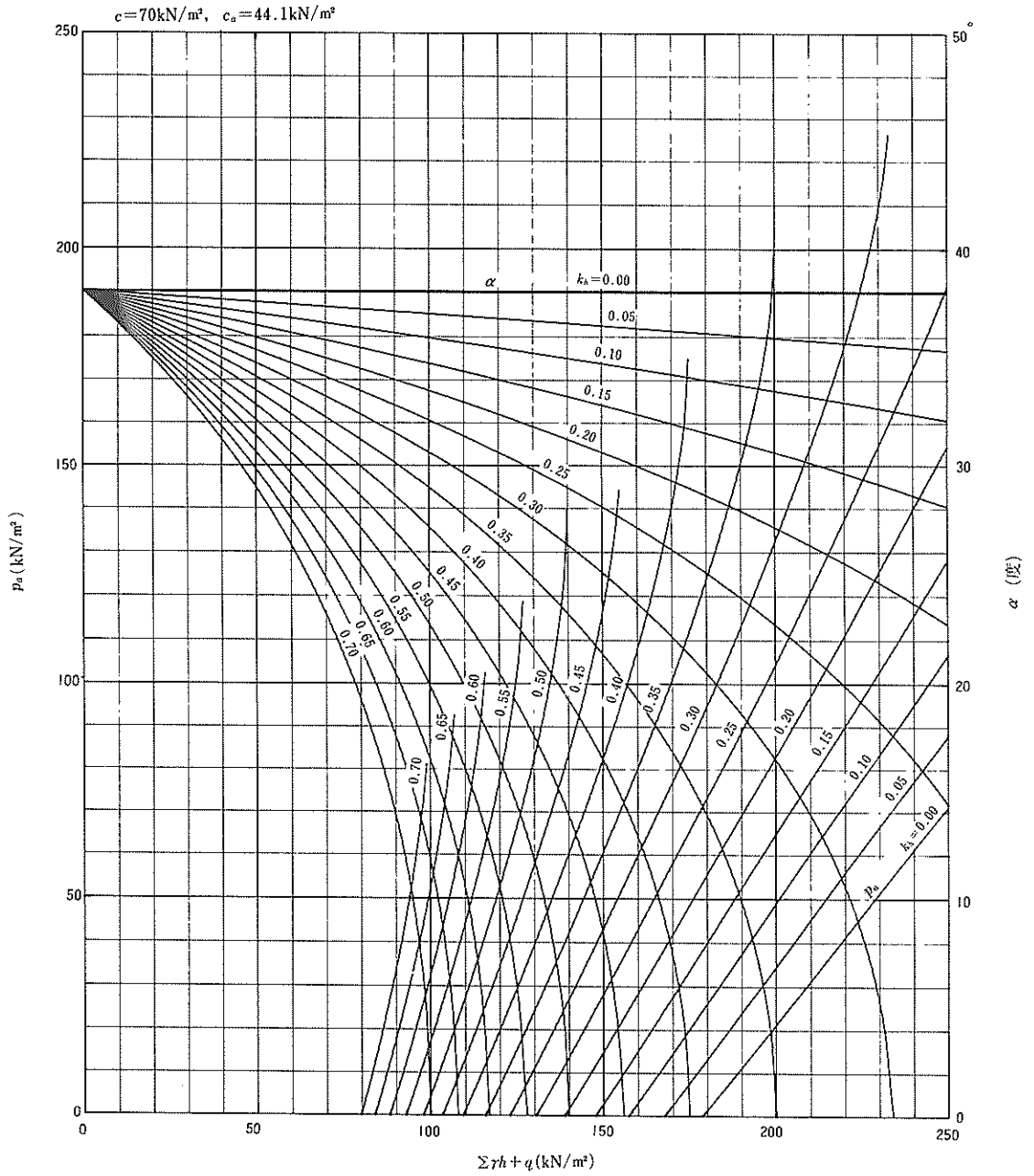


図-5.3(7) 粘性土の主働土圧強度と崩壊角 ( $c_a = \lambda c$  の場合)

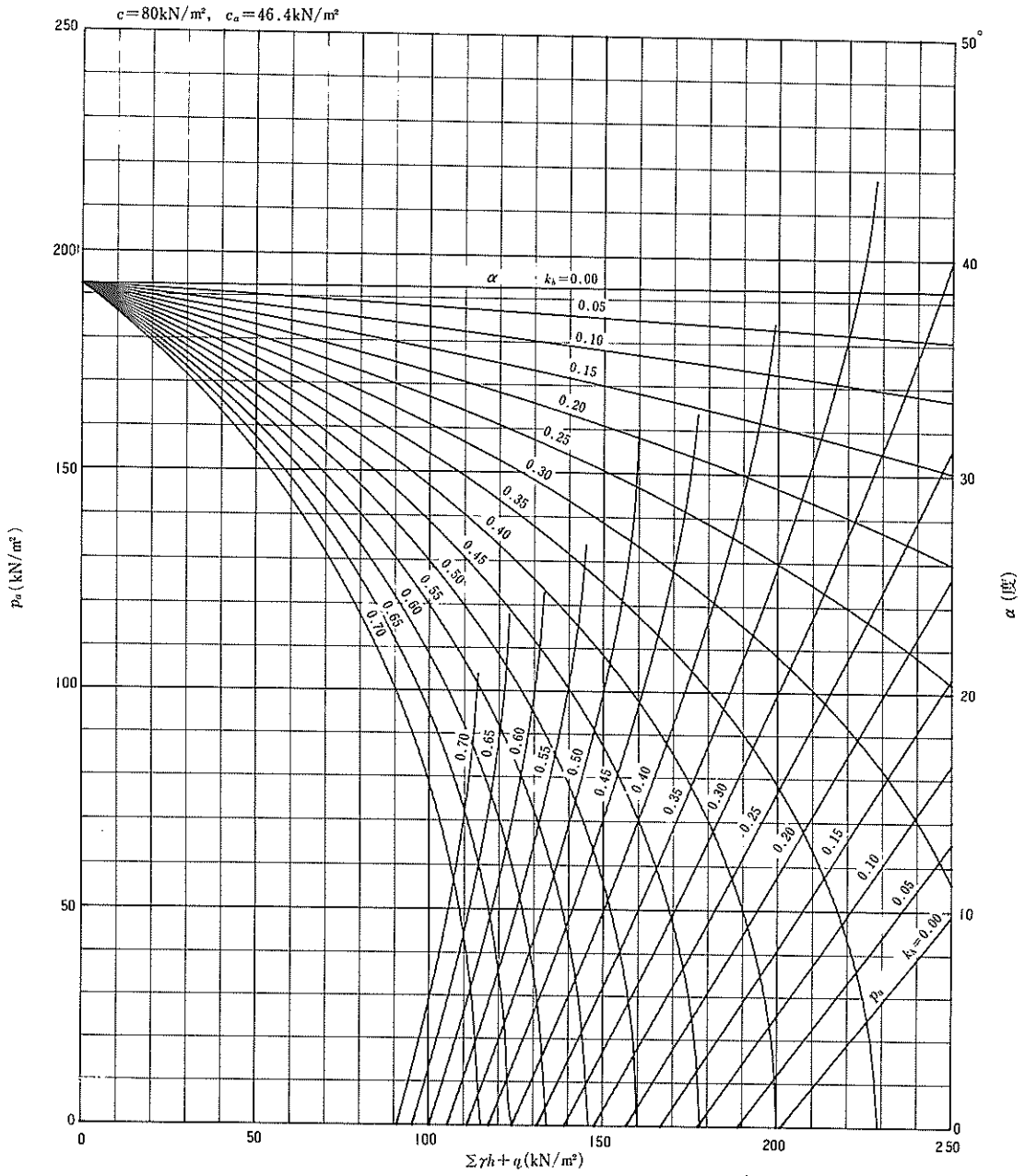
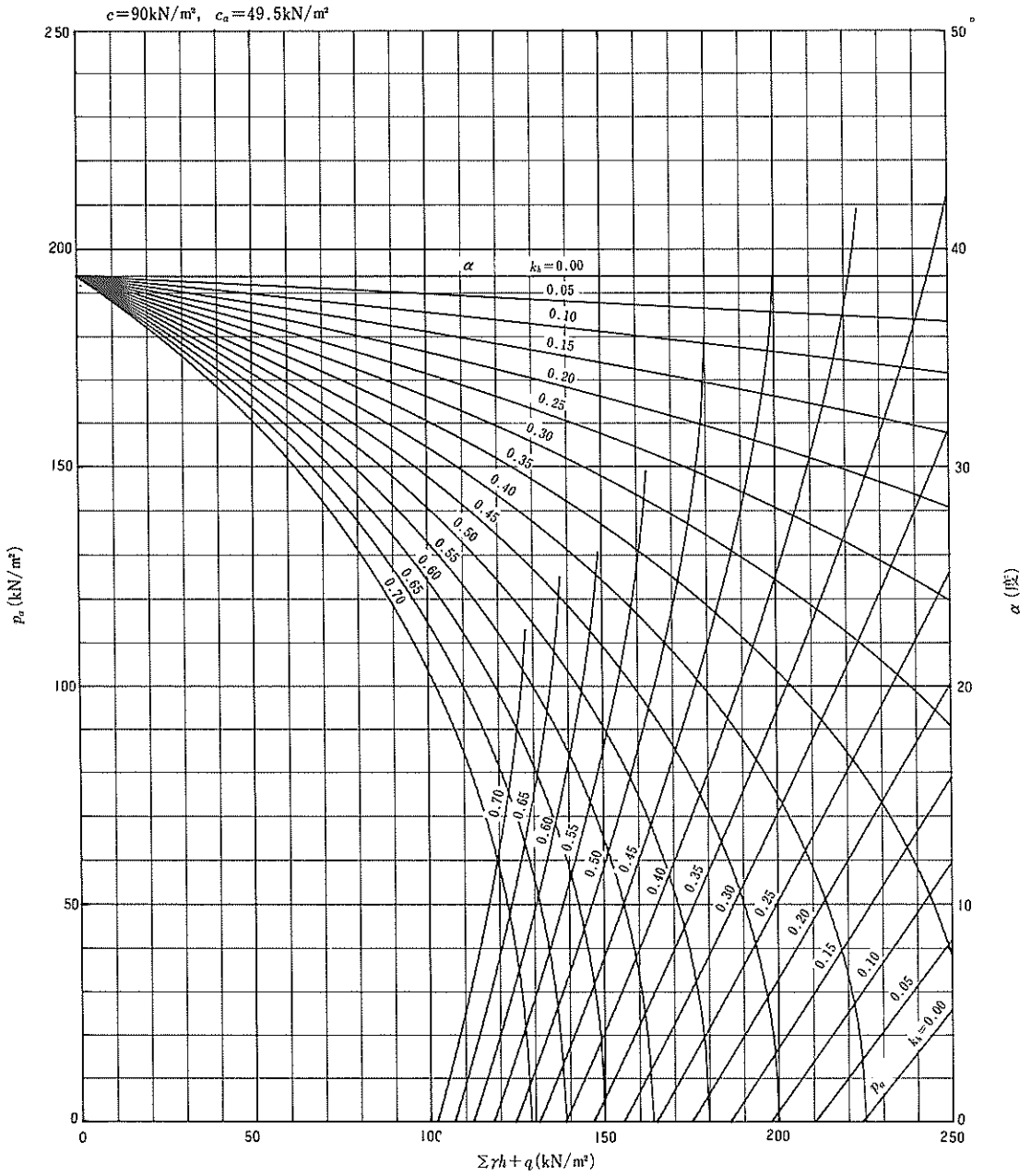


図-5.3(8) 粘性土の主働土圧強度と崩壊角 ( $c_a = \lambda c$  の場合)





図一五・三(9) 粘性土の主働土圧強度と崩壊角 ( $c_a = \lambda c$  の場合)

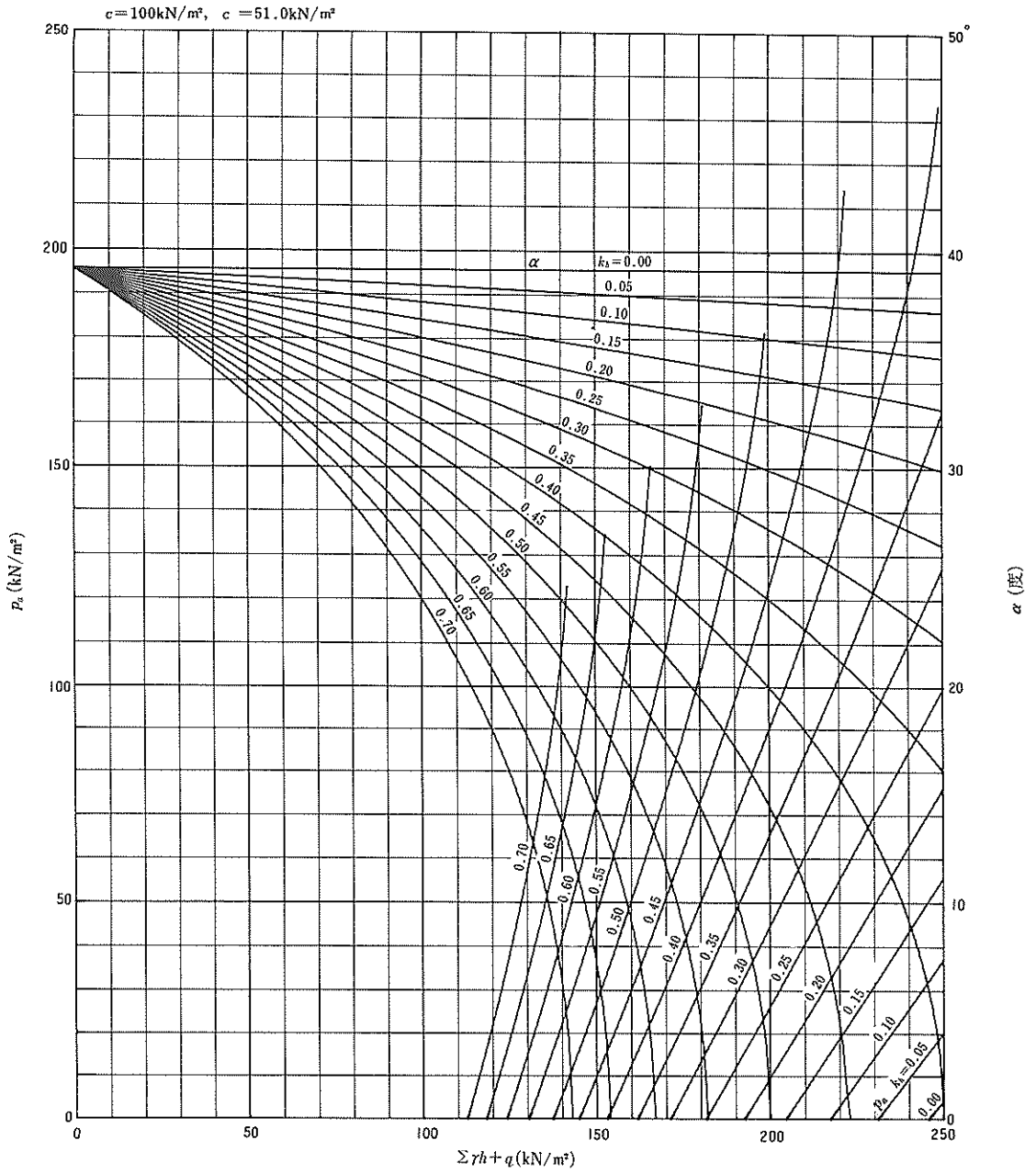


図-5.3(10) 粘性土の主働土圧強度と崩壊角 ( $c_a = \lambda c$  の場合)

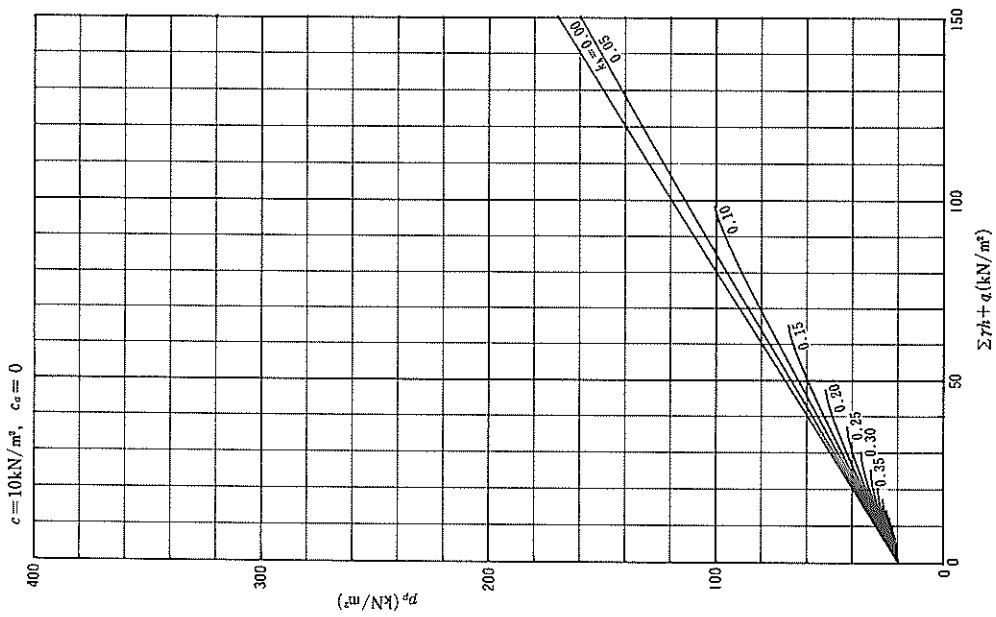


図-6.1(1) 粘性土の受働土圧強度 ( $c_a = 0$  の場合)

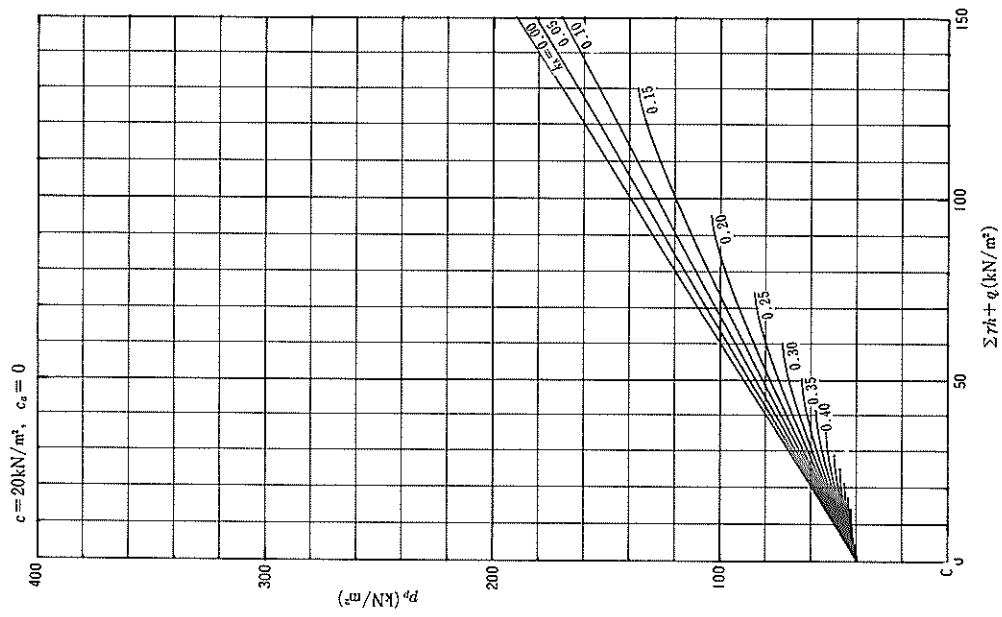
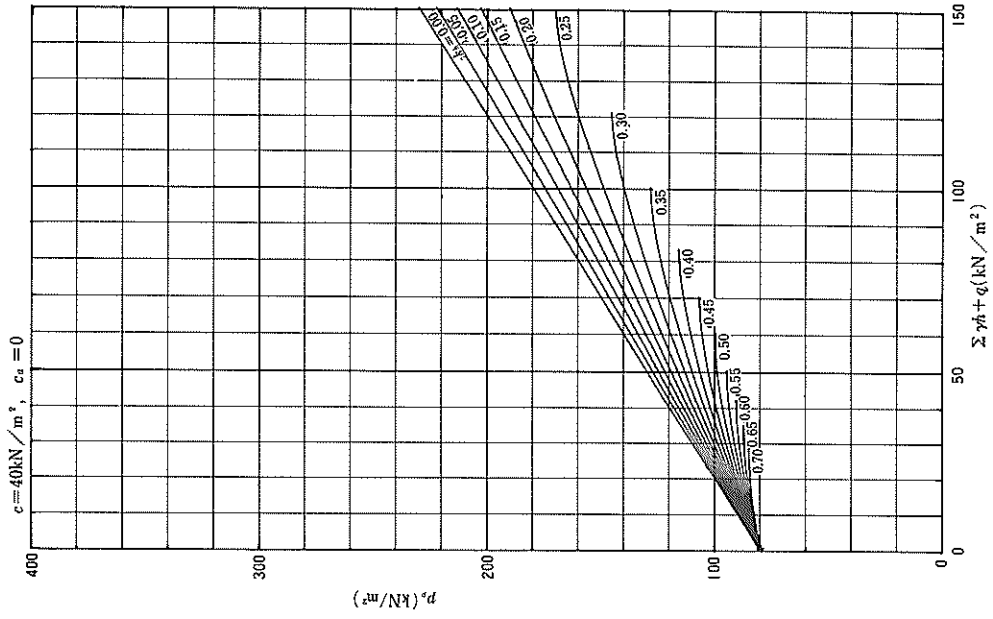
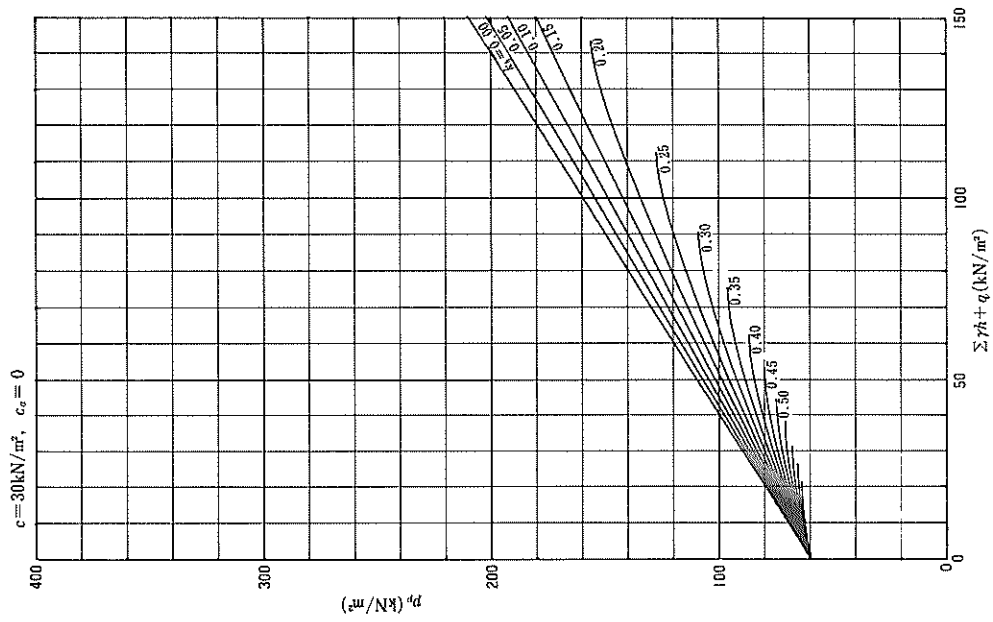


図-6.1(2) 粘性土の受働土圧強度 ( $c_a = 0$  の場合)



図一6.1(4) 粘性土の受働土圧強度 ( $c_u = 0$  の場合)



図一6.1(3) 粘性土の受働土圧強度 ( $c_u = 0$  の場合)

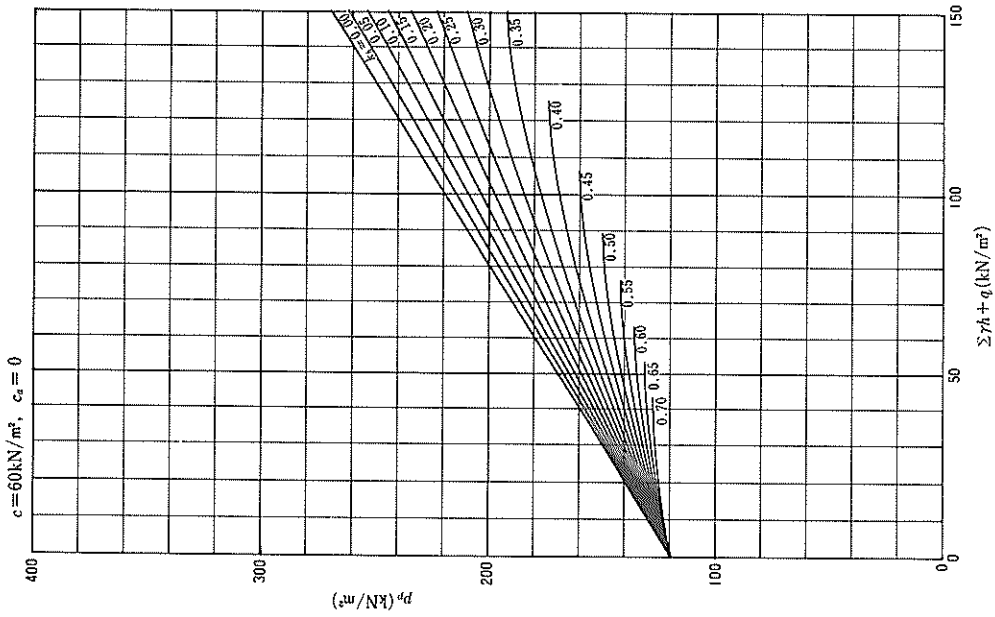


図-6. 1(6) 粘性土の受働土圧強度 ( $c_a = 0$  の場合)

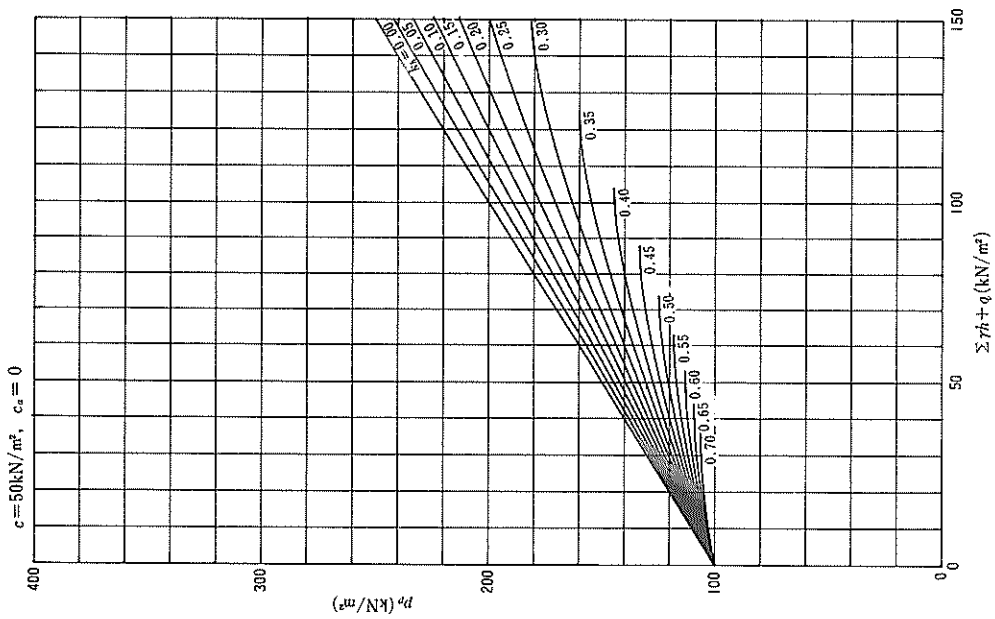


図-6. 1(5) 粘性土の受働土圧強度 ( $c_a = 0$  の場合)

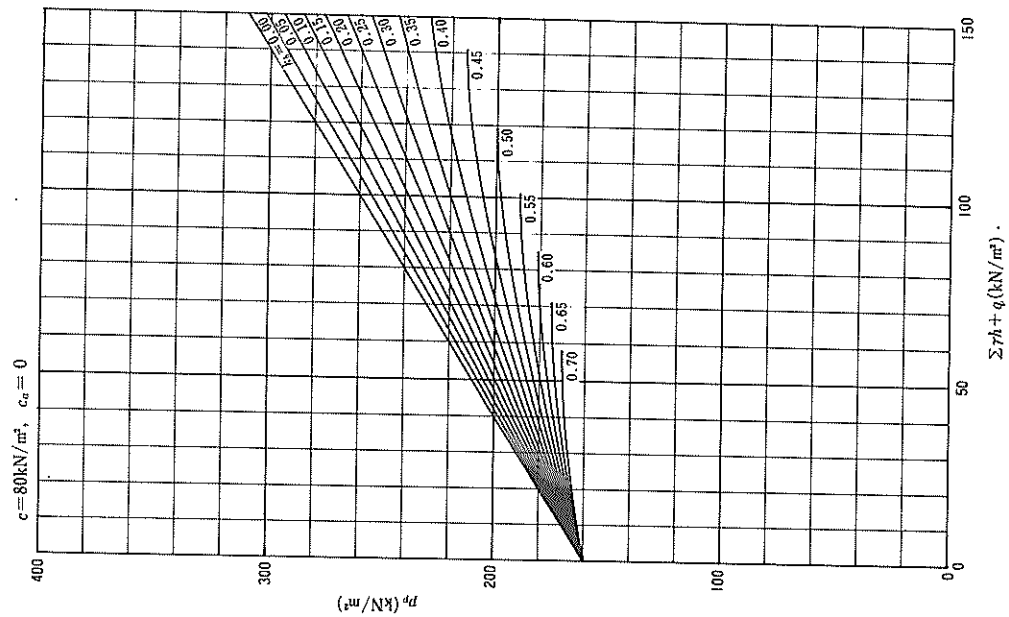


図-6. 1(8) 粘性土の受働土圧強度 ( $c_a=0$  の場合)

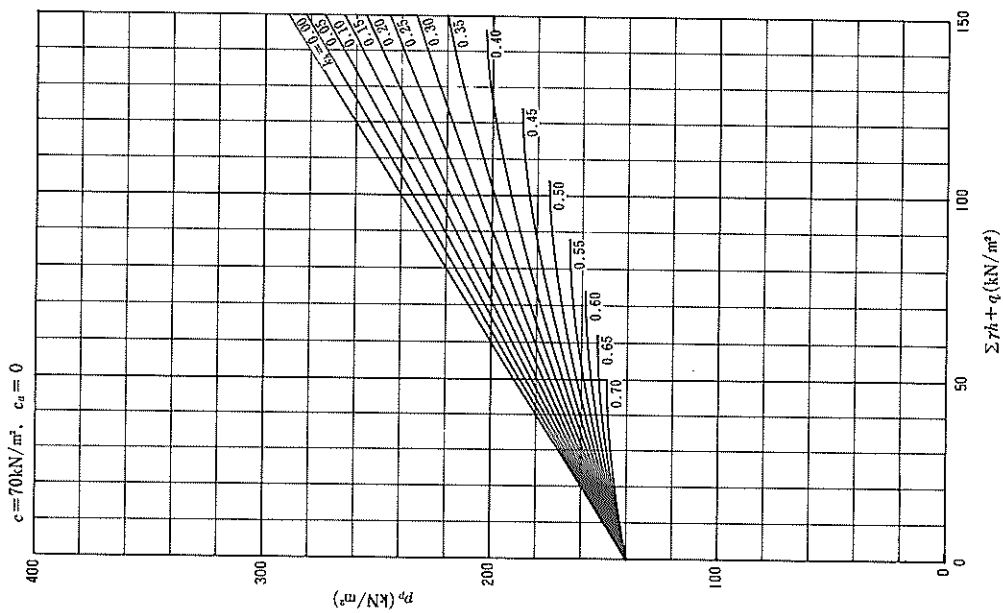


図-6. 1(7) 粘性土の受働土圧強度 ( $c_a=0$  の場合)

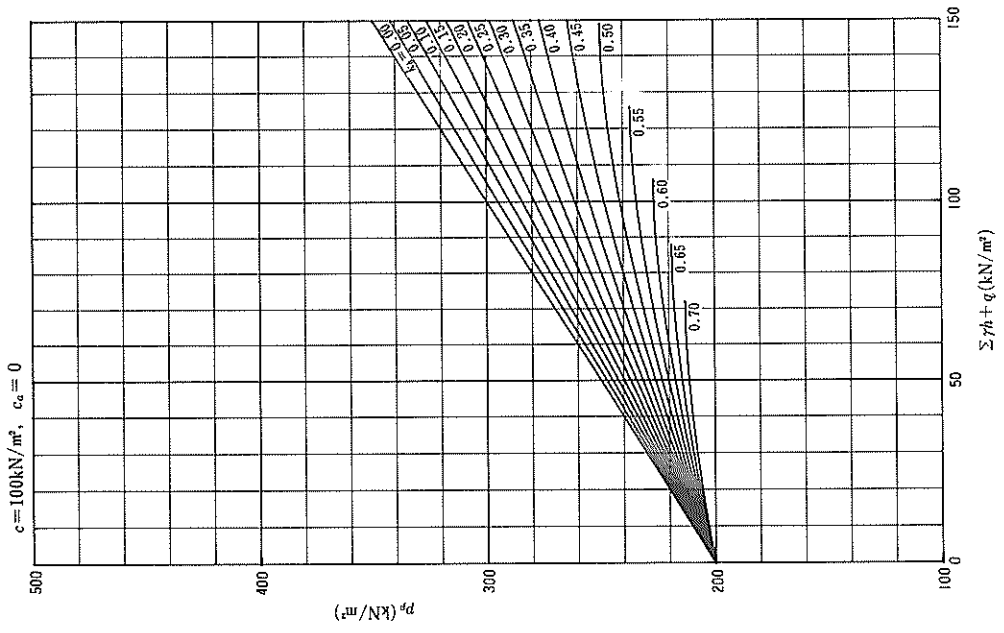


図-6. 1(8) 粘柱土の受働土圧強度 ( $c_a = 0$  の場合)

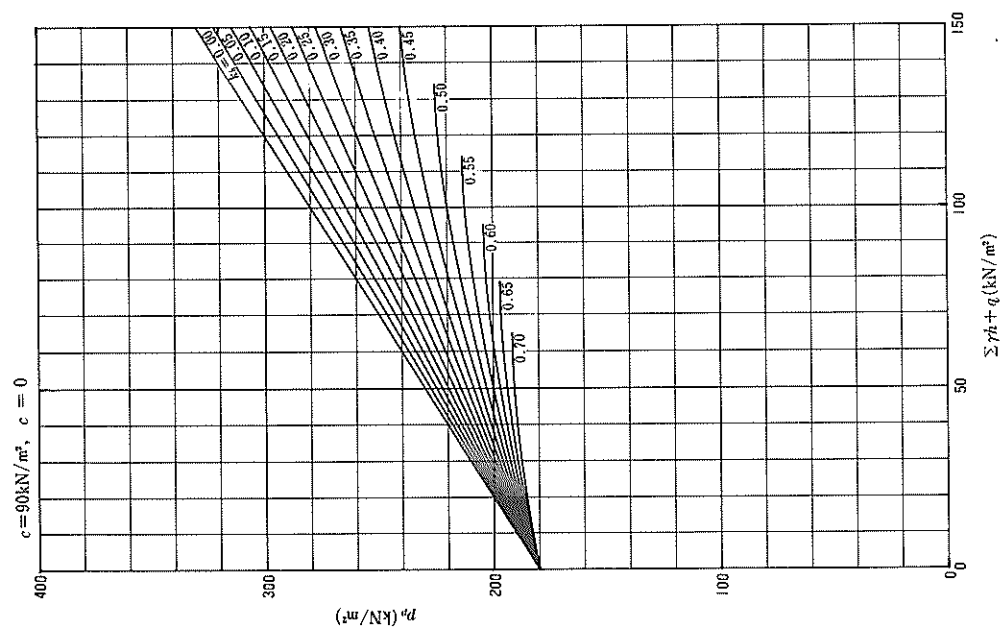


図-6. 1(9) 粘柱土の受働土圧強度 ( $c_a = 0$  の場合)

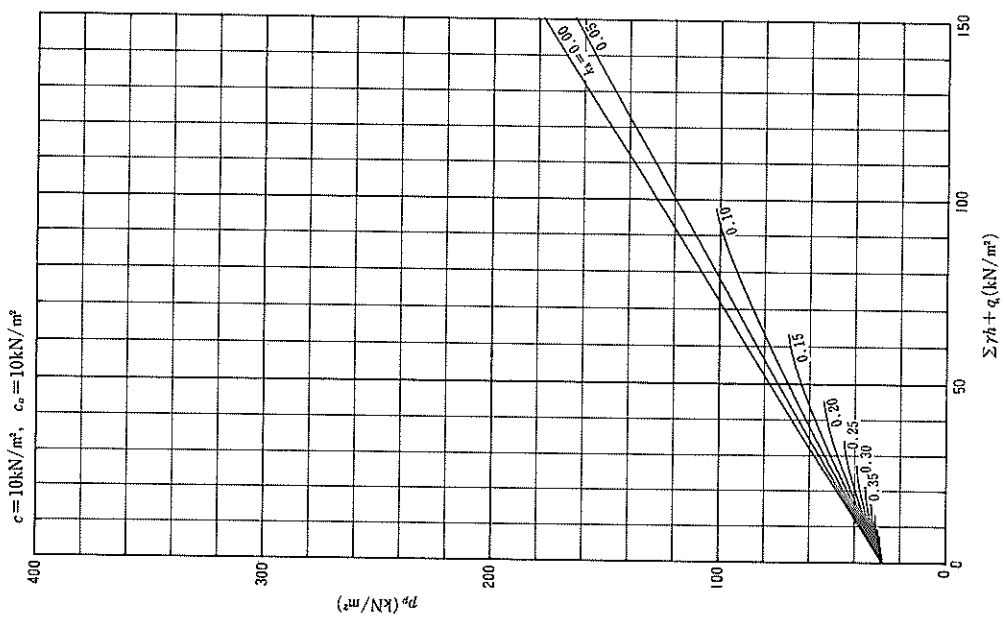


図-6.2(1) 粘性土の受働土圧強度 ( $c_a = c$  の場合)

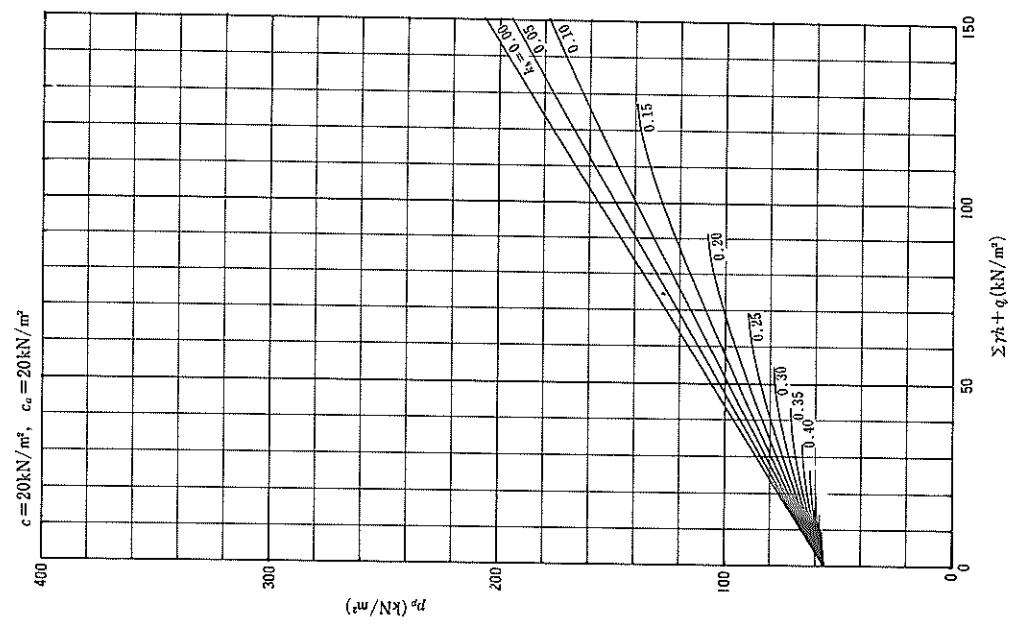
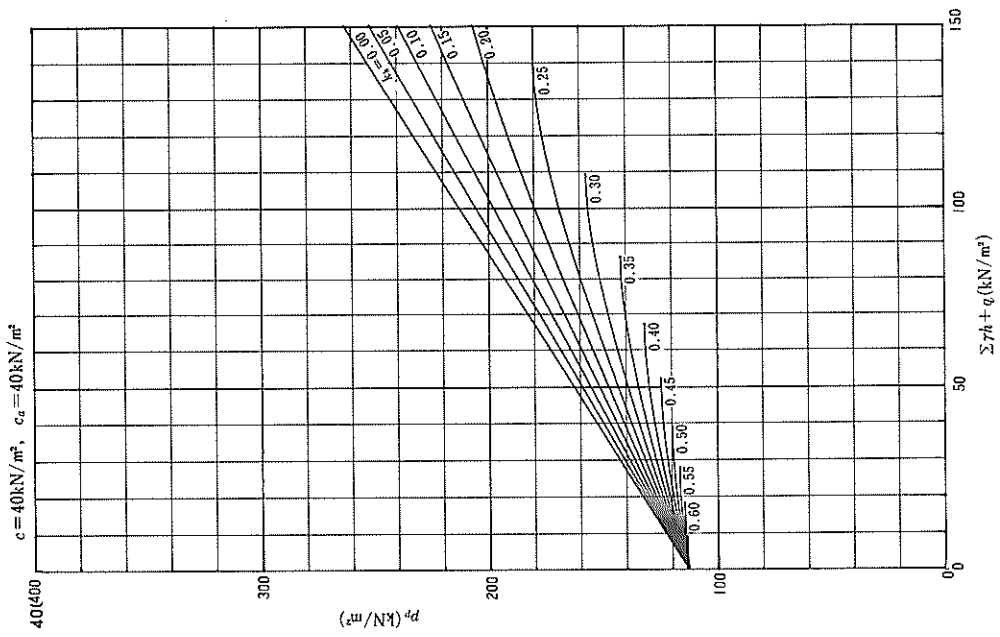
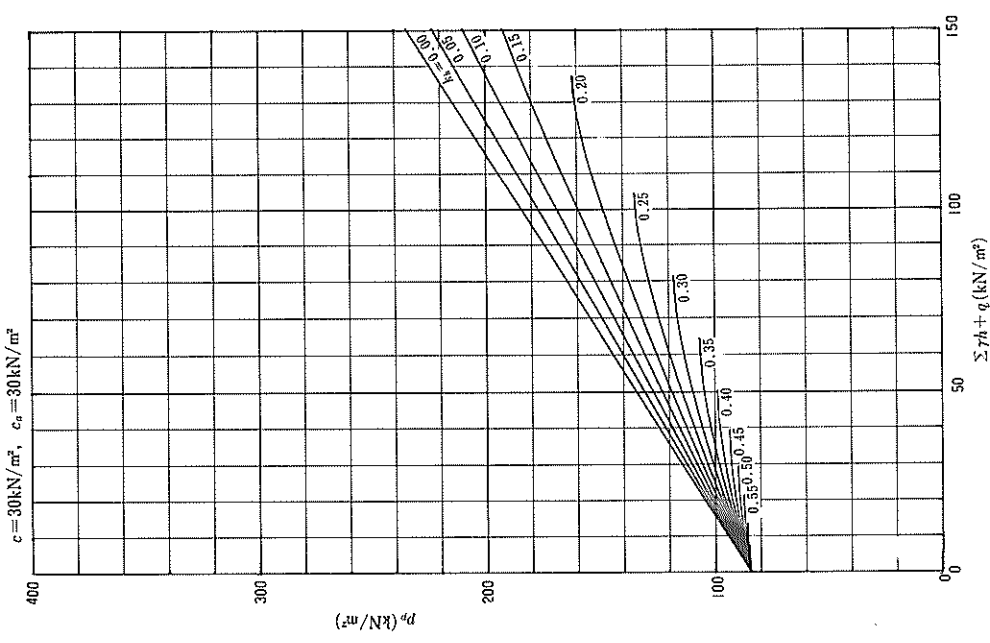


図-6.2(2) 粘性土の受働土圧強度 ( $c_a = c$  の場合)

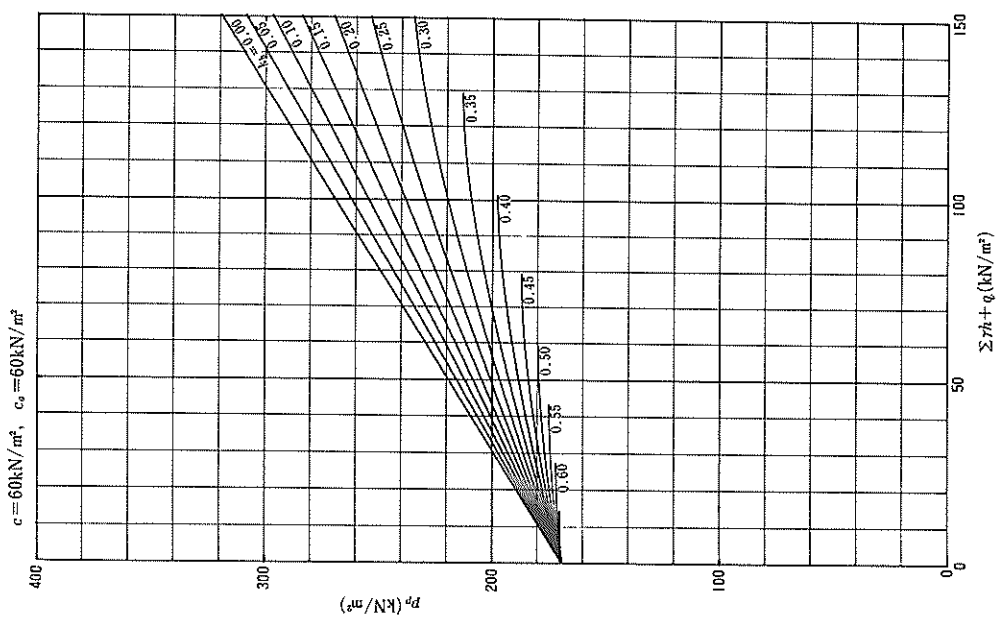




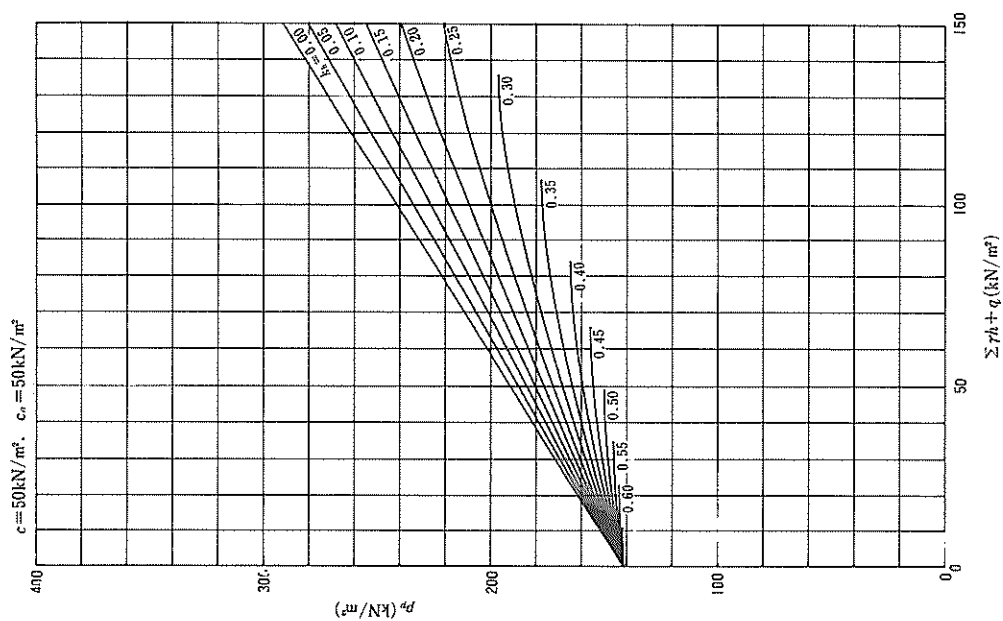
図一6. 2 (4) 粘柱土の受働土圧強度 ( $c_u = c$  の場合)



図一6. 2 (3) 粘柱土の受働土圧強度 ( $c_u = c$  の場合)



図一6.2(6) 粘性土の受働土圧強度 ( $c_a = c$  の場合)



図一6.2(5) 粘性土の受働土圧強度 ( $c_a = c$  の場合)

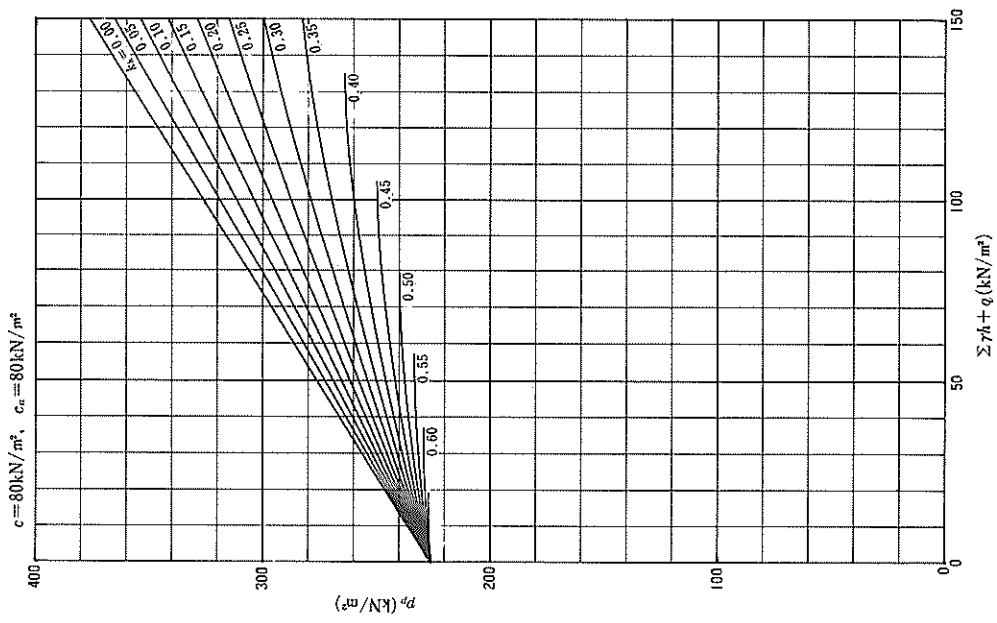


図-6.2(8) 粘性土の受働土圧強度 ( $c_u = c$  の場合)

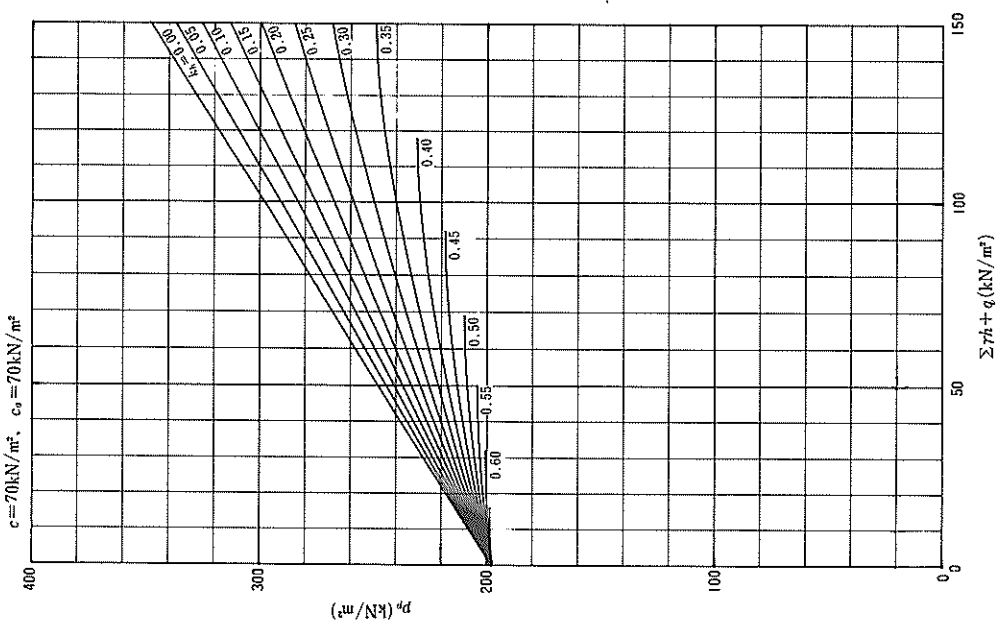
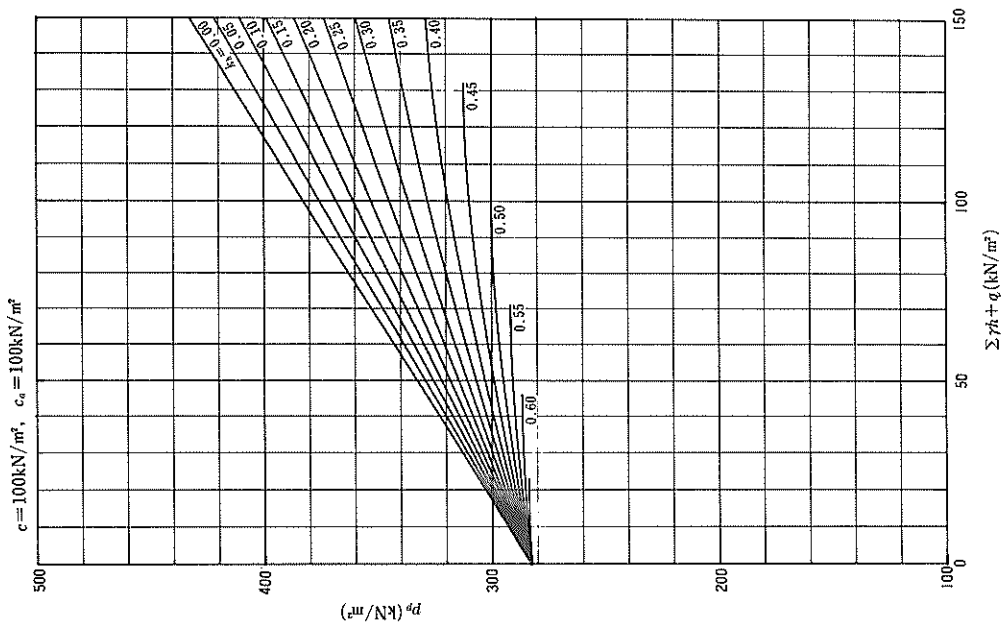
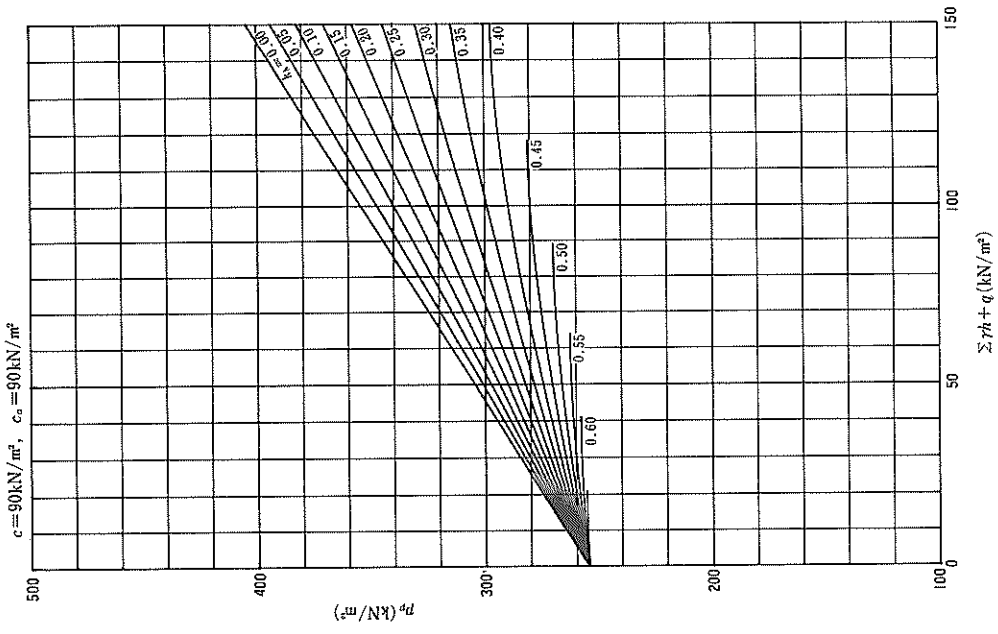


図-6.2(7) 粘性土の受働土圧強度 ( $c_u = c$  の場合)



図一六・二(10) 粘性土の受働土圧強度 ( $c_a = c$  の場合)



図一六・二(9) 粘性土の受働土圧強度 ( $c_a = c$  の場合)

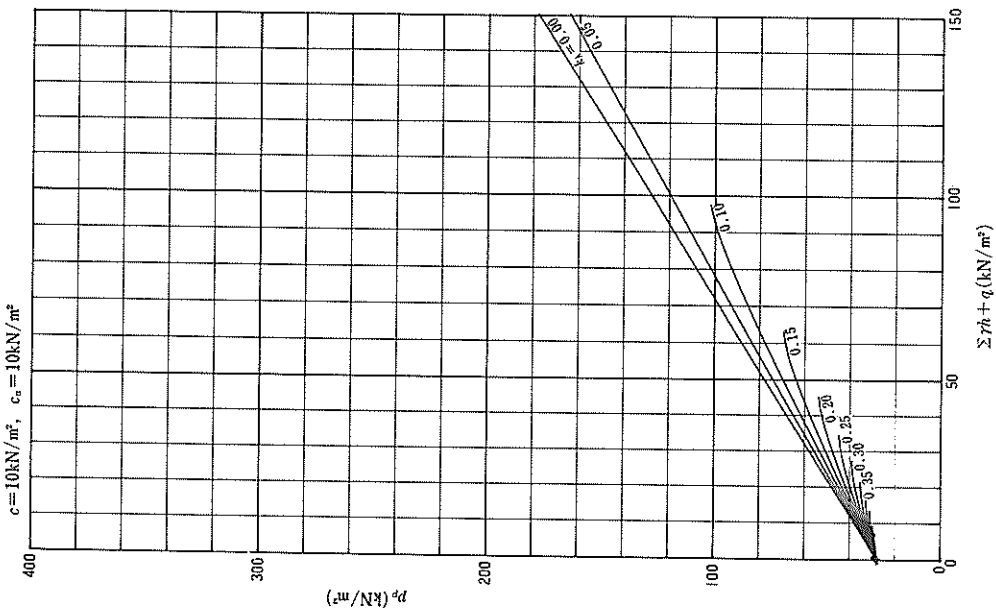


図-6.3(1) 粘性土の受働土圧強度 ( $c_u = \lambda c$  の場合)

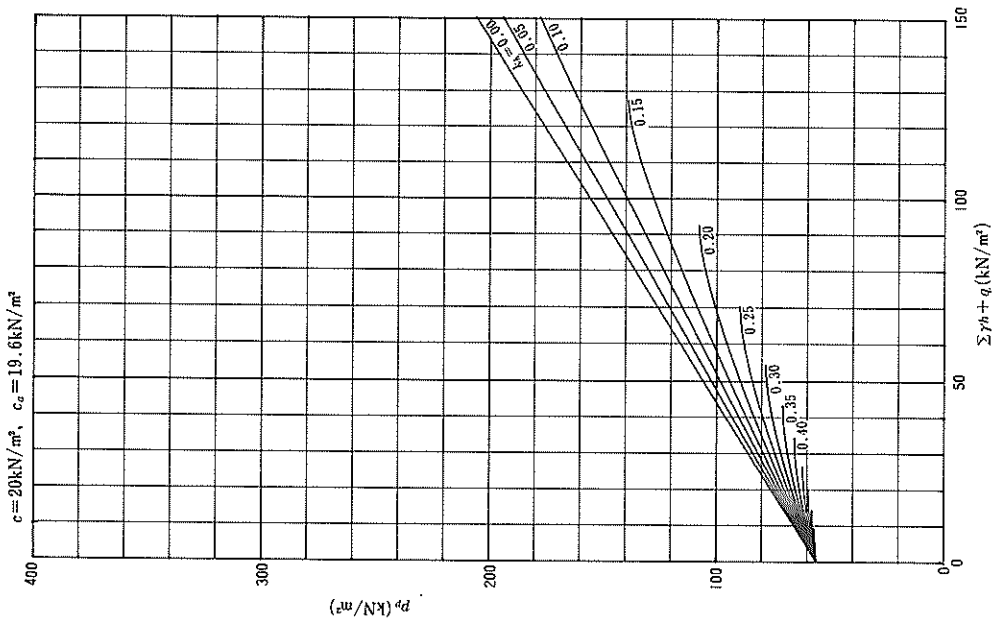


図-6.3(2) 粘性土の受働土圧強度 ( $c_u = \lambda c$  の場合)

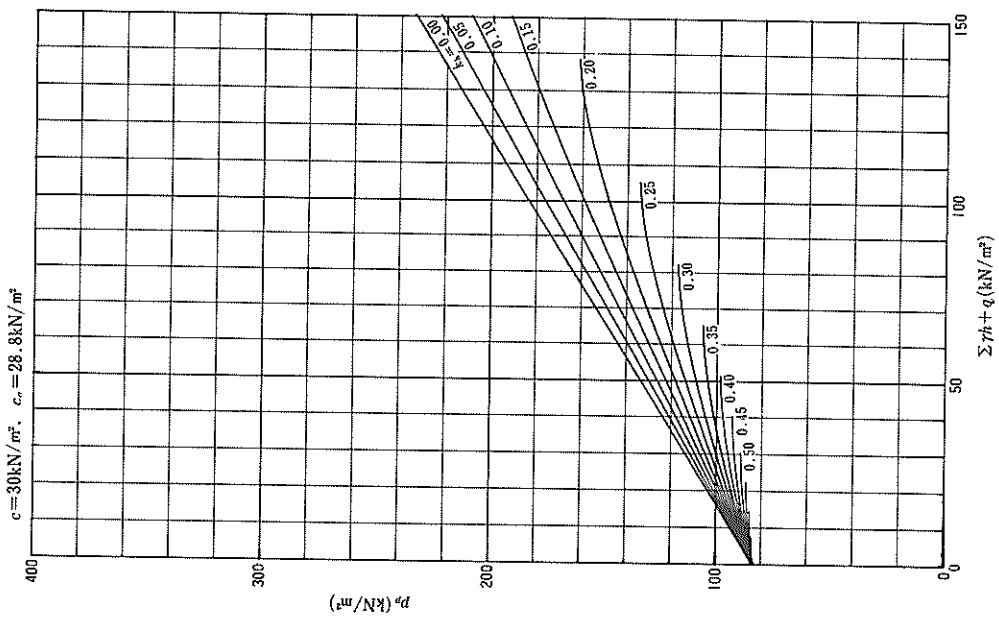


図-6.3(3) 粘土土の受働土圧強度 ( $c_u = \lambda_c$  の場合)

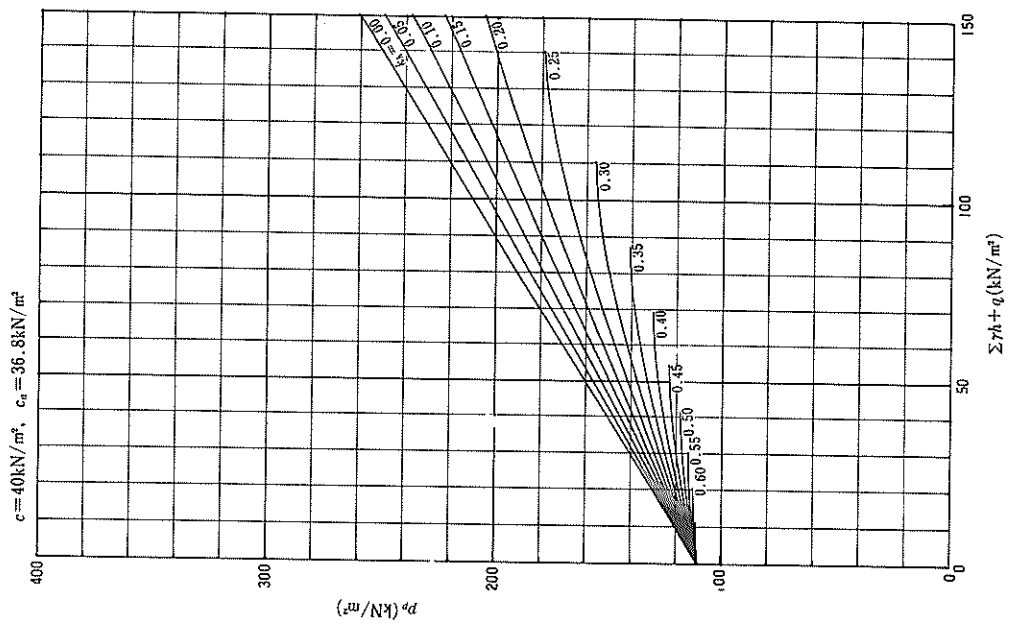
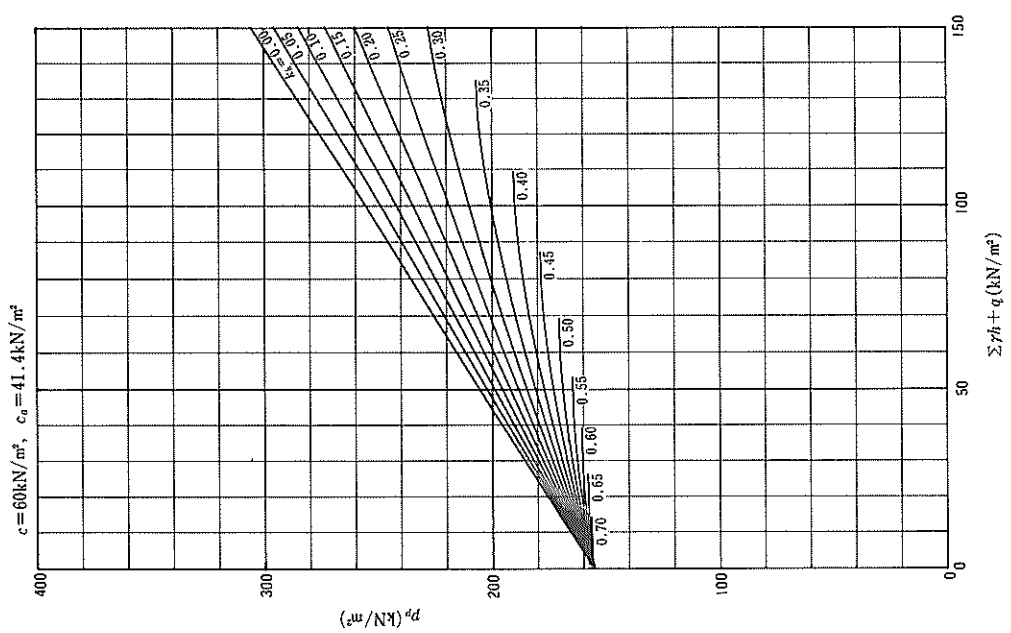
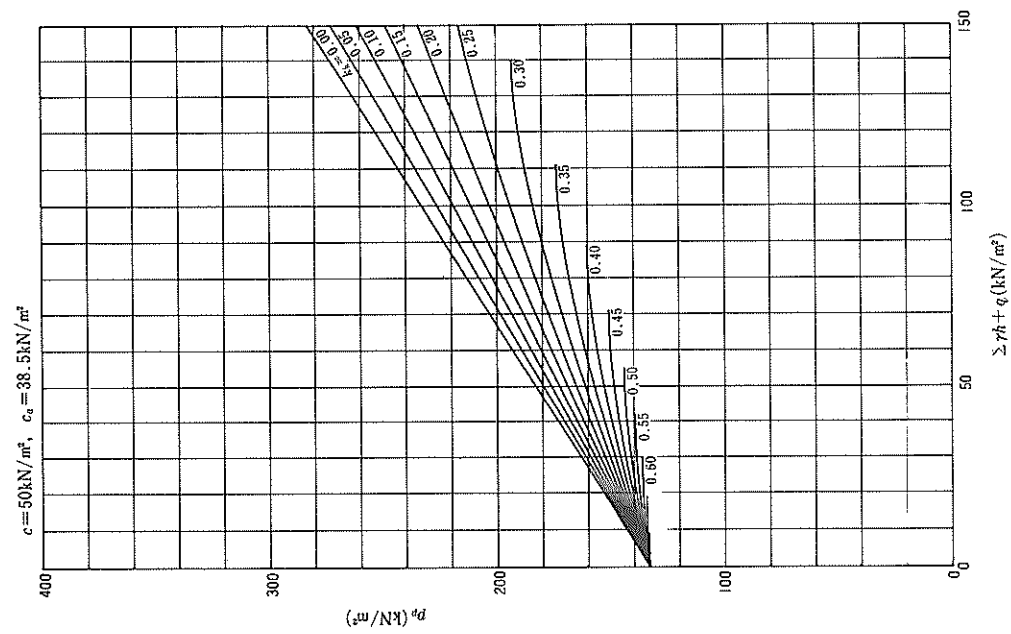


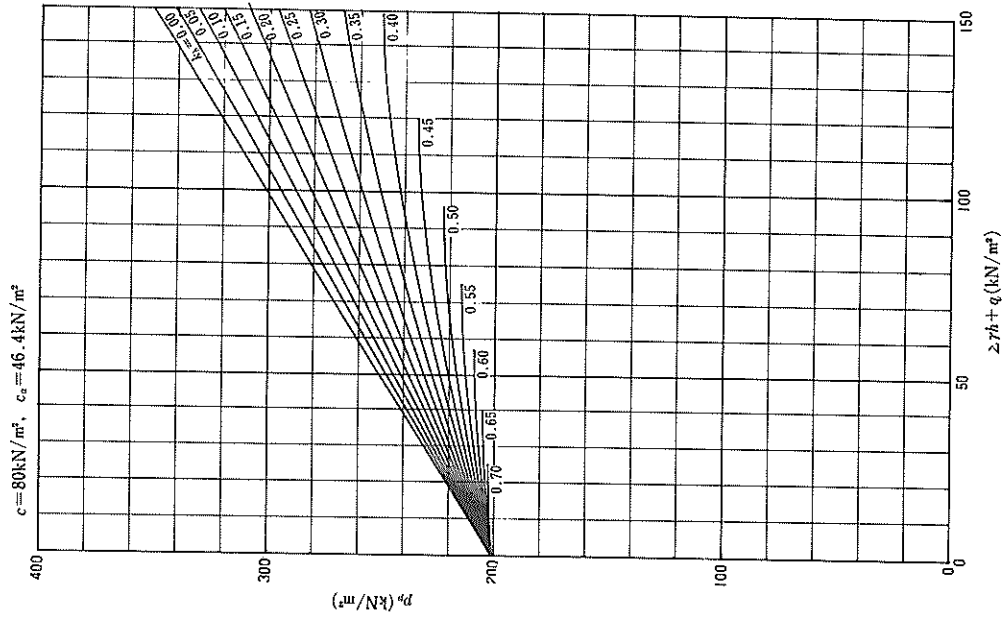
図-6.3(4) 粘土土の受働土圧強度 ( $c_u = \lambda_c$  の場合)



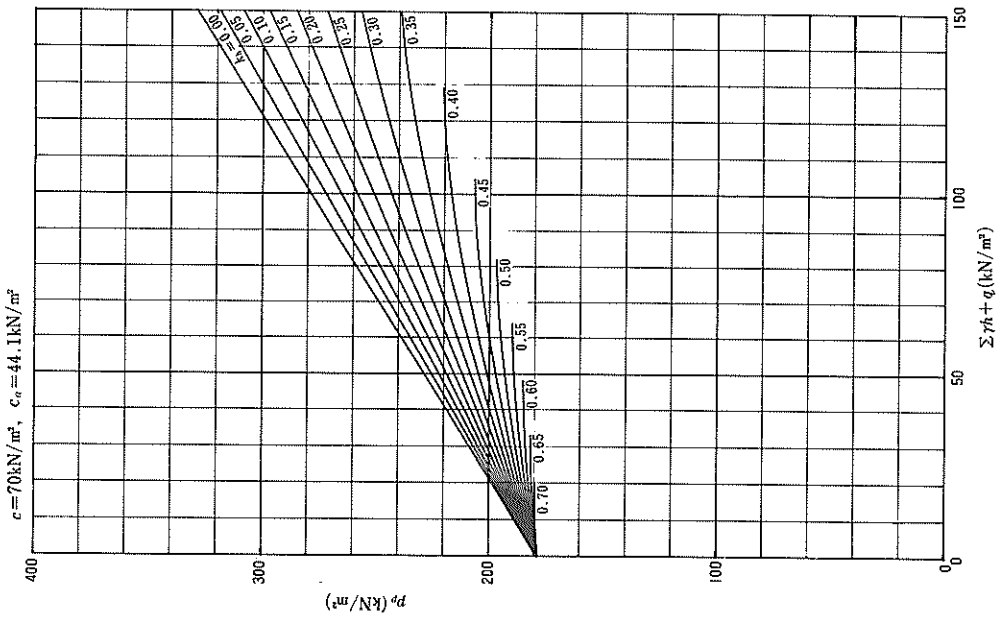
図一六・三(6) 粘性土の受働土圧強度 ( $c_a = \lambda c$  の場合)



図一六・三(5) 粘性土の受働土圧強度 ( $c_a = \lambda c$  の場合)

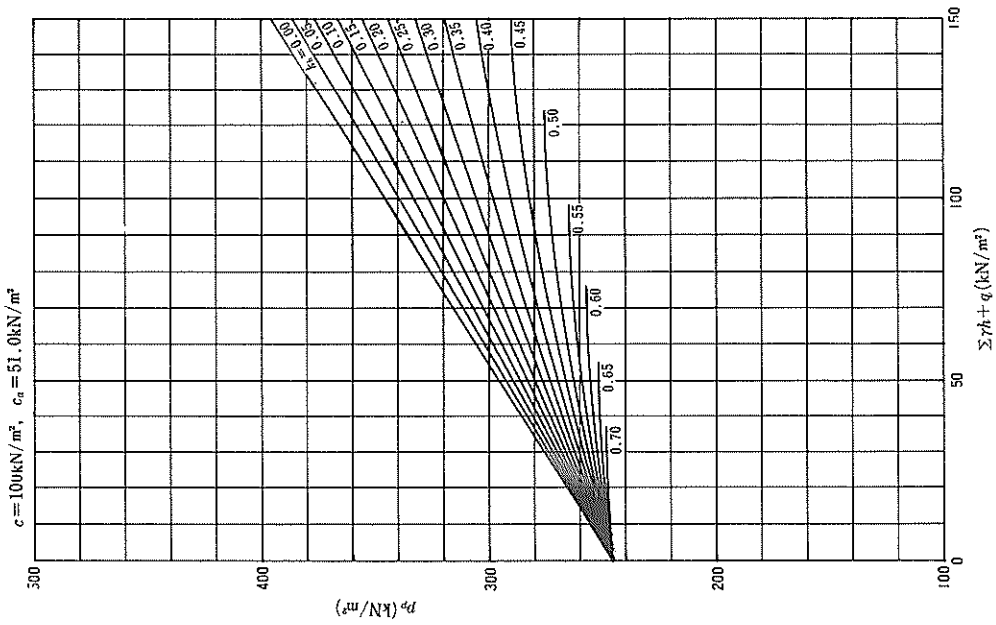


図一六・三(8) 粘性土の受働土圧強度 ( $c_s = \lambda c$  の場合)

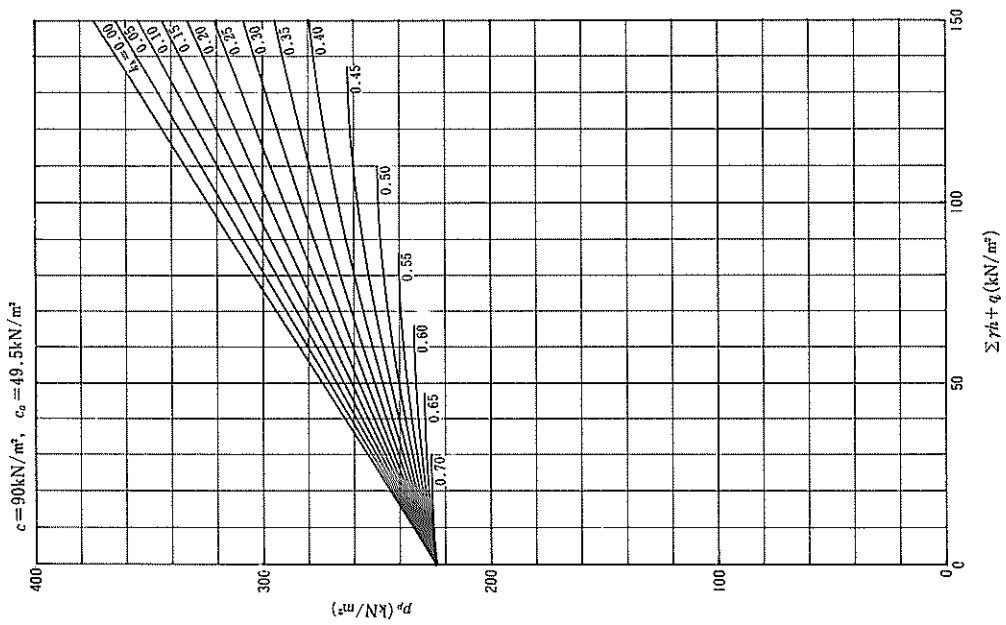


図一六・三(7) 粘性土の受働土圧強度 ( $c_s = \lambda c$  の場合)





図一六. 三(10) 粘性土の受働土圧強度 ( $c_u = 1.0c$ の場合)



図一六. 三(9) 粘性土の受働土圧強度 ( $c_u = 1.0c$ の場合)

#### 4. あとがき

ここに示した土圧計算図表は、控え矢板等の抵抗土圧を算定する場合だけでなく、砂質土および粘性土の広範囲の土圧計算に利用できるように配慮した。とくに、従来、土圧計算図表が完備されていなかった分野、すなわち、砂質土地盤においては地表面が傾斜している場合、粘性土地盤においては壁面付着力を考慮する場合の土圧計算に大いに役立つものと思われる。

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#### 記号一覧表

$c$  : 土の粘着力  
 $c_a$  : 壁面付着力  
 $h_i$  :  $i$  層の厚さ  
 $K$  : 土圧係数  
 $K_a$  : 主働土圧係数  
 $K_p$  : 受働土圧係数  
 $k_h$  : 水平震度  
 $p$  : 土圧強度  
 $p_a$  : 主働土圧強度  
 $p_p$  : 受働土圧強度  
 $p_h$  : 土圧強度の水平成分  
 $p_v$  : 土圧強度の鉛直成分  
 $q$  : 地表面単位面積当りの載荷重  
 $y$  : 地表面からの深さ  
 $\alpha$  : 崩壊角（崩壊面が水平となす角度）  
 $\alpha_a$  : 主働崩壊角  
 $\alpha_p$  : 受働崩壊角

$\beta$  : 壁面が水平となす角度  
 $\gamma$  : 土の単位体積重量  
 $\gamma_i$  :  $i$  層の土の単位体積重量  
 $\delta$  : 壁面摩擦角  
 $\varepsilon$  : 地震合成角,  $\varepsilon = \tan^{-1} k_h$   
 $\lambda$  : 付着比（壁面付着力と粘着力の比）  
 $\phi$  : 土の内部摩擦角  
 $\omega$  : 地表面傾斜角（地表面が水平となす角度）  
 $(\sum \gamma h + q)$  : 鉛直荷重

港湾技研資料 No.357

1980.9

編集兼発行人 運輸省港湾技術研究所

発行所 運輸省港湾技術研究所  
横須賀市長瀬3丁目1番1号

印刷所 日青工業株式会社

Published by the Port and Harbour Research Institute  
Nagase, Yokosuka, Japan.