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$$q_u = 0.5\gamma B N_\gamma s_\gamma g_\gamma i_\gamma + C N_c s_c g_c i_c \quad (1)$$

$$N_c = \frac{q_u}{s_c g_c i_c} \left(\frac{B}{i_g} \right)^\gamma$$

∴ []

$$(f(\sigma_{ij}) = 0)$$

$$\dot{\epsilon}_{ij}^p = \lambda \frac{\partial f(\sigma_{ij})}{\partial \sigma_{ij}}$$

σ_{ij}

$$\dot{\epsilon}_{ij}^p = \lambda$$

$$F = \frac{\tan \phi}{\tan \phi_d} = \frac{C}{C_d} \quad (2)$$

ϕ C

$$\phi_d = C_d$$

()

() [] (Giger & Krizek)
[] (Michalowski)

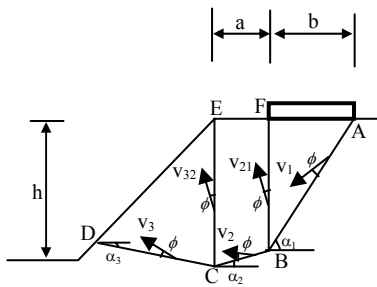
ϕ

$$\psi = \phi$$

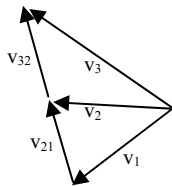
[]

TRASS

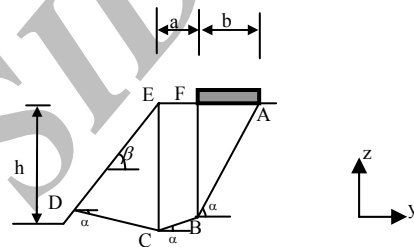
TRASS



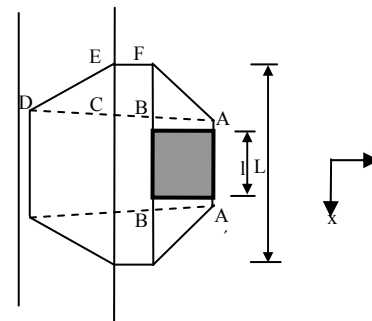
(الف)



(ب)



(الف)



(ب)

ϕ

$$\begin{pmatrix} V_3 \\ V_2 \\ V_1 \end{pmatrix} \begin{pmatrix} V_{32} \\ V_{21} \end{pmatrix}$$

(P)

$$(E) \quad (W_k)$$

$$E = P.V_o + k.P.(V_1)_h + \sum_{k=1}^3 W_k.(V_k)_v + \sum_{k=1}^3 k.W_k.(V_k)_h$$

$$(V_i)_h \quad (V_i)_v \quad k$$

i

(i)

: ()

$$I = C \cos \phi \left(\sum_{k=1}^3 V_k S_k + \sum_{k=2}^3 V_{k,k-1} S_{k,k-1} \right) \quad ()$$

)

(

$$V_{k,k-1} \quad k \quad V_k$$

$$S_k \quad k-1 \quad k$$

$$k$$

$S_{k,k-1}$

$k-1 \quad k$

P

(a)

$$P.V_0 + k.P.(V_1)_h + \sum_{k=1}^3 W_k.(V_k)_v + \sum_{k=1}^3 k.W_k.(V_k)_h$$

$$= C \cos \phi \left(\sum_{k=1}^3 V_k S_k + \sum_{k=2}^3 V_{k,k-1} S_{k,k-1} \right) \quad ()$$

q_u

P/b

$\phi_d \quad C_d$

C

$\phi_d \quad C_d$

F ϕ

محاسبه ظرفیت باربری
نهایی
 q_u

انتخاب

F_1

محاسبه بار مجاز

$$q_a = \frac{q_u}{F_1}$$

بررسی پایداری شیروانی با در
نظر گرفتن بار مجاز شالوده و

محاسبه F_2

F_{3D}

()

()

()

()

() F_2 F_2 (q_u)

$F_2(2D)$

(F_1)

F_2 F_1 (q_a)

$F_2(3D)$ ()

(F_2)

F_2

F_2 (q_a)

F_2 F_2

F_2 F_1 F_2 (F_1)

F_2 (F_2) $F_2(2D)$

F_2 F_2 (F_1) F_1

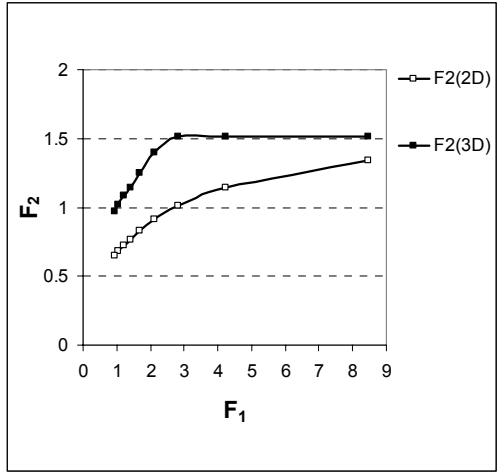
(F_1) F_2 F_2

$F_2(3D)$ ()

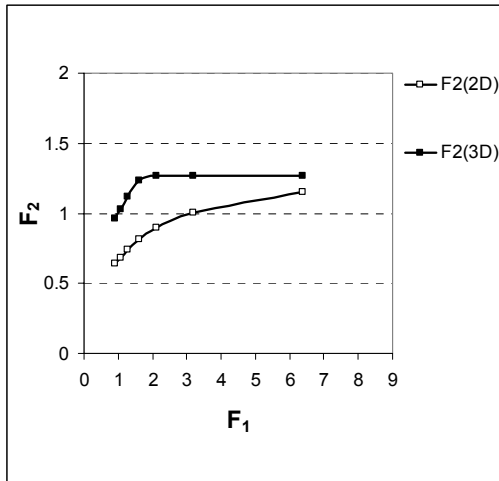
(F_1) (F_2)

(F_1) (F_2)

(F_1) (F_2)



F_2)
 (F_1)
 $F_2(3D)$
 (F_1)
)
)
)
) F_1) / F_1
 / / (F_1) 420÷2/4



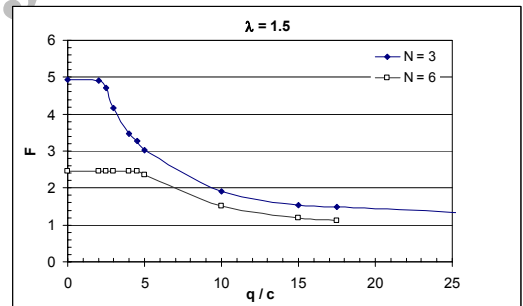
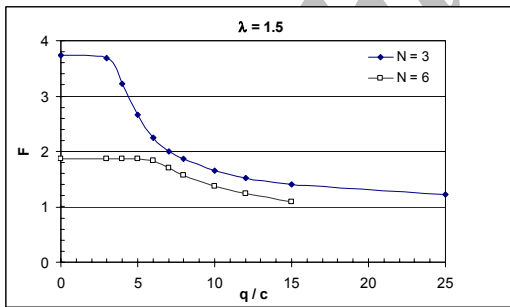
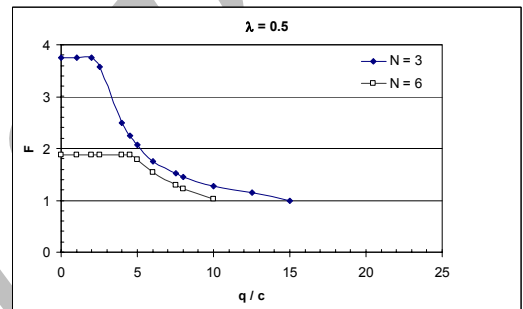
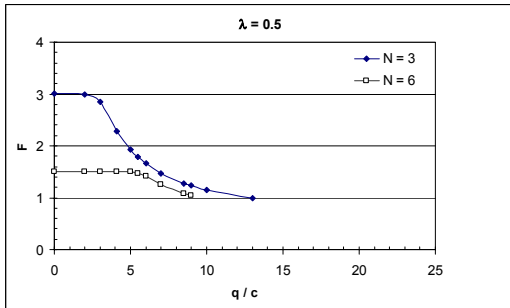
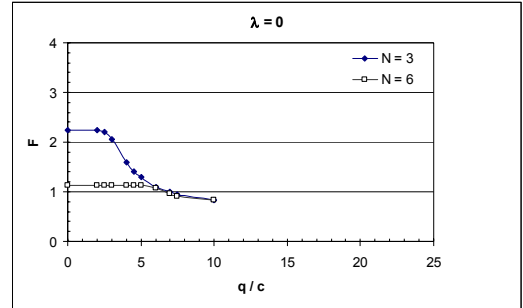
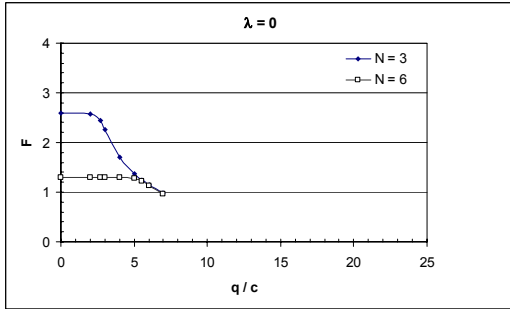
(F_1) /
 (F_2)
 ()
 () ()) / F_1
 (F_1) ÷ 1/8
 / F_1 /
 F_1)
 $F_2(3D)$
)
 $N = \gamma h / c$ (F_2)
 ()
 ($F_2(2D)$)

N

$$\lambda = (\gamma h / c) \tan \phi$$

()

λ



q/c :

q/c :

N و λ

N و λ

h/b / a/b -

F_2 F -

()

q -

() ()

:

N (

(L)

N

λ

(q_u)

q_a

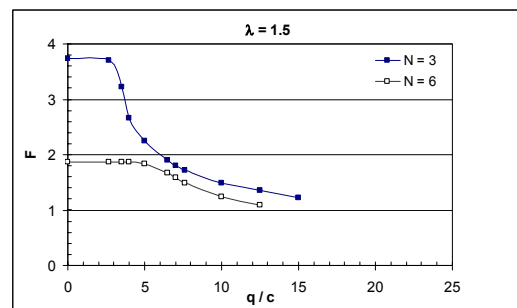
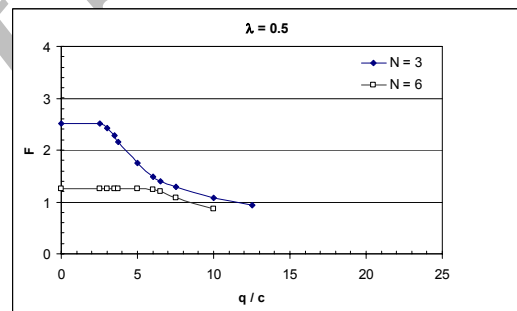
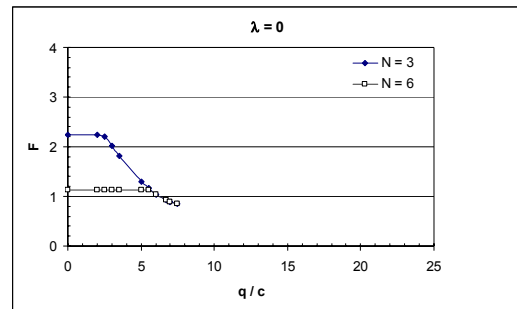
($q_a = \frac{q_u}{F_1}$)

(F_1)

(F_2)

(F_2)

(F_1)



q/c

N و λ

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