

รายการคำนวณ
ต่อเติมอาคารพาณิชย์พักอาศัย 4 ชั้น

เจ้าของอาคาร

วิศวกรนายพีรพงศ์ ศิริวัฒน์ สย. 6601....

DESIGN CRITERIA

สำหรับเหล็กกลมผิวเกลี้ยง

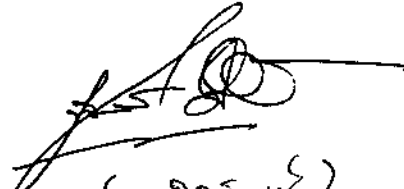
F_c'	=	173 ksc.
F_s	=	1200 ksc.
F_c	=	64.875 ksc.
N	=	10
K	=	0.350
J	=	0.883
R	=	10.051 ksc.

สำหรับเหล็กกลมผิวข้อ้อย

F_c'	=	173 ksc.
F_s'	=	1500 ksc.
F_c	=	64.875 ksc.
U	=	10
K	=	0.301
J	=	0.899
R	=	8.807

DESIGN LOADING

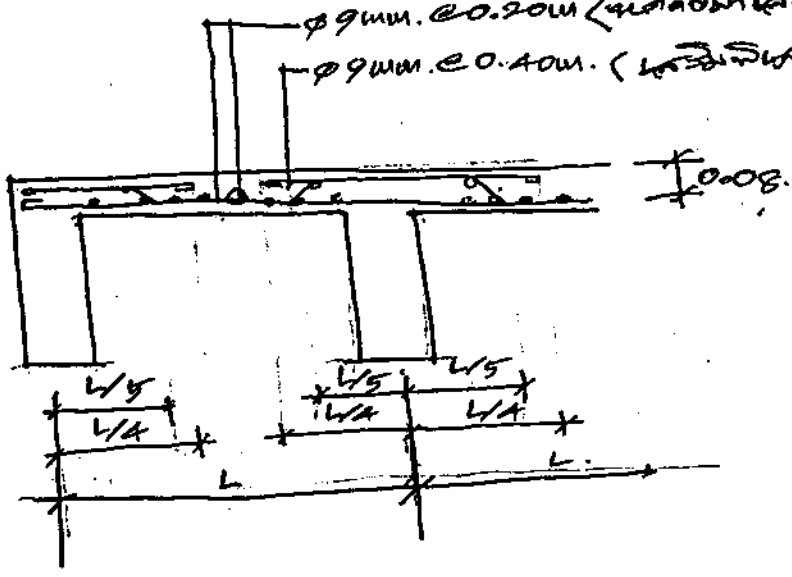
LL. สำหรับส่วนพานิชย์ บันได	=	300 kg/m ²
LL. สำหรับส่วนพักอาศัย	=	200 kg/m ²
LL. สำหรับลาดฟ้า	=	150 kg/m ²
LL. สำหรับกันสาด กลังคาคลุม บันได	=	100 kg/m ²
WEIGHT OF HALF BRICK WALL	=	180 kg/m ²
WEIGHT OF CONCRETE	=	24000 kg/m ³


(นายพีรพงศ์ ศิริวัฒน์)

สย. 6601

51.

$t = 0.08 \text{ m}$.

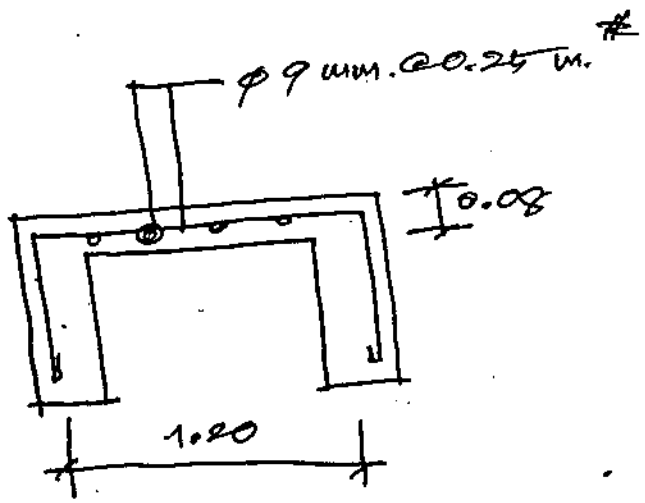


DL = 192 kg/m²
 LL = 200 kg/m²
W = 392 kg/m²
 M = 91 kg-m
 AS = 1.55 cm²

Use $\phi 9 \text{ mm} \cdot @ 0.20 \text{ m}$.

52.

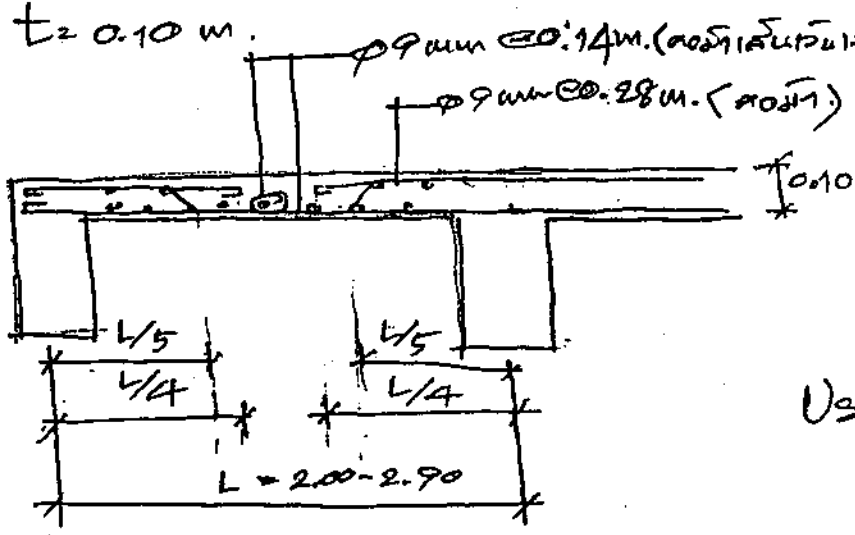
$t = 0.08 \text{ m}$.



DL = 192 kg/m²
 LL = 200 kg/m²
W = 392 kg/m²
 M = 71 kg-m
 AS = 1.21 cm²
 Use $\phi 9 \text{ mm} \cdot @ 0.25 \text{ m}$.
 AS^t = 2.00 cm²
 Use $\phi 9 \text{ mm} \cdot @ 0.25 \text{ m}$.

53.

$t = 0.10 \text{ m}$.



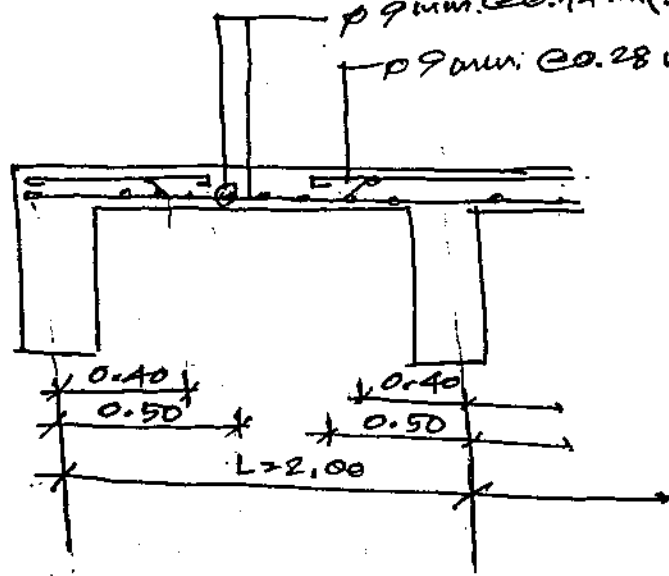
DL = 240 kg/m²
 LL = 200 kg/m²
W = 440 kg/m²
 M = 266 kg-m
 AS = 3.32 cm²

Use $\phi 9 \text{ mm} \cdot @ 0.14 \text{ m}$.

[Signature]
 (100 NSND 233000)

34

t = 0.10 m.



$\phi 9 \text{ mm. @ } 0.14 \text{ m. (တပ်ဆင်ပုံအတိုင်း)}$ DL = 240 kg/m.

$\phi 9 \text{ mm. @ } 0.28 \text{ m. (တပ်ဆင်ပုံအတိုင်း)}$ LL = 750 kg/m.

W = 990 kg/m.

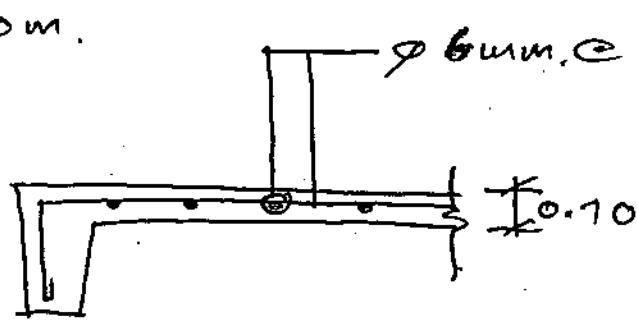
M = 328 kg-m.

A_{sc} = 410 cm²

Use $\phi 9 \text{ mm. @ } 0.14 \text{ m.}$

35

t = 0.10 m.



$\phi 6 \text{ mm. @ } 0.15 \text{ m.}$

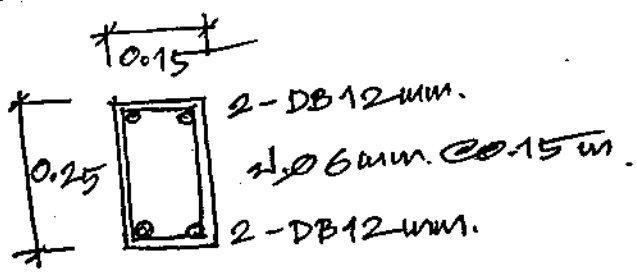
0.70

(ကျစ်လ်ရွှေသာ အိမ်ခြံမြေ)

နံ. 6601

681

Section. 0.15×0.25 m



$w = 468$ kg/m.

$M = 103$ kg-m

$V = 304$ kg.

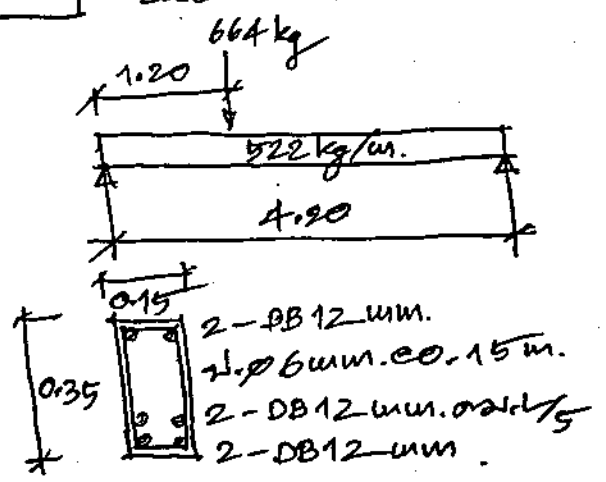
$A_s = 0.35$ cm².

Use 2-DB12mm.

Use 1- ϕ 6mm. @ 0.15m.

682

Section. 0.15×0.35 m.



$w = 522$ kg/m

$M = 1855$ kg-m

$V = 1835$ kg

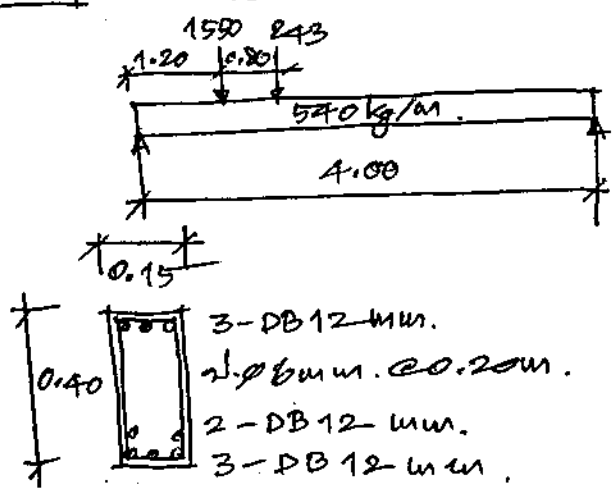
$A_s = 4.30$ cm².

Use 2-DB12mm + 2-DB12mm @ 0.15m

Use 2- ϕ 6mm. @ 0.15m.

683

Section. 0.15×0.40 m.



$w = 540$ kg/m

$M = 2627$ kg-m

$V = 2575$ kg

$A_s = 5.26$ cm².

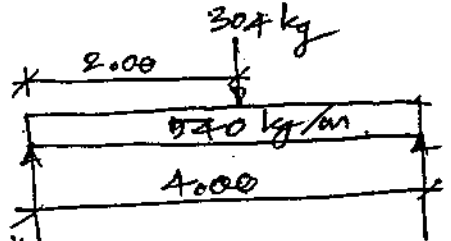
Use 3-DB12mm + 2-DB12mm @ 0.20m

Use 2- ϕ 6mm. @ 0.20m.

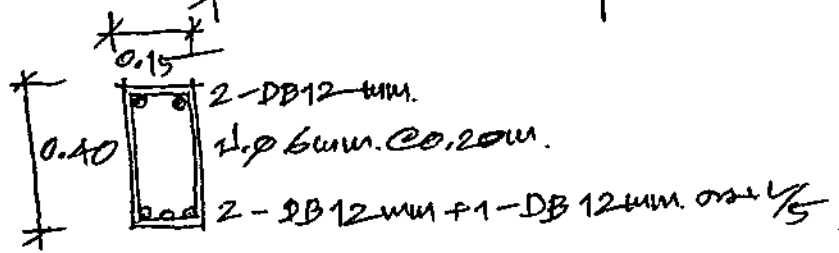
[Signature]
(W/... 235022)

EPA

Section. $0.15 \times 0.40m$.



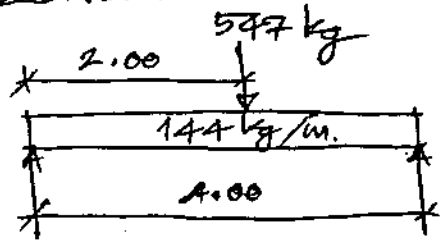
$w = 540 \text{ kg/m}$
 $M = 1672 \text{ kg-m}$
 $V = 1520 \text{ kg}$
 $A_s = 3.35 \text{ cm}^2$



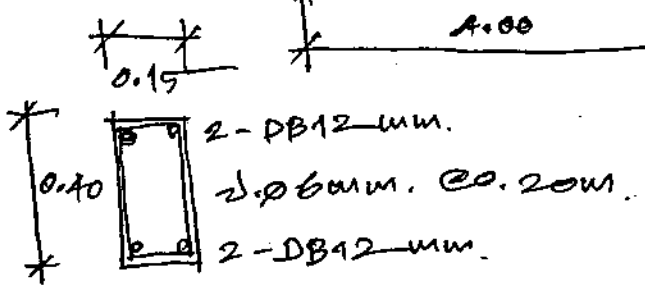
Use 2-DB12mm + 1-DB12mm at bottom
 Use 1- ϕ 6mm @ 0.20m

EPA

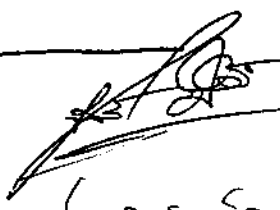
Section. $0.15 \times 0.40m$.

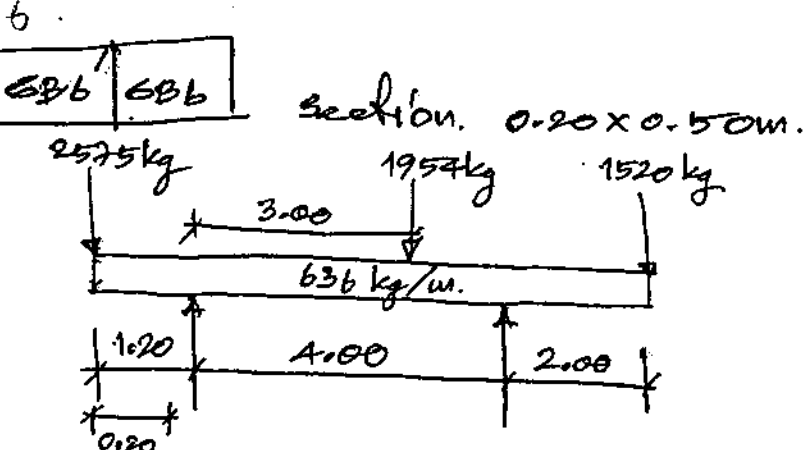


$w = 144 \text{ kg/m}$
 $M = 1123 \text{ kg-m}$
 $V = 850 \text{ kg}$
 $A_s = 2.25 \text{ cm}^2$



Use 2-DB12mm
 Use 1- ϕ 6mm @ 0.20m


 (COUNCIL REGISTERED ARCHITECT)
 No. 1601



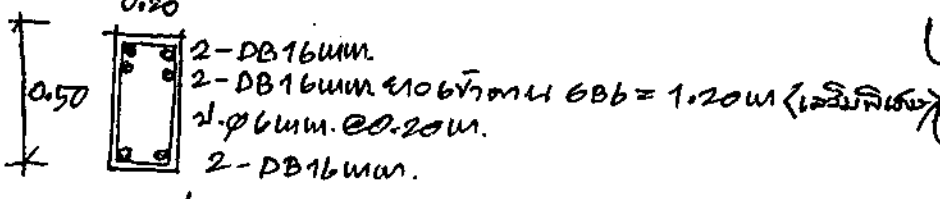
$w = 636 \text{ kg/m}$

GBB' $M = 4792 \text{ kg-m}$

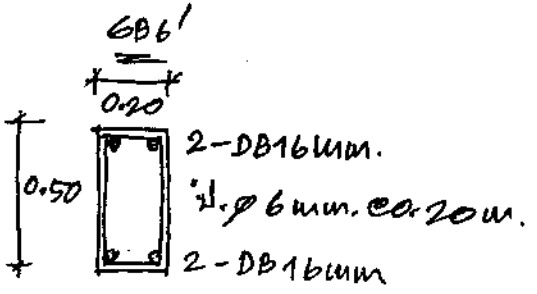
$V = 3522 \text{ kg}$

$A_s = 7.56 \text{ cm}^2$

Use 4-DB 16 mm.



Use 2- $\phi 6 \text{ mm}$ @ 0.20 m.



GBB $M = 1435 \text{ kg-m}$

$V = 1936 \text{ kg}$

$A_s = 2.27 \text{ cm}^2$

Use 2-DB 16 mm.

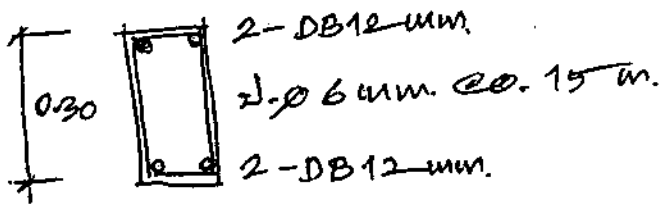
Use 2- $\phi 6 \text{ mm}$ @ 0.20 m

С. В. П. (С. В. П.)

№. 6601

1] Section. $0.15 \times 0.30 \text{ m}$.

$\times 0.15$



$$W = 843 \text{ kg/m}$$

$$M = 178 \text{ kg-m}$$

$$V = 548 \text{ kg}$$

$$A_s = 0.50 \text{ cm}^2$$

Use 2-DB12mm.

Use 2-φ6mm @ 0.15m.

32] section. $0.15 \times 0.40 \text{ m}$.

B2 = 6B2

$$W = 775 \text{ kg/m}$$

$$M = 2386 \text{ kg-m}$$

$$V = 2112 \text{ kg}$$

$$A_s = 4.78 \text{ cm}^2$$

Use 3-DB12mm + 2-DB12mm. $\text{or } \frac{5}{5}$

Use 2-φ6mm @ 0.20m.

B3] section. $0.15 \times 0.40 \text{ m}$.

B3 = 6B4

$$W = 674 \text{ kg/m}$$

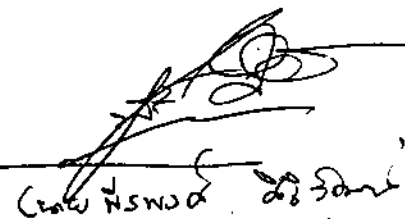
$$M = 1348 \text{ kg-m}$$

$$V = 1348 \text{ kg}$$

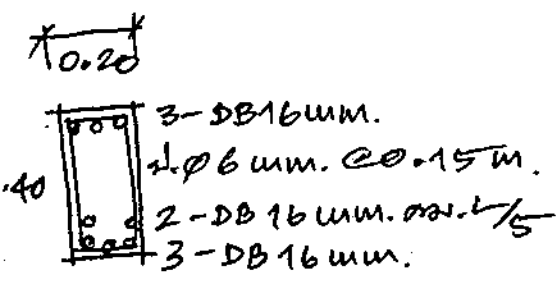
$$A_s = 2.70 \text{ cm}^2$$

Use 2-DB12mm + 1-DB12mm. $\text{or } \frac{4}{5}$

Use 2-φ6mm @ 0.20m.


C. H. S. N. S. D. 20/3/2017

B4 section. 0.20×0.40 m.



$w = 1332 \text{ kg/m.}$
 $M = 4410 \text{ kg-m}$
 $V = 4266 \text{ kg}$
 $A_s = 8.83 \text{ cm}^2$

Use 3-DB16mm + 2-DB16mm as $L/5$
 Use $\phi 6$ mm. @ 20 mm.

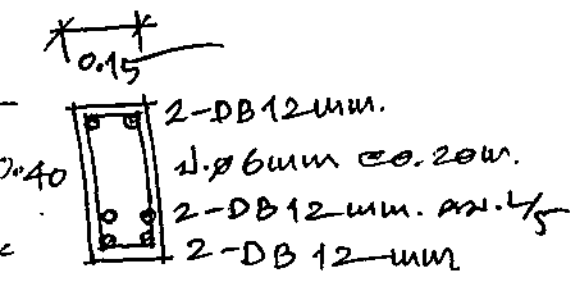
B5 section. 0.15×0.40 m

B4 = B5

$w = 379 \text{ kg/m.}$
 $M = 1123 \text{ kg-m}$
 $V = 1310 \text{ kg}$
 $A_s = 2.25 \text{ cm}^2$

Use 2-DB12 mm.
 Use $\phi 6$ mm. @ 20 mm.

B8 section. 0.15×0.40 m.



$w = 1004 \text{ kg/m.}$
 $M = 2008 \text{ kg-m}$
 $V = 2008 \text{ kg}$
 $A_s = 4.02 \text{ cm}^2$

Use 2-DB12mm + 2-DB12mm as $L/5$
 Use $\phi 6$ mm. @ 20 mm.

[Signature]
 (1000 ASHJON AS 3022)
 KE. 1801

B6A', B6, B6' section. 0.20x0.40m.

$w_1 = 588 \text{ kg/m}$

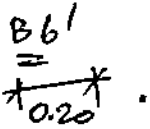
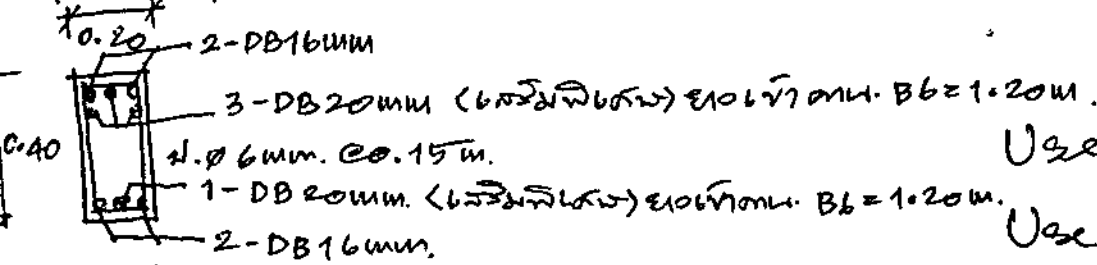
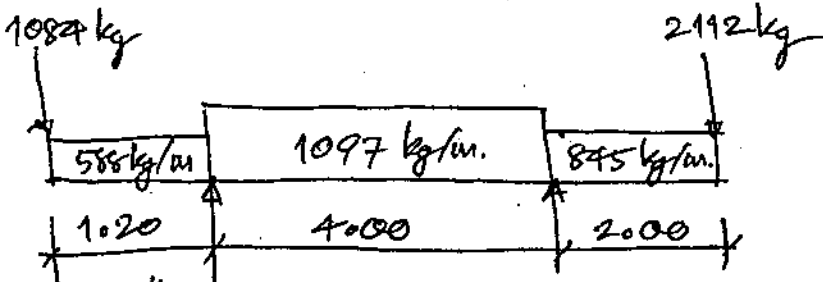
$w_2 = 1097 \text{ kg/m}$

$w_3 = 845 \text{ kg/m}$

B6A', B6 $M = 1862 \text{ kg-m}$

$V = 2020 \text{ kg}$

$A_s = 3.73 \text{ cm}^2$



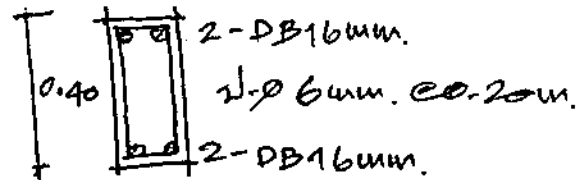
Use 2-DB16 mm.

Use 1.06mm $\phi 150 \text{ mm}$.

B6' $M = 6298. \text{ kg-m}$

$V = 4184 \text{ kg}$

$A_s = 12.62 \text{ cm}^2$



B6A', B6

Use 2-DB16mm + 3-DB20mm

Use 1.06mm $\phi 150 \text{ mm}$.

B7A', B7, B7' section. 0.20x0.40m.

$w_1 = 588 \text{ kg/m}$

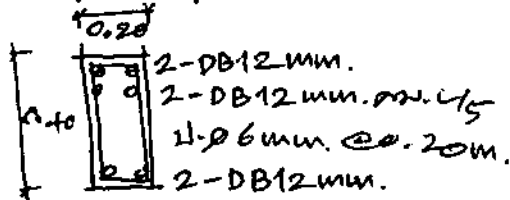
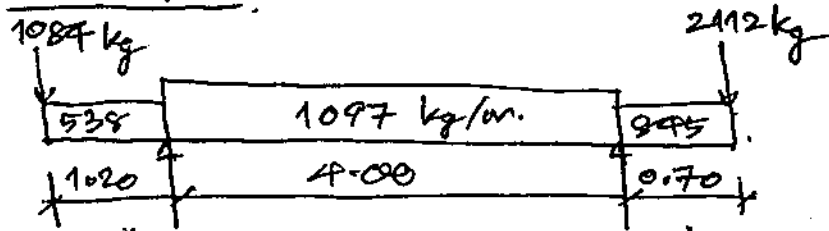
$w_2 = 1097 \text{ kg/m}$

$w_3 = 845 \text{ kg/m}$

$M = 1862. \text{ kg-m}$

$V = 2838 \text{ kg}$

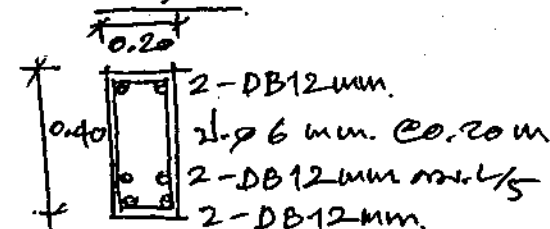
$A_s = 3.73 \text{ cm}^2$



B7A', B7'

Use 2-DB12mm + 2-DB12mm $\phi 106$

Use 1.06mm $\phi 200 \text{ mm}$.

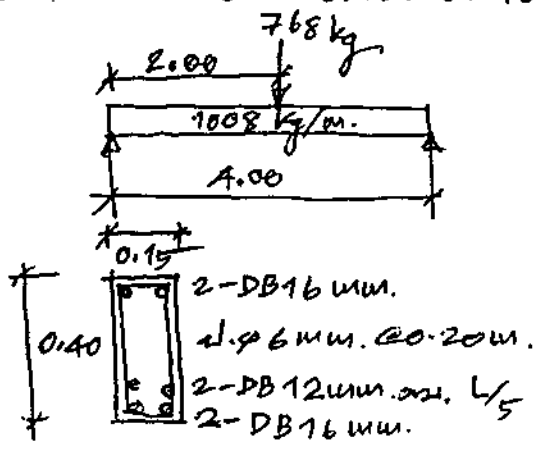


B7

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 No. 6601

A9

Section. 0.15 x 0.40 m.

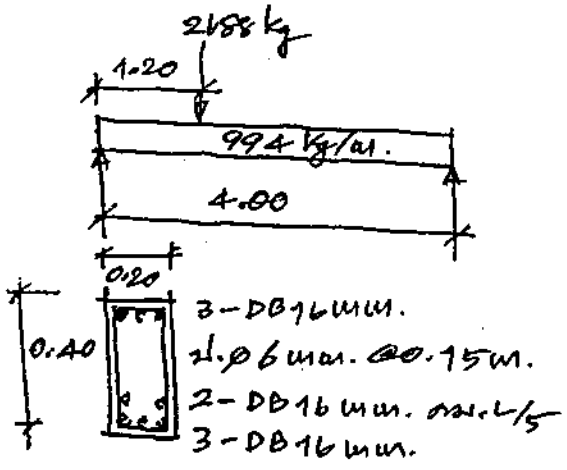


$w = 1008 \text{ kg/m.}$
 $M = 3072 \text{ kg-m}$
 $V = 2688 \text{ kg}$
 $A_s = 6.15 \text{ cm}^2.$

Use 2-DB16 mm. + 2-DB12 mm. @ L/5
 Use ∅ 6 mm. @ 200 mm.

B10

Section. 0.20 x 0.40 m.

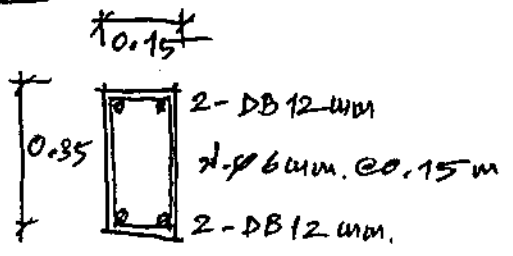


$w = 994 \text{ kg/m.}$
 $M = 4259 \text{ kg-m}$
 $V = 4254 \text{ kg}$
 $A_s = 8.53 \text{ cm}^2.$

Use 3-DB16 mm + 2-DB16 mm. @ L/5
 Use ∅ 6 mm. @ 150 mm

B11

Section. 0.15 x 0.35 m.



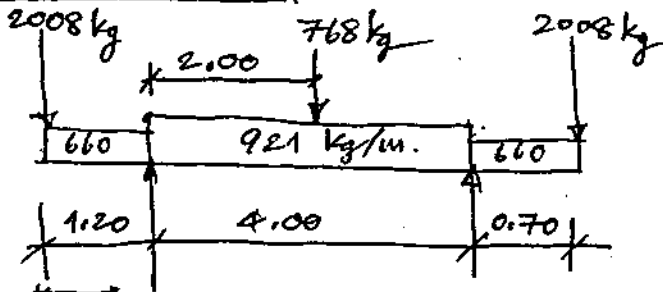
$w = 216 \text{ kg/m.}$
 $M = 928 \text{ kg-m}$
 $V = 1492 \text{ kg}$
 $A_s = 2.15 \text{ cm}^2.$

Use 2-DB 12 mm.
 Use ∅ 6 mm @ 150 mm.

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 (unclear) 28/5/2017

B12A', B12, B12'

Section. 0.20 x 0.40 m.



$w_1 = 660 \text{ kg/m}$

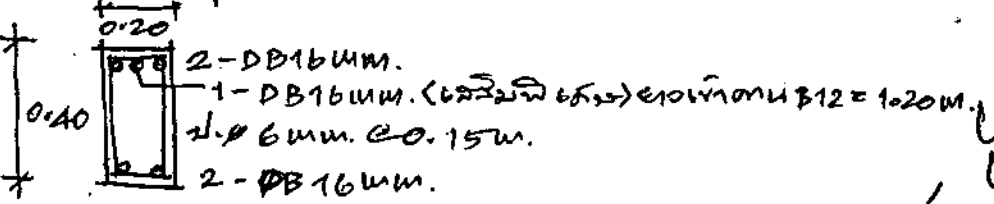
$w_2 = 921 \text{ kg/m}$

B12A'

$M = 3023 \text{ kg-m}$

$V = 3030 \text{ kg}$

$A_s = 6.05 \text{ cm}^2$



Use 3-DB16mm.

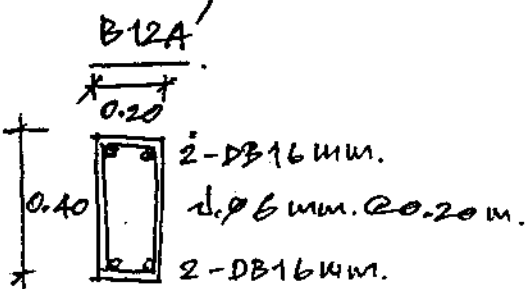
Use 1-DB16mm @ 0.15m.

B12', B12

$M = 1614 \text{ kg-m}$

$V = 2604 \text{ kg}$

$A_s = 3.24 \text{ cm}^2$



Use 2-DB16mm.

Use 1-DB16mm @ 0.20m.

B12', B12

B13 section. 0.15 x 0.40 m.

B13 = B9

$w = 1524 \text{ kg/m}$

$M = 3048 \text{ kg-m}$

$V = 3048 \text{ kg}$

$A_s = 6.11 \text{ cm}^2$

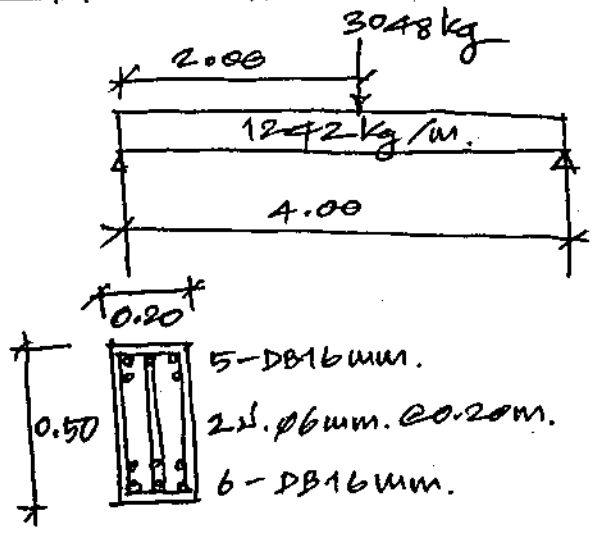
Use 2-DB16mm + 2-DB16mm @ 0.15

Use 1-DB16mm @ 0.20m.

(Date: 15/10/2015)

B14

Section. $0.20 \times 0.50 \text{ m}$.



$W = 1242 \text{ kg/m}$
 $M = 6012 \text{ kg-m}$
 $V = 4008 \text{ kg}$
 $A_s = 9.48 \text{ cm}^2$

Use 6-DB16 mm.

Use 2-#6 mm @ 0.20 m.

B15

Section. $0.15 \times 0.40 \text{ m}$.

B15 = 6B4.

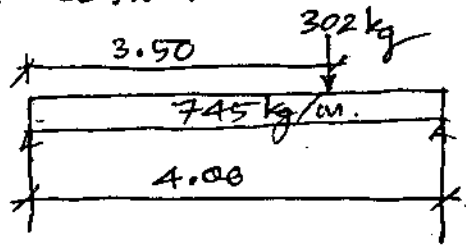
$W = 666 \text{ kg/m}$
 $M = 1332 \text{ kg-m}$
 $V = 1332 \text{ kg}$
 $A_s = 2.66 \text{ cm}^2$

Use 2-DB12 mm + 1-DB12 mm, $\text{arr. } L/5$

Use 1-#6 mm @ 0.20 m.

B16

Section. $0.15 \times 0.40 \text{ m}$.



$W = 745 \text{ kg/m}$
 $M = 1854 \text{ kg-m}$
 $V = 2042 \text{ kg}$
 $A_s = 3.71 \text{ cm}^2$

B16 = B8.

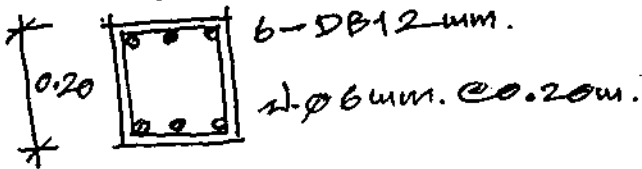
Use 2-DB12 mm + 2-DB12 mm, $\text{arr. } L/5$

Use 1-#6 mm @ 0.20 m.

13

К101013 (Зубч4) Section. 0.20x0.20 m.

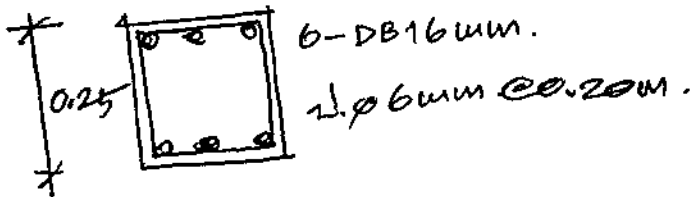
0.20



$P = 23,349 \text{ kg} > 9771 \text{ kg OK}$

К101012 (К101013) Section. 0.25x0.25 m.

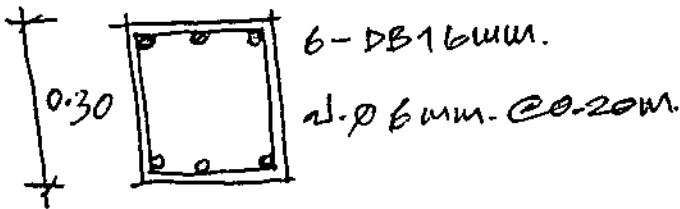
0.25



$P = 38,353 \text{ kg} > 20822 \text{ kg OK}$

К101011 (Зубчное К101012) Section. 0.30x0.30 m.

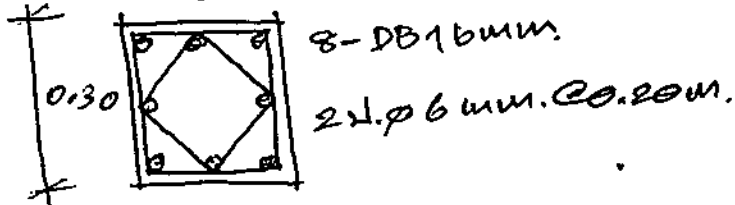
0.30



$P = 48,462 \text{ kg} > 43,470 \text{ kg OK}$

К101010 Section. 0.30x0.30 m.

0.30



$P = 53,588 \text{ kg} > 51,000 \text{ kg OK}$

(К101010) 23.5.2012

И.В. БФ01

F

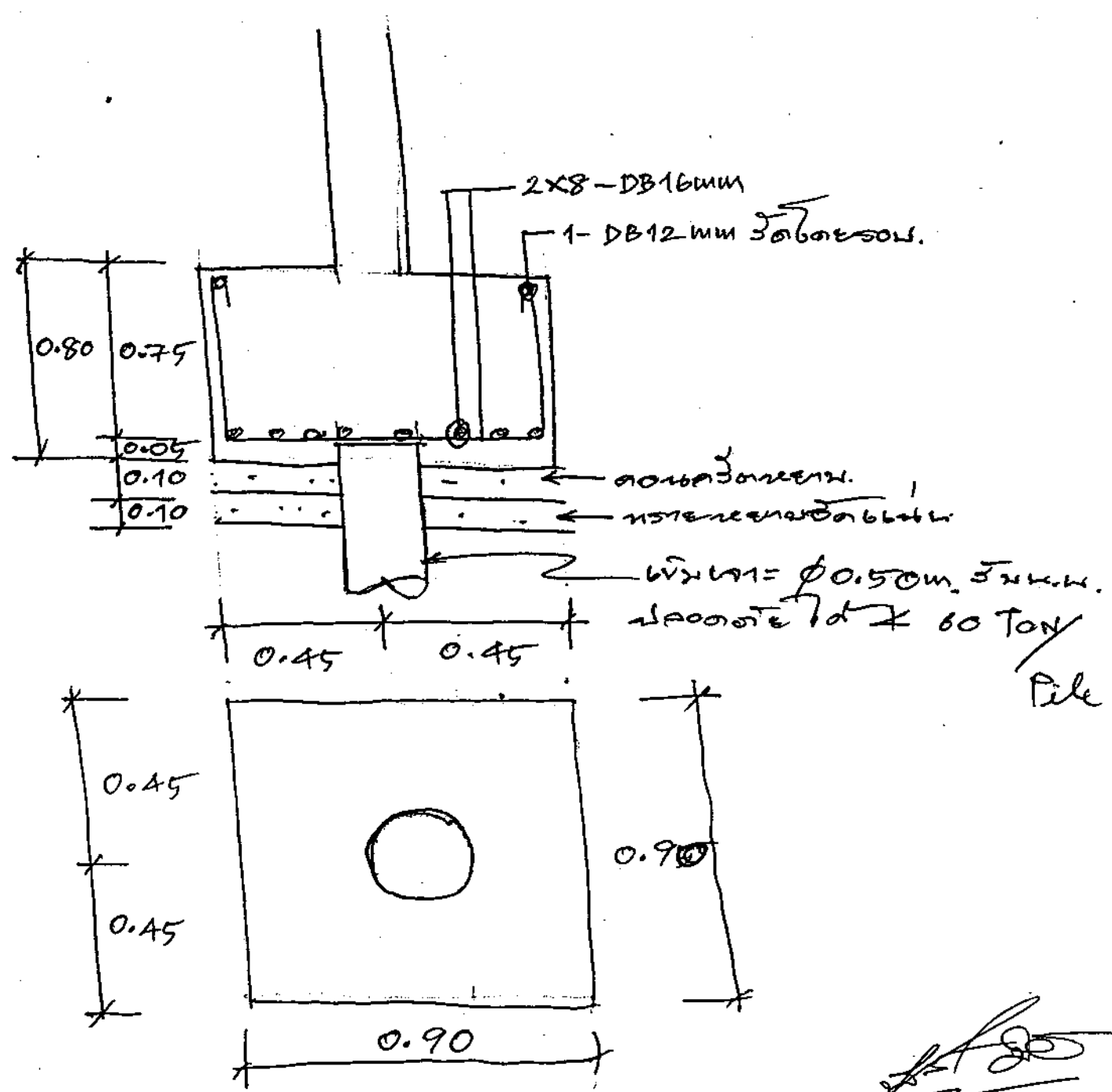
υμνηση = 53,000 kg

Use βυλιου = φ 0.50 m. 3ημ.μ. υαοοοτε 7δ ≠ 60 TON / pile

M = 15,900 kg-m

A_s = 15.72 cm²

Use 8-DB16mm.



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 (υμνηση υαοοοτε 25300kg)



အလေးချိန်။ 53,000 kg

Use ပုံနှိပ်ကတ် = 2- ϕ 0.35 m. အလေးချိန် 40 Ton
File

$w = 26,500 \text{ kg}$

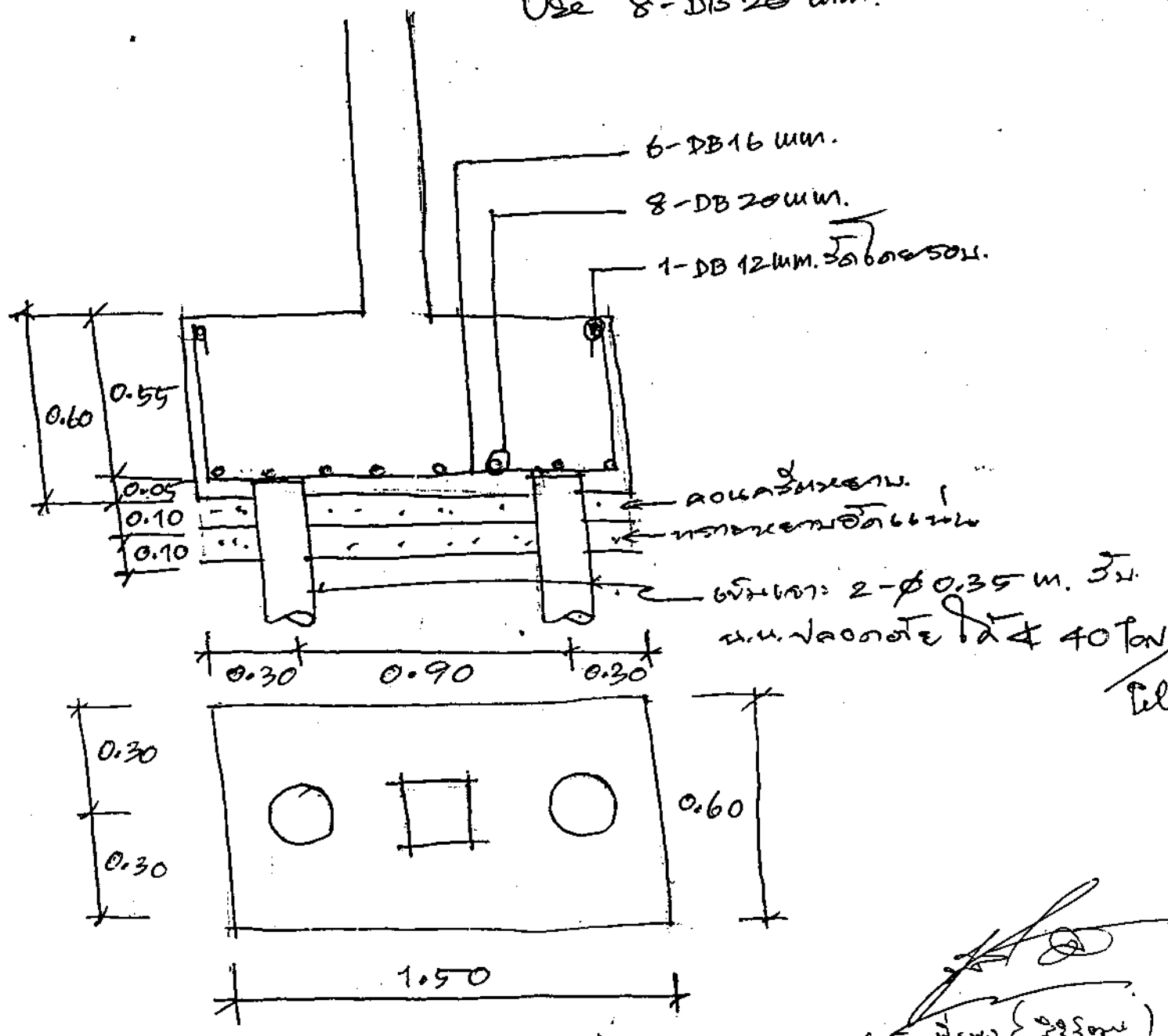
$M = 7,950 \text{ kg-m}$

$A_s = 10.72 \text{ cm}^2$

Use 6-DB 16 mm.

$A_{sc} = 22.50 \text{ cm}^2$

Use 8-DB 20 mm.



(Handwritten signature and notes)