1

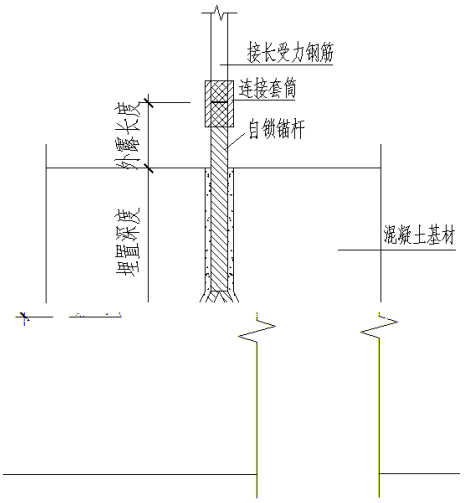
1 C30 $f_{cu\ k}$=30N/mm^2;

2 20mm A_0=245mm^2;

3 20mm A1=314mm^2;

4 8.8 f_{yk}=640N/mm^2;

5 HRB400 f_{yk}=400N/mm^2 f_y=360N/mm^2



1

1 $N_1=A_1\times f_y=0.001\times314\times360=109.4$kN

2 $N_{s,d}$ $_d$ N_d $A_s f_y/K_s$

$N_{s,d}$ kN

N_d kN

f_{sk} kPa $f_{sk}=f_{yk}$

A_s m^2

K_s 1.3 1.2

N_d $A_s f_{sk}/K_s=0.001\times245\times640/1.3=120$KN

$N_{s,d}=N_1=109.4$KN

2

1 C30 $f_{cu\ k}$=30N/mm^2;

2 20mm A_0=245mm^2;

3 8.8 f_{yk}=640N/mm^2;

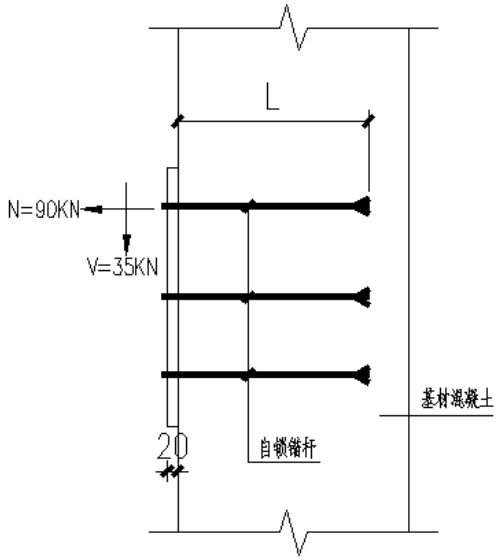
4

N=90KN V=35KN

5 f_{mck}=2.85MPa

f_{msk}=6.0MPa

6 D=25mm, D_+=38mm



2

1

20 8.8

N_d=120KN N_{vd}=48.3KN

2

$$H \quad \sqrt[3]{\frac{(\ _c N_d)^2}{9.8^2 f_{cu,k}}}$$

H

N_d kN

$_c$ 2

$f_{cu\ k}$ kPa $f_{cu\ k}$>45N/mm^2

0.95

H=271mm

H=360mm

$$H \quad \sqrt[3]{\frac{(\ _c N_d)^2}{9.8^2 f_{cu,k}}} \quad \sqrt[3]{\frac{(2\ \ 120)^2}{9.8^2\ \ 30}} \quad 271mm$$

3

N_d $_{t1} + N_{t2}$

K_c 2 1.7

N_{t1} kN

N_{t2} kN

N_{t1} 5 $_{mck}$ D_a /2

N_{t1} 5 $_{msk}$ D_a /2

$N_{t2} = 1.8\ _c\ _l f_{ck} A_{ln}$

d m d=20mm

D D=25mm

D_+ D_+=38mm

f_{mck} kPa

1

A_{ln} m^2

A_{ln} $_0)^2$- ^{2}]/4=3.14×[38)^2- 20)^2]/4=819.54mm^2

$_c$ C30 1.0

C60 0.6

$_l$ 3

N_{t1} 5 $D f_{mck}$ L_a /2=3.14×25×2.85×10^3×360×10^{-3}/2=40.27KN

$N_{t1} = n$ $d f_{msk}$ L_a /2=3.14×1.0×20×6×10^3×360×10^{-3}/2=67.8KN

N_{t1} =40.27KN

N_{t2} = 1.8 $_{c}$ $_{l}$ f_{ck} A_{ln} =1.8×1.0×3×20.1×10^{3}×819.5×10^{-6}=88.95KN

N_d=120KN N_{t1} + N_{t2} =40.27+88.95=129.22KN

4

$N_{s,d}$ $_{d}$

N_{d} $A_{\mathrm{s}}f_{\mathrm{sk}}/K_{\mathrm{s}}$

$N_{\mathrm{s,d}}$ kN

N_{d} kN

f_{sk} kPa f_{sk}= f_{yk} f_{sk}= f_{pyk}

$\mathrm{A_s}$ $\mathrm{m^2}$

K_{s} 1.3 1.2

N_{d} =$A_{\mathrm{s}}f_{\mathrm{sk}}/K_{\mathrm{s}}$=0.001×245×640/1.3=120KN $N_{s,d}$=90KN

5

$\mathrm{N_{vk}}$=0.5×0.8×K_{s}×$\mathrm{N_d}$

$\mathrm{N_{vd}}$=0.5×0.8×$\mathrm{N_d}$ 8% 0.8

$\mathrm{N_{vd}}$=0.5×0.8×$\mathrm{N_d}$ =0.5×0.8×120=48KN