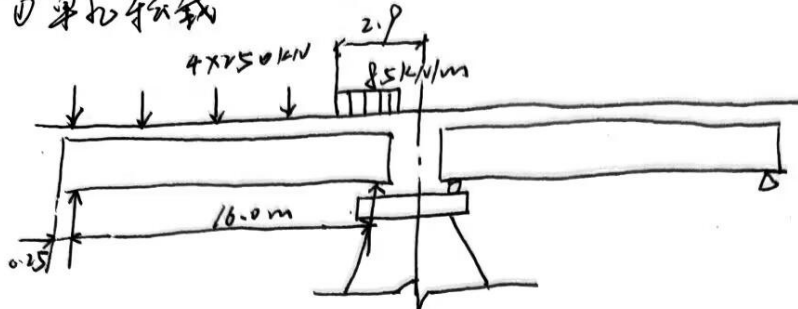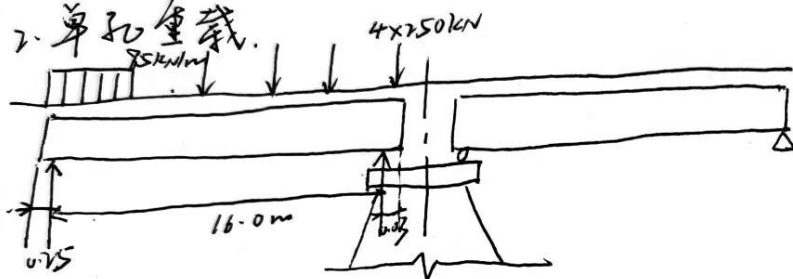① 单孔轻载

计算跨度：$L_0 = 2 \times (\frac{16}{8} + 0.6) = 17.2$ (m) > 33.21 (m)

① $R_1 = \frac{1}{16} \times [250 \times 4 \times (3.2 \times \frac{3}{2} - 0.25) + 2.9 \times 85 \times (\frac{2.9}{2} + 10.4 - 0.25)] = 1975.6$ kN

② $N_t = 447.9 + 38 \times 16.56 = 1077.08$ kN   ③ $M_{R_1} = 1975.6 \times 0.28 = 553.2$ kN·m
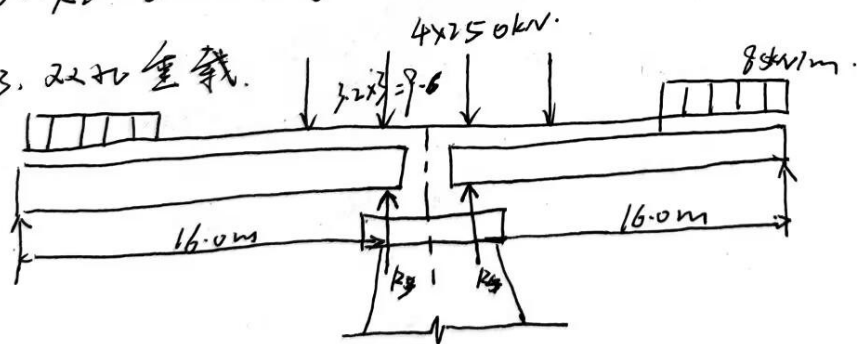
2. 单孔重载.

① $R_2 = \frac{1}{16} \times [2.9 \times 85 \times (\frac{2.9}{2} - 0.25) + 250 \times 4 \times (2.9 + 4.8 + 0.8 - 0.25)] = 805.2$ kN

② $N_t = 447.8 + 38 \times 16.56 = 1077.08$ kN.

③ $M_{R_2} = 805.2 \times 0.28 = 225.5$ kN·m.

3. 双孔重载.

$R_3 = R_4 = \frac{1}{16} \times [10.66 \times 85 \times (\frac{10.66}{2} - 0.25) + 7 \times 250 \times (16.53 - 0.25 - 7.6)]$

$R_{3,4} = 1382.05$. $M_{R_{3-4}} = 0$.

1. 墩顶面积 $A_1 = \pi \times 0.75^2 + 1.5 \times 2.7 = 5.82$ m^2

2. 墩顶惯性矩: $I_0 = \frac{\pi}{64} \times 1.5^4 + \frac{1}{12} \times 2.7 \times 1.5^3 = \cancel{\text{---}}$ 1.01 m^4

3. 墩底面积: $A_2 = \pi \times 0.95^2 + 1.9 \times 2.7 = 7.87$ m^2

4. 墩底截面惯性矩: $I_d = \frac{\pi}{64} \times 1.9^4 + \frac{1}{12} \times 2.7 \times 1.9^3 = 2.18$ m^4

5. m 值 按 I_0/I_d 查表 2-77 $\quad I_0/I_d = 1.01/2.18 = 0.463$ 查表得 $m = 1.87 + \frac{0.13}{0} \times 0.63 = 1.95$

6. 墩身平均面积 $A_0 = \frac{A_1 + A_2}{2} = \frac{5.82 + 7.87}{2} = 6.90$ m^2

7. 计算长度 $L_0 = 2 \times 10.6 + 16.7 = 33.2$ m

	单孔轻载 ($E_0=0.181$)	单孔重载 ($E_0=0.170$)	双孔重载 ($E_0=0$)
E_0 (kpa)	—	24×10^6	—	—
$a = \frac{0.1}{0.2 + \frac{E_0}{h}} + 0.16$	$\frac{0.1}{0.2 + \frac{0.181}{1.7}} + 0.16 = 0.486$	$\frac{0.1}{0.2 + \frac{0.17}{1.7}} + 0.16 = 0.53$	$\frac{0.1}{0.2 + \frac{0}{1.7}} + 0.16 = 0.66$
$\beta = \frac{4mE_0 I_d}{L_0^2} = \pi$	$(4 \times 1.95 \times 24 \times 10^6 \times 2.18)/33.2^2 = 237 \times 10^5$		
$a \cdot \pi$	110322	120310	149820
$N_{cr} = a \cdot \pi \left[\frac{1}{1 + 2 \times \frac{1}{1.1 A K_0}} \right]$	46270	47938	52022
主力 kN_{32} ($K=2$)	610336	3764.56	4818.26
主力 $\eta_{max} = \frac{1}{1 - \frac{kN_A}{N_{cr}}}$	1.152	1.085	1.404
主+附 kN_{32} ($K=1.6$)	4884.38	3011.65	3934.61
主+附 η_{max}	1.046	1.025	1.027