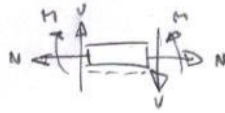
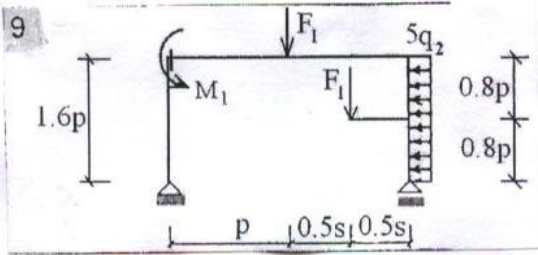


Pr. 1

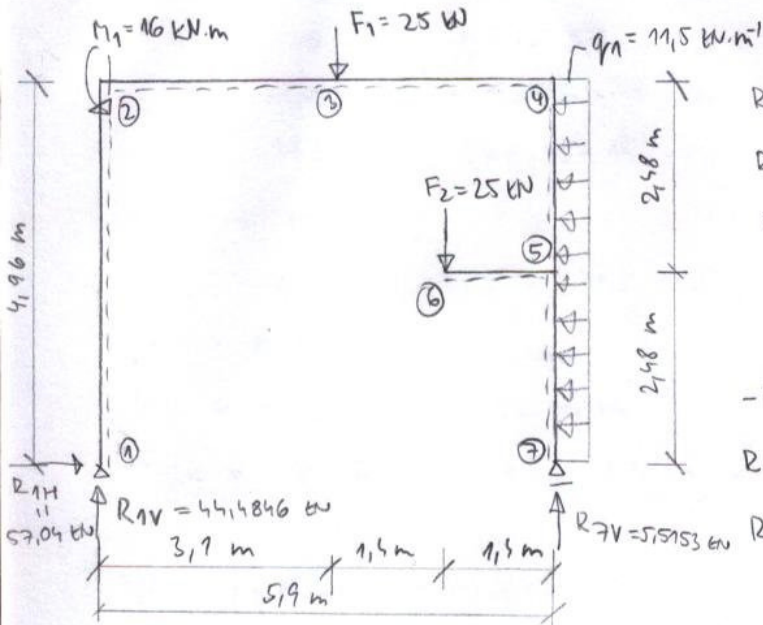


①

$$\textcircled{1} \quad \sum H = 0 \quad R_{1H} - q_1 \cdot 4,96 = 0$$

$$R_{1H} = q_1 \cdot 4,96$$

$$R_{1H} = 57,04 \text{ kN}$$



$$\sum M_1 \oplus = 0$$

$$R_{2V} \cdot 5,9 + q_1 \cdot 4,96 \cdot 2,48 - F_2 \cdot 4,5 - F_1 \cdot 3,1 + M_1 = 0$$

$$R_{2V} \cdot 5,9 = -141,4592 + 112,5 + 77,5 - 16$$

$$R_{2V} \cdot 5,9 = 32,5408$$

$$R_{2V} = 5,5153 \text{ kN}$$

$$\sum M_2 \oplus = 0$$

$$-R_{1V} \cdot 5,9 + M_1 + F_1 \cdot 2,8 + F_2 \cdot 1,4 + q_1 \cdot 4,96 \cdot 2,48 = 0$$

$$R_{1V} \cdot 5,9 = 16 + 70 + 35 + 141,4592$$

$$R_{1V} \cdot 5,9 = 262,4592$$

$$R_{1V} = 44,4846 \text{ kN}$$

KONTROLA

$$\sum V = 0 \quad R_{1V} - F_1 - F_2 + R_{2V} = 0$$

$$44,4846 - 25 - 25 + 5,5153 = 0$$

$$-0,0001 = 0$$

$$\sum M_3 \oplus = 0$$

$$-R_{1V} \cdot 3,1 + R_{1H} \cdot 4,96 + M_1 - q_1 \cdot 4,96 \cdot 2,48 - F_2 \cdot 1,4 + R_{2V} \cdot 2,8 = 0$$

$$-137,90226 + 282,9184 + 16 - 141,4592 - 35 + 15,4284 = 0$$

$$-0,00022 = 0$$

$$\textcircled{2} \quad N_{12} = -R_{1V} = -44,4846 \text{ kN} = N_{21}$$

$$N_{23} = -R_{1H} = -57,04 \text{ kN} = N_{32} = N_{43}$$

$$N_{75} = -R_{2V} = -5,5153 \text{ kN} = N_{57}$$

$$N_{65} = 0 \text{ kN} = N_{56}$$

$$N_{54} = -R_{2V} + F_2 = -5,5153 + 25 = 19,4847 \text{ kN} = N_{45}$$

$$\textcircled{3} \quad V_{12} = -R_{1H} = -57,04 \text{ kN} = V_{21}$$

$$V_{23} = R_{1V} = 44,4846 \text{ kN} = V_{32}$$

$$V_{34} = R_{1V} - F_1 = 44,4846 - 25 = 19,4846 \text{ kN} = V_{43}$$

$$V_{75}^P = 0 \text{ kN}$$

$$V_{57} = q_1 \cdot 2,48 = 11,5 \cdot 2,48 = 28,52 \text{ kN}$$

$$V_{65} = -F_2 = -25 \text{ kN} = V_{56}$$

$$V_{54} = q_1 \cdot 2,48 = 28,52 \text{ kN}$$

$$V_{45} = q_1 \cdot 4,96 = 57,04 \text{ kN}$$

$$\textcircled{4} \quad M_1 = 0 \text{ kN}\cdot\text{m}$$

$$M_{21} = -R_{1H} \cdot 4,96 = -57,04 \cdot 4,96 = -282,9184 \text{ kN}\cdot\text{m}$$

$$M_{23} = M_{21} - M_1 = -282,9184 - 16 = -298,9184 \text{ kN}\cdot\text{m}$$

$$M_3 = -R_{1H} \cdot 4,96 + R_{1V} \cdot 3,1 - M_1 = 57,04 \cdot 4,96 + 44,5846 \cdot 3,1 - 16 = \\ = -282,9184 + 137,90226 - 16 = -161,01614 \text{ kN}\cdot\text{m}$$

$$M_4 = -R_{1H} \cdot 4,96 + R_{1V} \cdot 5,9 - M_1 - F_1 \cdot 2,18 = \\ = -57,04 \cdot 4,96 + 44,5846 \cdot 5,9 - 16 - 25 \cdot 2,18 = \\ = -282,9184 + 262,45914 - 16 - 70 = -106,45926 \text{ kN}\cdot\text{m}$$

$$M_7^P = 0 \text{ kN}\cdot\text{m}$$

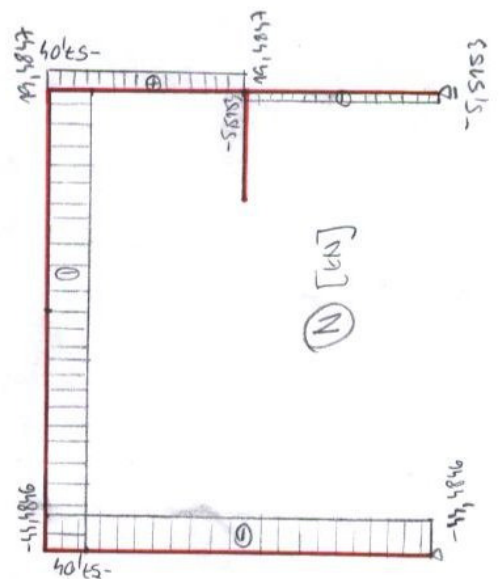
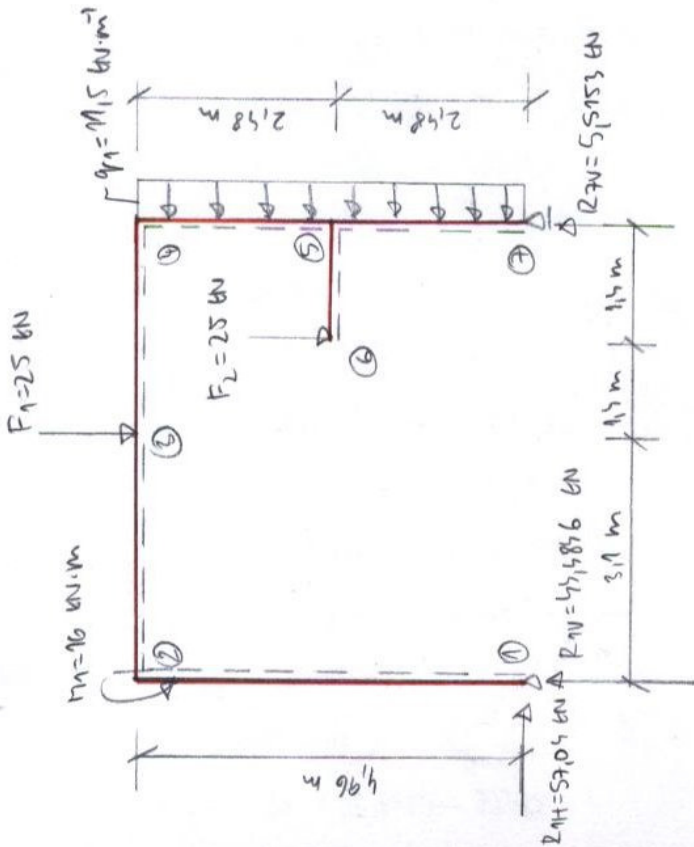
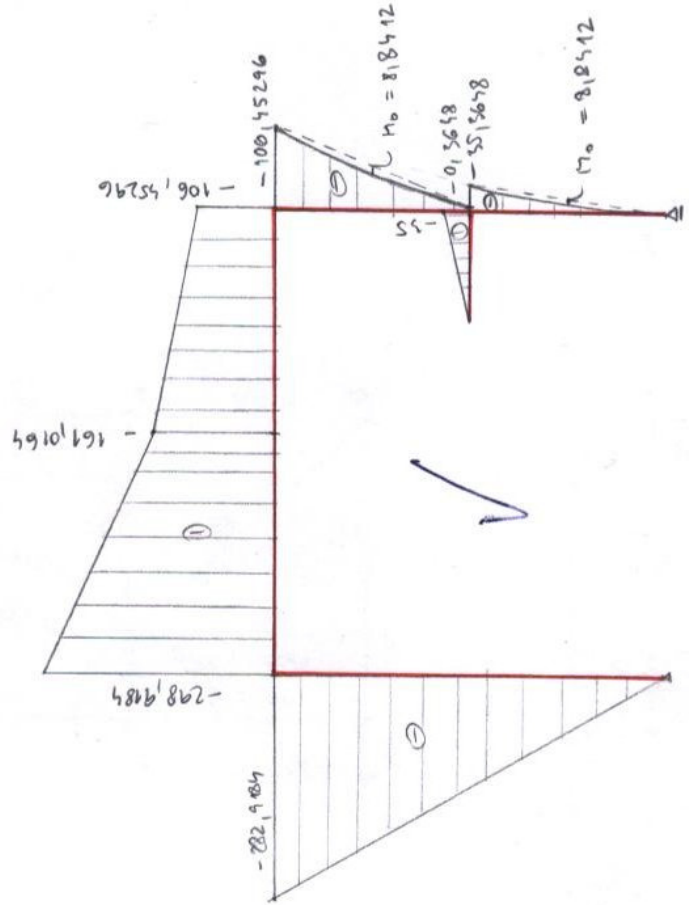
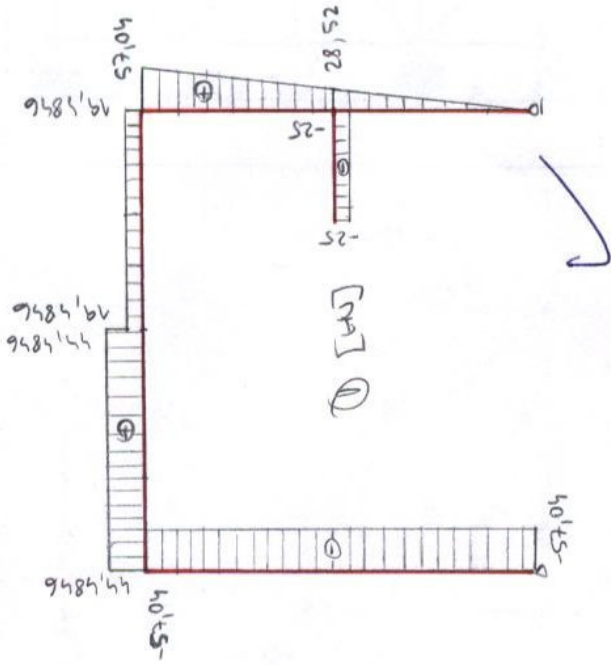
$$M_{57} = -q_1 \cdot 2,58 \cdot 1,25 = -11,5 \cdot 2,58 \cdot 1,25 = -35,3648 \text{ kN}\cdot\text{m}$$

$$M_6 = 0 \text{ kN}\cdot\text{m}$$

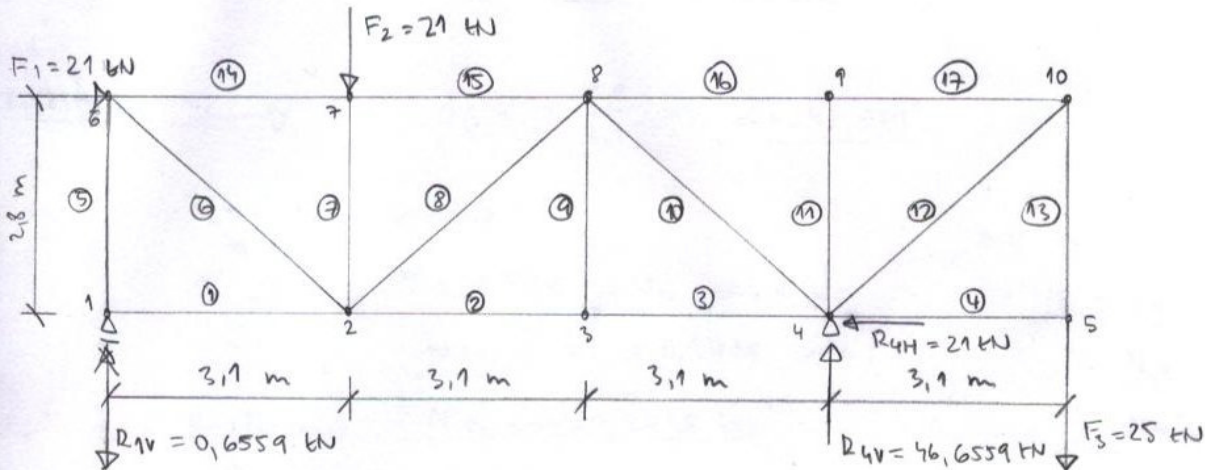
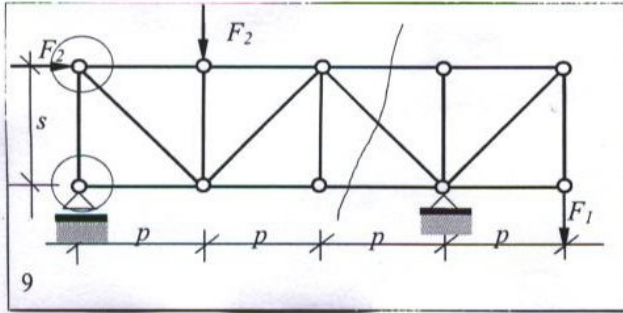
$$M_{56} = -F_2 \cdot 1,4 = -35 \text{ kN}\cdot\text{m}$$

$$M_{54} = -q_1 \cdot 2,58 \cdot 1,25 + F_2 \cdot 1,4 = -0,3648 \text{ kN}\cdot\text{m}$$

$$M_0 = \frac{1}{8} q l^2 = \frac{1}{8} \cdot 11,5 \cdot 2,58^2 = 8,8412$$



# 2



C.P.	N [kN]
1	0
2	-27,7023
3	-27,7023
4	0
5	0,6559
6	-0,9785
7	-21
8	32,3084
9	0
10	-32,3084
11	0
12	-37,2976
13	25
14	-20,2758
15	-20,2758
16	27,6786
17	27,6786

$$\textcircled{1} \quad \Sigma H = 0$$

$$F_1 - R_{4H} = 0$$

$$R_{4H} = 21 \text{ kN}$$

$$\Sigma M_1^{\oplus} = 0$$

$$-F_3 \cdot 12,4 + R_{4V} \cdot 9,3 - F_2 \cdot 3,1 - F_1 \cdot 2,8 = 0$$

$$R_{4V} \cdot 9,3 = 25 \cdot 12,4 + 21 \cdot 3,1 + 21 \cdot 2,8$$

$$R_{4V} \cdot 9,3 = 310 + 65,1 + 58,8$$

$$R_{4V} \cdot 9,3 = 433,9$$

$$R_{4V} = 46,6559 \text{ kN}$$

$$\Sigma M_4^{\oplus} = 0$$

$$-R_{1V} \cdot 9,3 - F_1 \cdot 2,8 + F_2 \cdot 6,2 - F_3 \cdot 3,1 = 0$$

$$R_{1V} \cdot 9,3 = -21 \cdot 2,8 + 21 \cdot 6,2 - 25 \cdot 3,1 = 0$$

$$R_{1V} \cdot 9,3 = -58,8 + 130,2 - 77,5$$

$$R_{1V} \cdot 9,3 = -6,1$$

$$R_{1V} = -0,6559 \text{ kN}$$

$$R_{1V} = 0,6559 \text{ kN}$$

KONTROLA

$$\Sigma V = 0 \quad -R_{1V} - F_2 + R_{4V} - F_3 = 0$$

$$-0,6559 - 21 + 46,6559 - 25 = 0$$

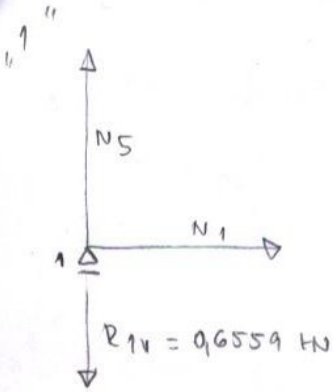
$$0 = 0$$

$$\Sigma M_7^{\oplus} = 0$$

$$R_{1V} \cdot 3,1 + R_{4V} \cdot 6,2 - R_{4H} \cdot 2,8 - F_3 \cdot 9,3 = 0$$

$$2,03329 + 289,26658 - 58,8 - 232,5 = 0$$

$$-0,00013 = 0$$



$$\Sigma H = 0$$

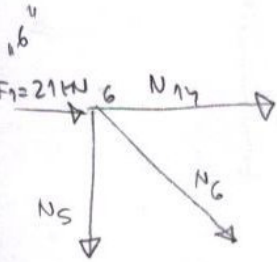
$$N_1 = 0 \text{ kN}$$

$$\Sigma V = 0$$

$$N_5 - R_{1v} = 0$$

$$N_5 = R_{1v}$$

$$N_5 = 0,6559 \text{ kN}$$



$$\tan \alpha = \frac{21}{3,1} \Rightarrow \alpha = 42,089^\circ$$

$$\Sigma H = 0$$

$$F_1 + N_{14} + N_6 \cdot \cos \alpha = 0$$

$$N_{14} = -21 + 0,9785 \cdot \cos \alpha$$

$$N_{14} = -20,2738 \text{ kN}$$

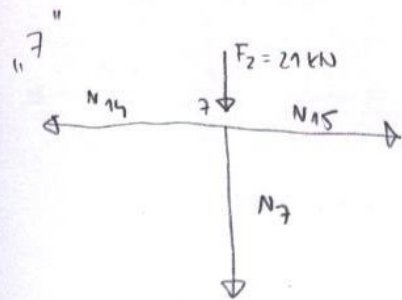
$$\Sigma V = 0$$

$$-N_5 - N_6 \cdot \sin \alpha = 0$$

$$N_6 \cdot \sin \alpha = -N_5$$

$$N_6 \cdot \sin \alpha = -0,6559$$

$$N_6 = -0,9785 \text{ kN}$$



$$\Sigma H = 0$$

$$-N_{14} + N_{15} = 0$$

$$N_{15} = N_{14}$$

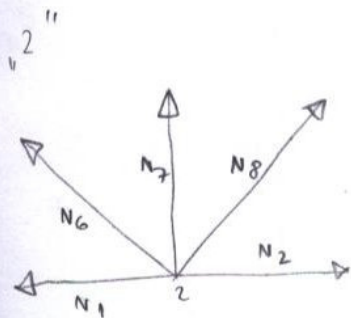
$$N_{15} = -20,2738 \text{ kN}$$

$$\Sigma V = 0$$

$$-F_2 - N_7 = 0$$

$$N_7 = -F_2$$

$$N_7 = -21 \text{ kN}$$



$$\Sigma H = 0$$

$$-N_1 - N_6 \cdot \cos \alpha + N_8 \cdot \cos \alpha + N_2 = 0$$

$$N_2 = N_1 + N_6 \cdot \cos \alpha - N_8 \cdot \cos \alpha$$

$$N_2 = 0 - 0,726149 - 23,97621032$$

$$N_2 = -24,7023 \text{ kN}$$

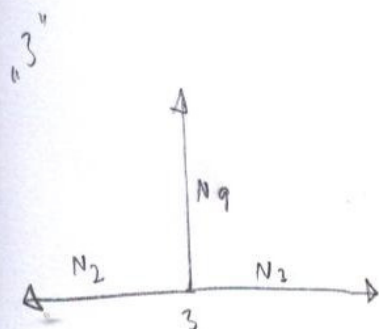
$$\Sigma V = 0$$

$$N_6 \cdot \sin \alpha + N_7 + N_8 \cdot \sin \alpha = 0$$

$$N_8 \cdot \sin \alpha = -N_6 \cdot \sin \alpha - N_7$$

$$N_8 \cdot \sin \alpha = 21,6558$$

$$N_8 = 32,3084 \text{ kN}$$



$$\Sigma H = 0$$

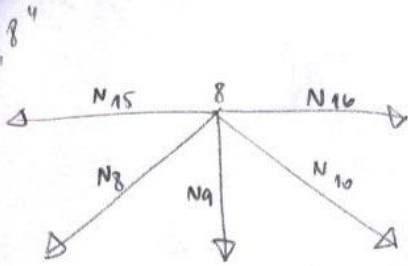
$$-N_2 + N_3 = 0$$

$$N_3 = N_2$$

$$N_3 = -24,7023 \text{ kN}$$

$$\Sigma V = 0$$

$$N_9 = 0 \text{ kN}$$



$$\sum H = 0$$

$$-N_{15} - N_8 \cdot \cos \alpha + N_{10} \cdot \cos \alpha + N_{16} = 0$$

$$N_{16} = N_{15} + N_8 \cdot \cos \alpha - N_{10} \cdot \cos \alpha$$

$$N_{16} = -20,2738 + 47,95242064$$

$$\underline{N_{16} = 27,6786 \text{ kN}}$$

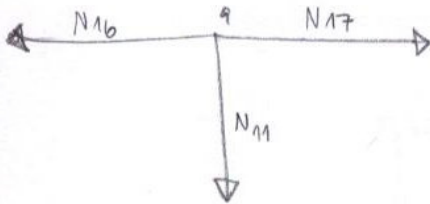
$$\sum V = 0$$

$$-N_8 \cdot \sin \alpha - N_9 - N_{10} \cdot \sin \alpha = 0$$

$$N_{10} \cdot \sin \alpha = -N_8 \cdot \sin \alpha - N_9$$

$$N_{10} \cdot \sin \alpha = -21,6558$$

$$\underline{N_{10} = -32,3085 \text{ kN}}$$



$$\sum H = 0$$

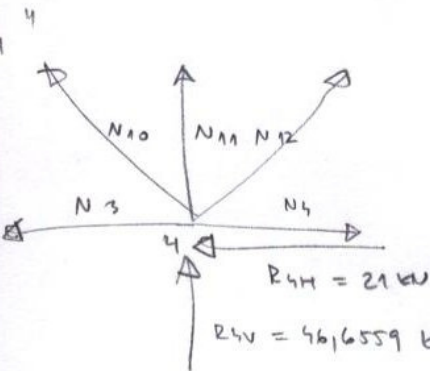
$$-N_{16} + N_{17} = 0$$

$$N_{17} = N_{16}$$

$$\underline{N_{17} = 27,6786 \text{ kN}}$$

$$\sum V = 0$$

$$\underline{N_{11} = 0 \text{ kN}}$$



$$\sum H = 0$$

$$-N_3 - N_{10} \cdot \cos \alpha + N_{12} \cdot \cos \alpha + N_4 - R_{4H} = 0$$

$$N_4 = N_3 + N_{10} \cdot \cos \alpha - N_{12} \cdot \cos \alpha + R_{4H}$$

$$N_4 = -24,7023 - 23,97621 + 27,67871 + 21$$

$$\underline{N_4 = 0 \text{ kN}}$$

$$\sum V = 0$$

$$N_{10} \cdot \sin \alpha + N_{11} + N_{12} \cdot \sin \alpha + R_{4V} = 0$$

$$N_{12} \cdot \sin \alpha = -N_{10} \cdot \sin \alpha - N_{11} - R_{4V}$$

$$N_{12} \cdot \sin \alpha = 21,655808 - 0 - 46,6559$$

$$N_{12} \cdot \sin \alpha = -25$$

$$\underline{N_{12} = -37,2976 \text{ kN}}$$

$$\sum H = 0$$

$$\underline{N_4 = 0 \text{ kN}}$$

$$\sum V = 0$$

$$N_{13} - F_3 = 0$$

$$N_{13} = F_3$$

$$\underline{N_{13} = 25 \text{ kN}}$$

