

ΠΠΜ 220: Στατική Ανάλυση των Κατασκευών Ι

Διάλεξη 38

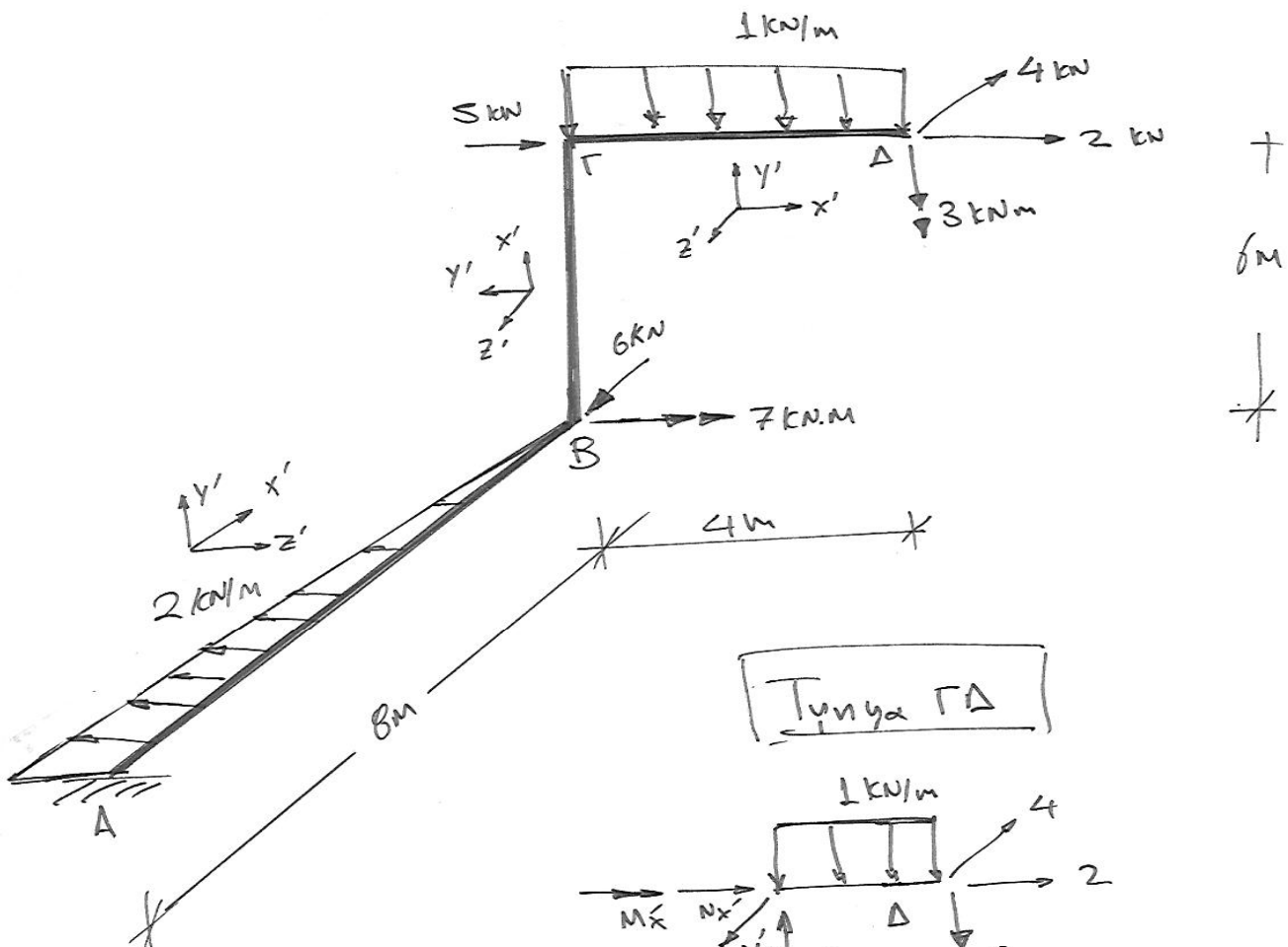
Τρισδιάστατο Παράδειγμα

Παρασκευή 3 Δεκεμβρίου, 2004

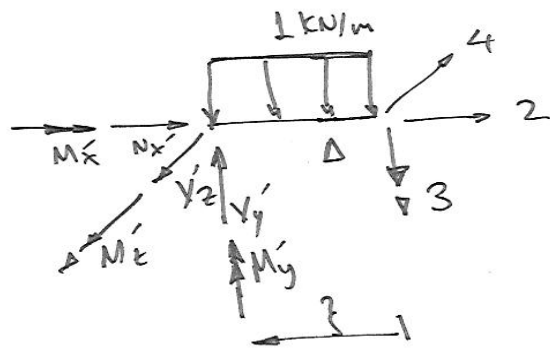
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Tanya ΓΔ



$$\left. \begin{aligned} N_{x'} &= -2 \\ V_{y'} &= 3 \\ V_{z'} &= 4 \end{aligned} \right\} (0 \rightarrow 4)$$

$$M_{x'} = 0$$

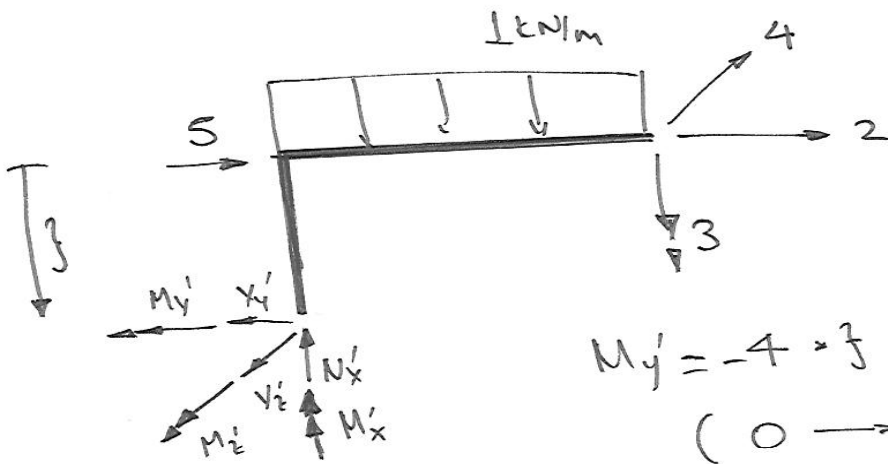
$$M_{y'} = 3 - 4 \cdot 3$$

$$(3 \rightarrow -13) \text{ kNm}$$

$$M_{z'} = 1 \cdot 3 \cdot \frac{3}{2} = \frac{3^2}{2}$$

$$(0 \rightarrow 8 \text{ kNm})$$

Τύπος ΒΓ



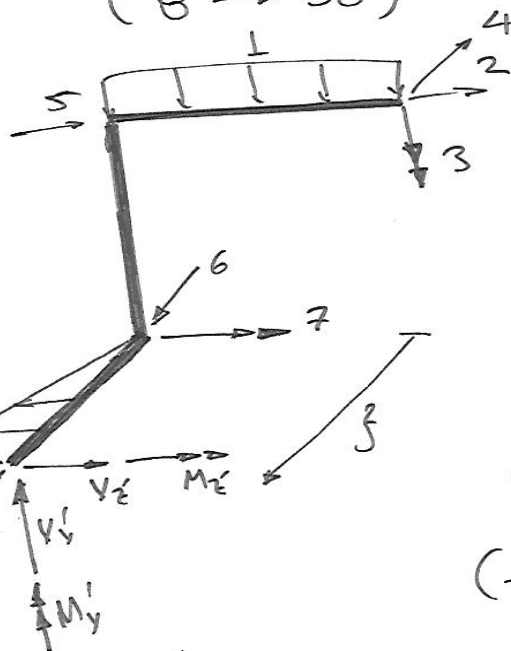
$$\left. \begin{aligned} N_{x'} &= 4 \text{ kN} \\ V_{y'} &= 2 + 5 = 7 \\ V_{z'} &= 4 \text{ kN} \end{aligned} \right\}$$

$$\begin{aligned} M_{x'} &= 3 - 4 = 4 \\ \hookrightarrow M_{x'} &= -13 \text{ kNm} \end{aligned}$$

$$\begin{aligned} M_{y'} &= -4 \times 3 \\ (0 \rightarrow -24) \end{aligned}$$

$$\begin{aligned} M_{z'} &= 2 \times 3 + 1 \times 4 \times 2 + 5 \times 3 = 7 \times 3 + 8 \\ (8 \rightarrow 50) \end{aligned}$$

Τύπος ΑΒ



$$N_{x'} = 6 - 4 = 2$$

$$V_{y'} = 1 \times 4 = 4$$

$$\begin{aligned} V_{z'} &= -7 + 3 \cdot \frac{3}{4} \cdot \frac{1}{2} \\ \hookrightarrow V_{z'} &= -7 + \frac{3^2}{8} \end{aligned}$$

$$(-7 \rightarrow 1)$$

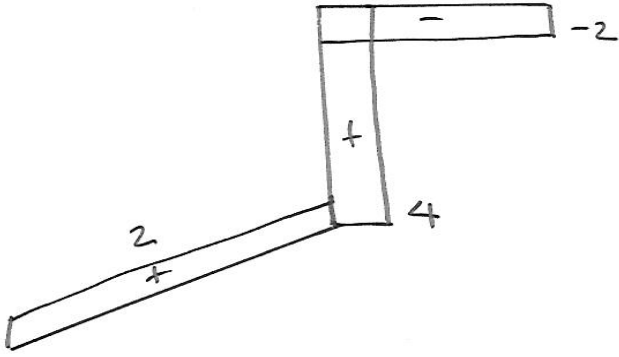
Από όμοια τρίγωνα
 $3^* = 8 \rightarrow W = 2 \text{ kN/m}$
 $3 \rightarrow W = 2 \times 3 \cdot \frac{3}{4}$

$$M_{x'} = -1.4 \cdot 2 - 7 \cdot 6 = -50 \text{ kNm}$$

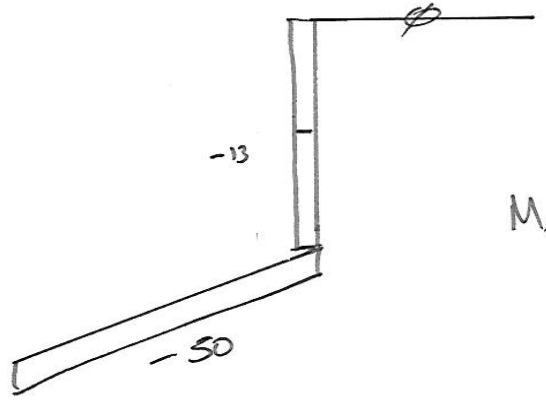
$$M_{y'} = 7 \times 3 + 3 - 4 \times 4 - 3 \cdot \frac{3}{4} \cdot \frac{1}{2} \times \frac{3}{3} = 7 \times 3 - 13 - \frac{3^3}{24} \quad (-13 \rightarrow 21.667)$$

$$M_{z'} = -7 + 1.4 \cdot 3 + 4 \times 6 = 17 + 4 \times 3 \quad (17 \rightarrow 49)$$

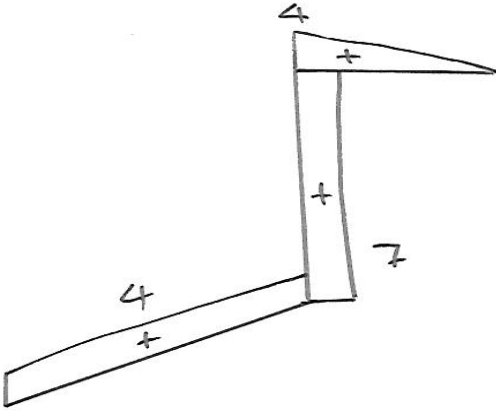
N'_x



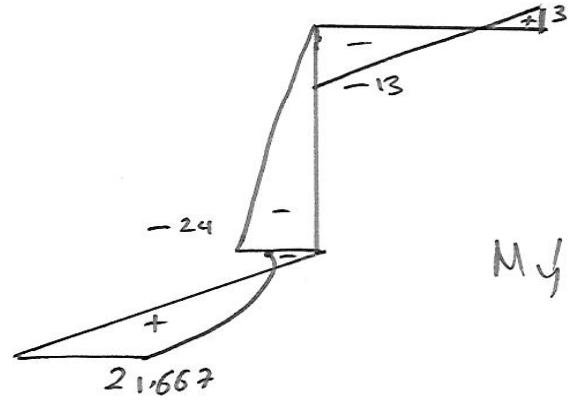
M'_x



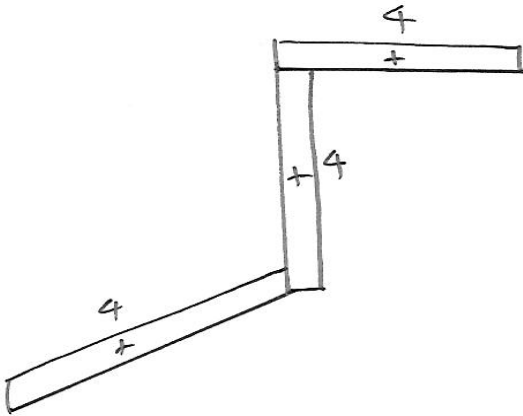
Y'_1



M'_y



V'_2



M'_z

