

Garage - Berging
perceel Hogenkampweg 7
te Hengelo Gld

Opdrachtgever

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Berekening Constructie

febr. 2015

Garage berging
Regenkamp weg

(2)

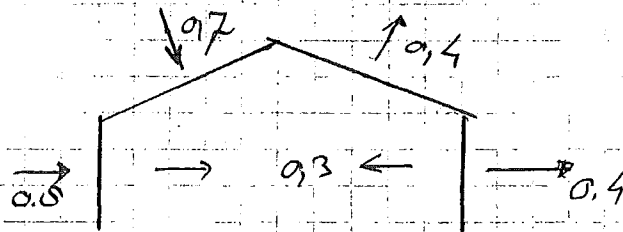
Veiligheidsklasse C1 $\gamma_g = \frac{1,22/1,08}{1,9} \gamma_g = 1,35$

Belastingaannames

Pannendak $\alpha = 35^\circ$ eig.gew. = $0,74 / \cos 35^\circ = 0,90 \text{ kN/m}^2$
snow = $0,7 \frac{(60-35)}{30} 0,7 = 0,47 \text{ kN/m}^2$

Verdiepingsvloer: houten vloer
variabel $0,40 \text{ kN/m}^2$
 $2,00 \text{ kN/m}^2$

Wind $h = 6,0$ stuwdrukwaarde = $0,58 \text{ kN/m}^2$



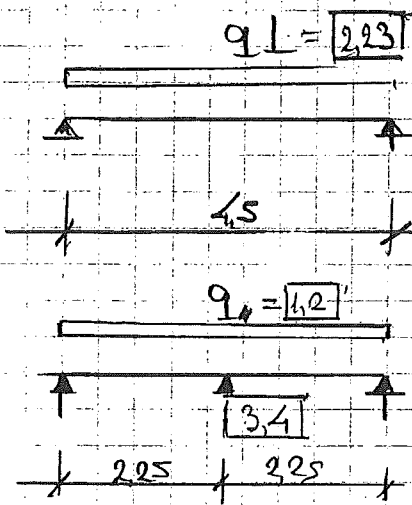
Garage Berging

13

Logenkamperweg

Gordingen

1/221 hoh 1,55



$$q_{g1} = 1,55 \times 0,90 \cos^2 35^\circ = 0,94 \text{ kN/m}$$

$$q_{sn} = 0,47 = 0,49 \text{ kN/m}$$

$$q_{wd} = 1,55 \times (0,7 + 0,3) \times 0,58 = 0,90 \text{ kN/m}$$

$$q_{g11} = 0,66 \text{ kN/m} \quad q_{sn11} = 0,35 \text{ kN/m}$$

sterkte $q_{r1} = 1,08 \times 0,94 + 1,35 \times 0,90 = 2,230 \text{ N/m}$

$$\sigma_b1 = 5645 / 578 = 9,8 \text{ N/mm}^2$$

$$q_{11} = 1,08 \times 0,66 + 1,35 \times 0,35 = 1,185$$

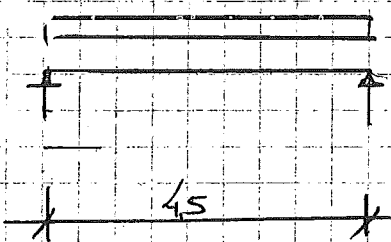
$$\sigma_b11 = 624 / 186 = 3,4 \text{ N/mm}^2$$

doorbuiging

$$\left. \begin{array}{l} f_g = 120 \times 0,94 \times 4,5^4 / 6390 = 7,2 \\ f_{wd} = 0,90 \\ \text{kruip} = 0,6 \times 7,2 = 4,3 \end{array} \right\} 18,4 \text{ mm}$$

Balklaag 1^e verdieping

1/221 hoh 600



$$q_g = 0,6 \times 0,4 = 0,24 \text{ kN/m}$$

$$q_g = 0,6 \times 2,0 = 1,20 \text{ kN/m}$$

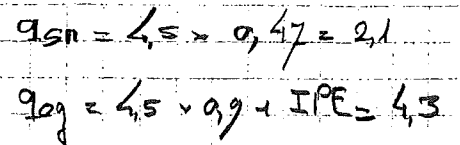
sterkte $q_{r1} = 1,2 \times 0,24 + 1,35 \times 1,20 = 1,908$

$$\sigma_b = 4830 / 578 = 8,4 \text{ N/mm}^2$$

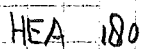
doorbuiging

$$\left. \begin{array}{l} f_g = 120 \times 0,24 \times 4,5^4 / 6390 = 1,8 \\ f_{wd} = 1,20 \\ \text{kruip} = 0,6 (1,8 + 0,8 \times 9,2) = 5,5 \end{array} \right\} 16,5$$

G



$$q_{ag} = 2,25 \cdot 0,4 + HEA = 1,3$$


$$H = 1,2 \times 24,6 + 1,35 \times 25,4 = 53 \text{ kWh}$$

$$M = 1,2 \times 55 + 4,35 \cdot 19,3 = 32,4 \text{ kNm}$$

$$D = \frac{53}{0,74530} + 1,1 \cdot \frac{32,5}{292} = 0,016 + 0,122 = 0,138 \quad UC = 0,59$$

IPE 180

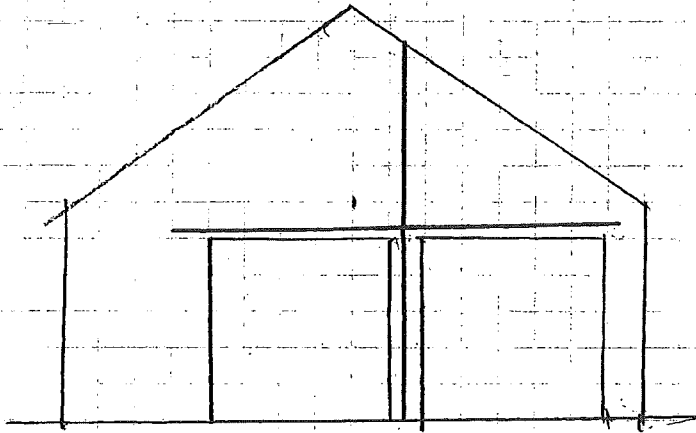
$$\begin{aligned} M &= 100 \text{ g} & 3 + 135 \text{ g} &= 144 \text{ kJ} \\ N &= 400 \text{ g} & 20 &= 216 \text{ kJ} \end{aligned}$$

$$\lambda_y = 4700 / 742 = 64 \quad w = 0,85$$

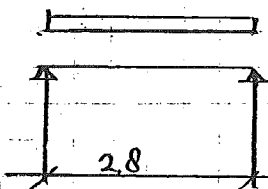
$$T = \frac{21.600}{0,85 \cdot 2010} + \frac{41 \cdot 14,4}{166} = 0,013 + 0,096 = 0,108 \quad u = 0,46$$

Garage Berging

Hogenkampsweg



no zijgel latei L50-100-10



$$\begin{array}{rcl} q_{\text{dak}} & 2.5 \times 0.9 & = 2.25 \text{ kWh/m} \\ q_{\text{mw}} & 2.7 \times 2.0 & = 5.40 \text{ "} \\ q_{\text{eg}} & & = 0.25 \text{ "} \\ \hline & & 7.9 \text{ kWh/m} \end{array}$$

$$q_{\text{q}}: \text{nieuw } 2.5 \times 0.47 = 1.2 \text{ kWh/m}$$

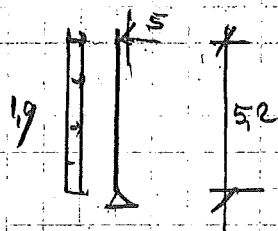
$$\text{sterkte } q_{\text{H}} = 12 \times 7.9 + 1.35 \times 1.2 = 11.1 \text{ kWh/m}$$

$$q_{\text{b}} = 10.9 / 54 = 0.20 \quad u_{\text{e}} = 0.86$$

$$\text{doorb. } f_{\text{g}} = 62 \times 7.9 \times 2.8^4 / 554 = 54 \text{ mm}$$

kolam

HEA 140

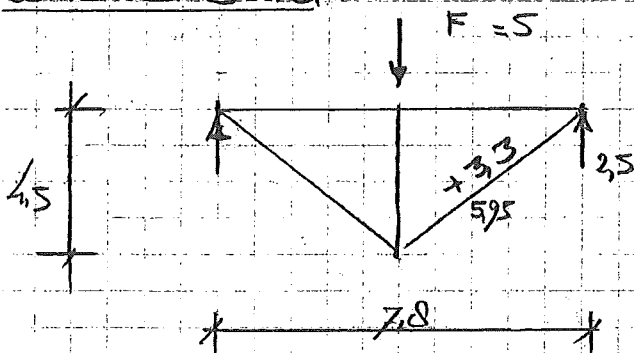


$$q_{\text{w}} = 30 \times (0.8 + 0.3) \times 0.58 = 1.9 \text{ kWh/m}$$

doorbuiging

$$f = 62 \times 1.9 \times 5.2^4 / 1033 = 8.4 \text{ mm}$$

windverband

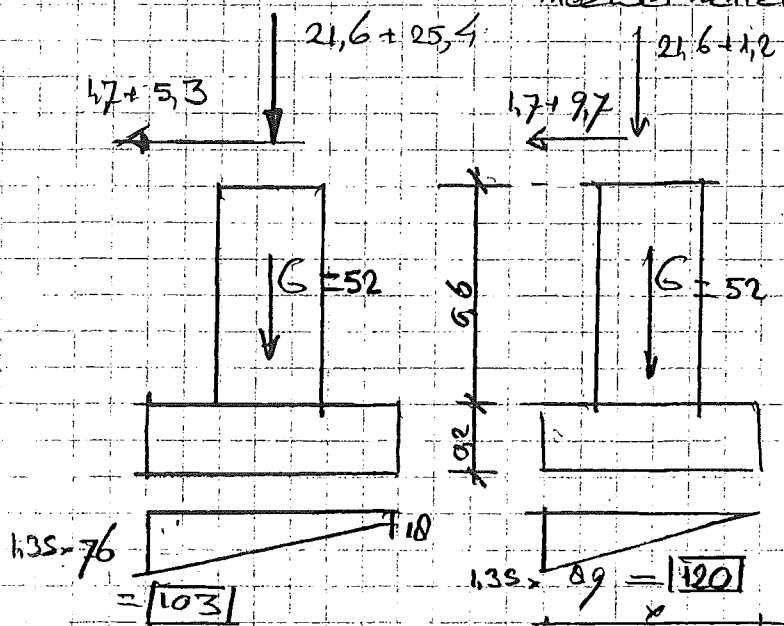


Garage / Berging

Fundering

strook $d=200$ $b=700$

meewerkende lengte = 2,40 m



G: gewel

$$2,4 \times 3,5 \times 4 = 33,6 \text{ kN}$$

grond

$$2,4 \times 0,5 \times 0,5 \times 17 = 10,2 \text{ kN}$$

strook

$$2,4 \times 0,7 \times 0,2 \times 24 = \frac{0,2}{52 \text{ kN}}$$

1) $q_g + \text{sneeuw} + v_b$

$$\Sigma V = 21,6 + 25,4 + 52 = 99 \text{ kN}$$

$$M = (1,7 + 5,3) \cdot 0,8 = 5,6 \text{ kNm}$$

$$q_g = \frac{99}{2,4 \times 0,7} + \frac{5,6}{\frac{1}{6} \times 2,4 \times 0,7^2}$$

$$= 47 + 29$$

2) $q_g + \text{wind}$

$$\Sigma V = 21,6 + 12 + 52 = 75 \text{ kN}$$

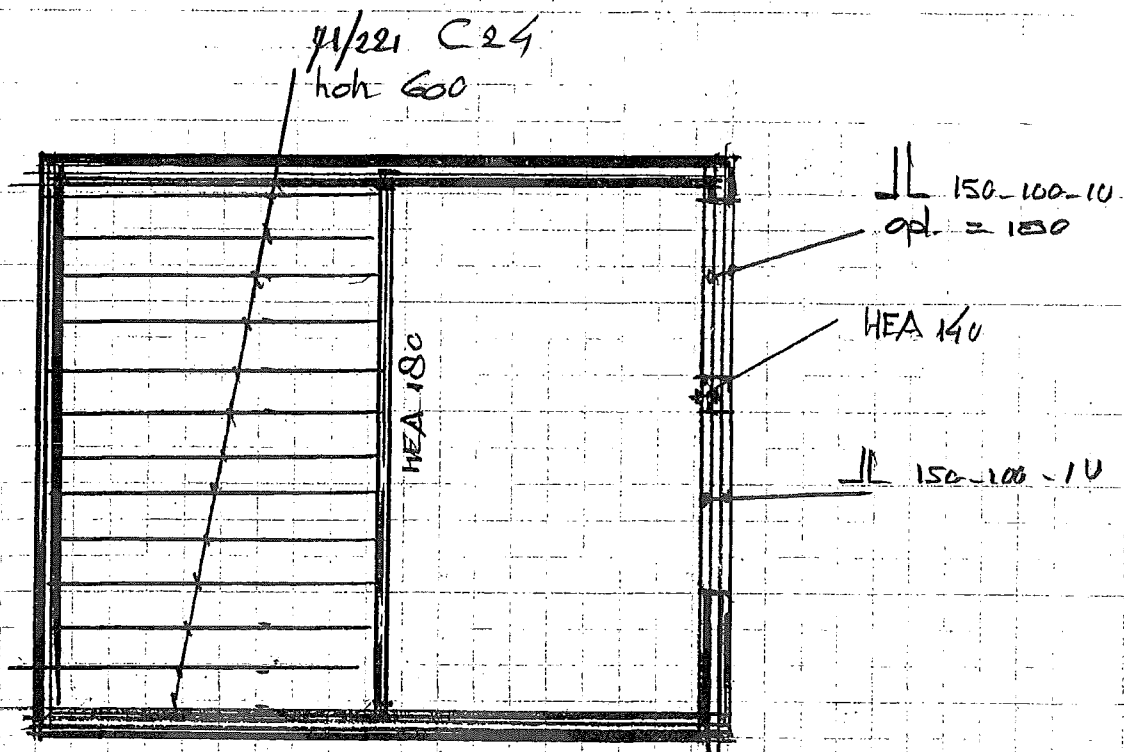
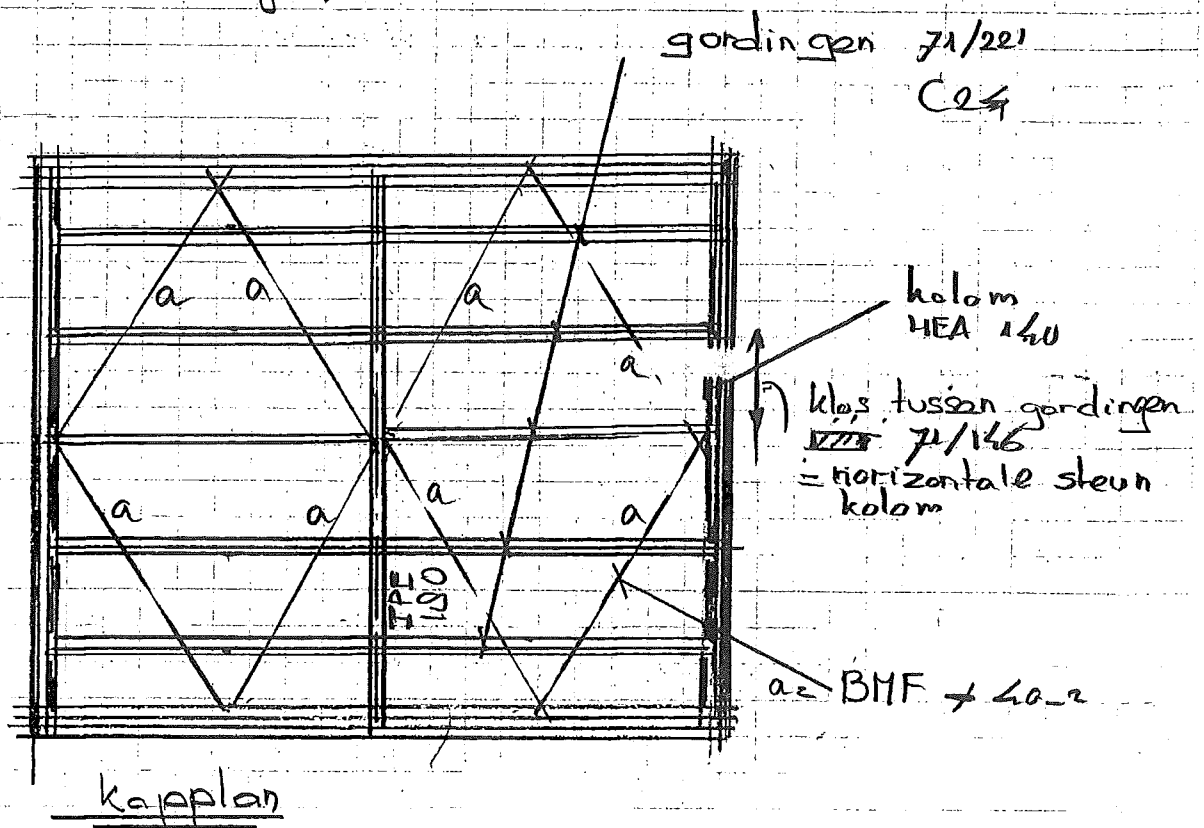
$$M = (1,7 + 9,7) \cdot 0,8 = 9,1 \text{ kNm}$$

$$x = 4,5 \cdot 0,7 - \frac{9,1}{75} = 0,7$$

$$q_g = \frac{75}{\frac{1}{2} \times 2,4 \times 0,7} = 89 \text{ kN/m}^2$$

Garage Berging Hogenkampweg 7

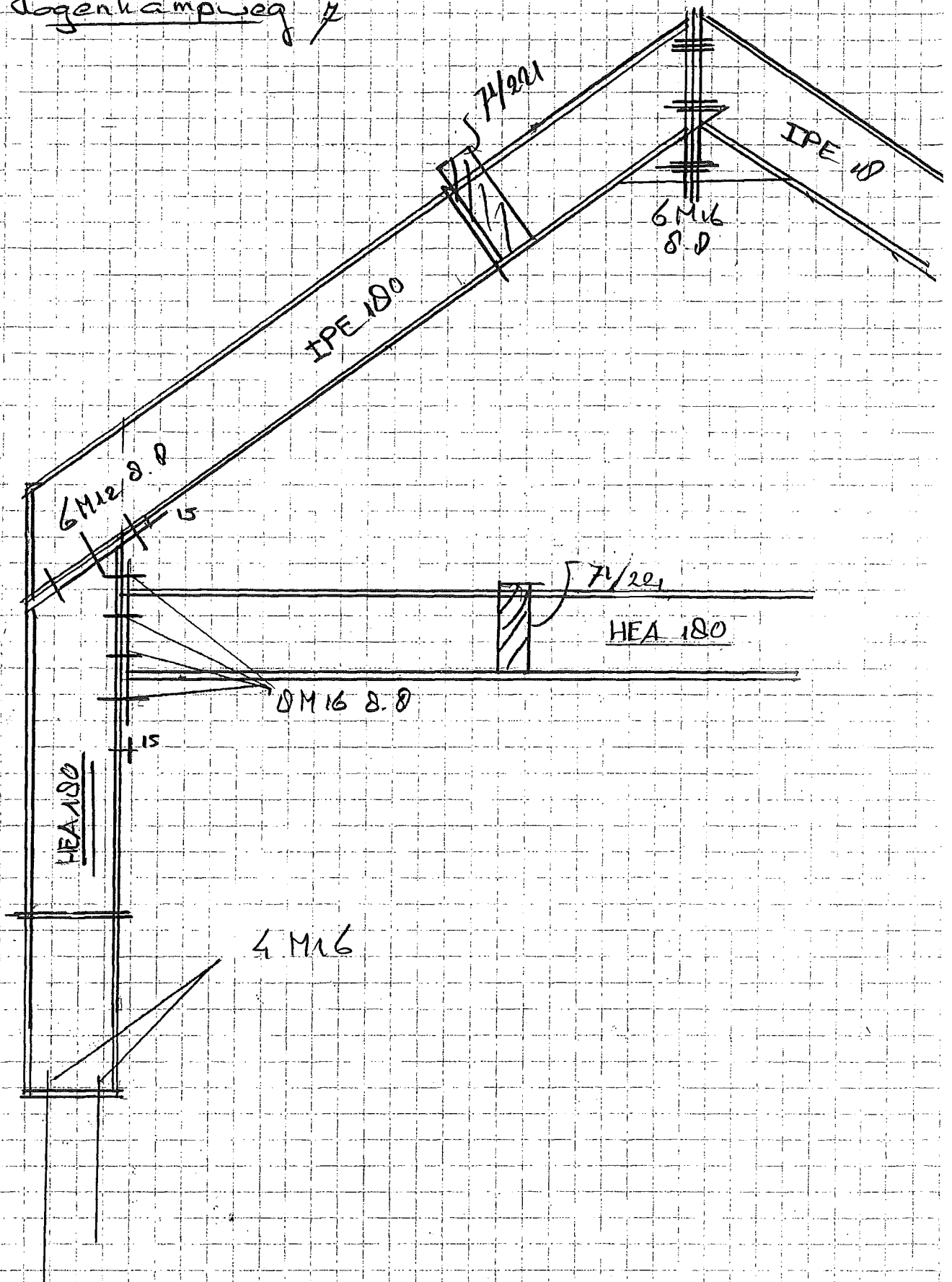
7



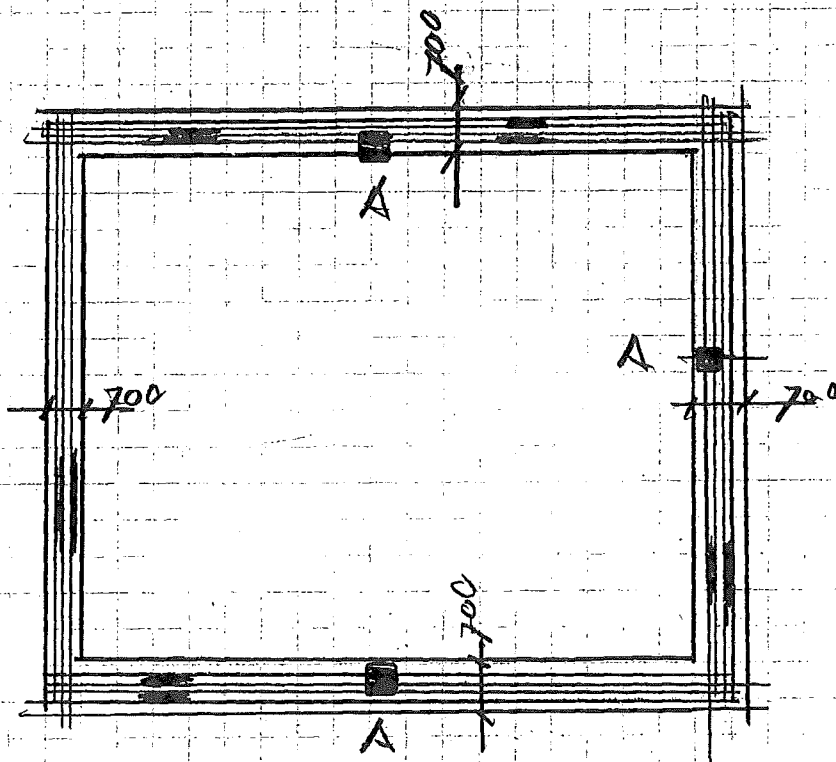
Pueroeping belasting 20 kN/m²

Garage Barging
Hagenkampweg

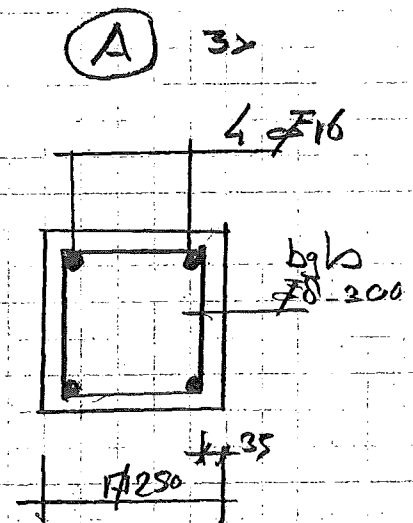
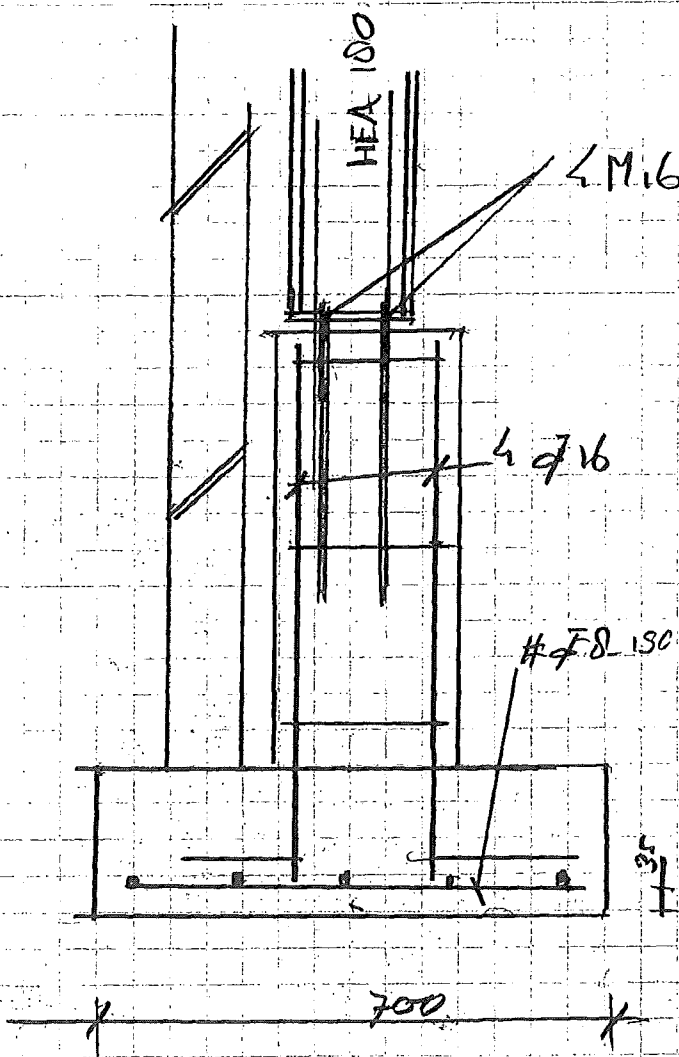
(8)



Fundering



C20/25
3C 3
dikking 35



minimaal
100 cm zand
met conus-
waarde
≥ 40 kgf/cm²