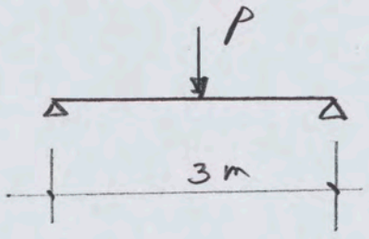
vloer balk

draagende breedte = 2,1 m.



$P_{e.g.} = (2{,}1 \times 1{,}5) \times 1 = 3{,}15$ kN

$P_{nyt.} = (2{,}1 \times 1{,}5) \times 2{,}5 = 7{,}875$ kN

11 kN

$u_{max.} = 1/450\ l = 6{,}667$ mm

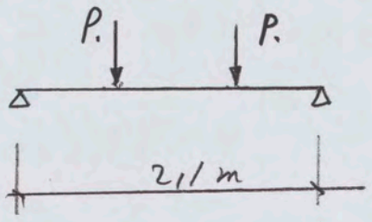
$I_{ben} = \frac{3^3}{6{,}667}\left[9{,}92 \times 11\right] = 446\ cm^4$

neem min IPE.140 $I_x = 541\ cm^4$

$\sigma; d = 1{,}5 \quad \frac{1/4 \times 11 \times 3 \times 10^6}{77{,}3 \times 10^3} = 160\ N/mm^2$

$u = 5{,}5$ mm $= 1/545\ l.$

vloer balk



$P_{e.g} = (0,7 \times 1,5) \times 1 \quad 1,05$ kN

$P_{Hb} = (0,7 \times 1,5) \times 2,5 = 2,625$ kN

3,7 kN

$u_{max} = 1/450\ l. = 4,67$ mm

$$I_{ben} = \frac{2,1}{4,67}^{3} [2 \times 8,3 \times 3,7] = 122\ cm^4$$

neem min IPE 140 (praktisch)

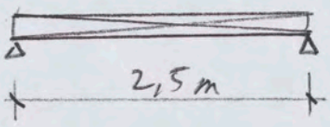
$R = 3,7$ kN $\quad R;d = 5,2$ kN.

Luik in vloeren

Langs balk

$q_{e.g.} = 1\ kN/m^2$

$q_{n.b.} = 2{,}5\ kN/m^2$



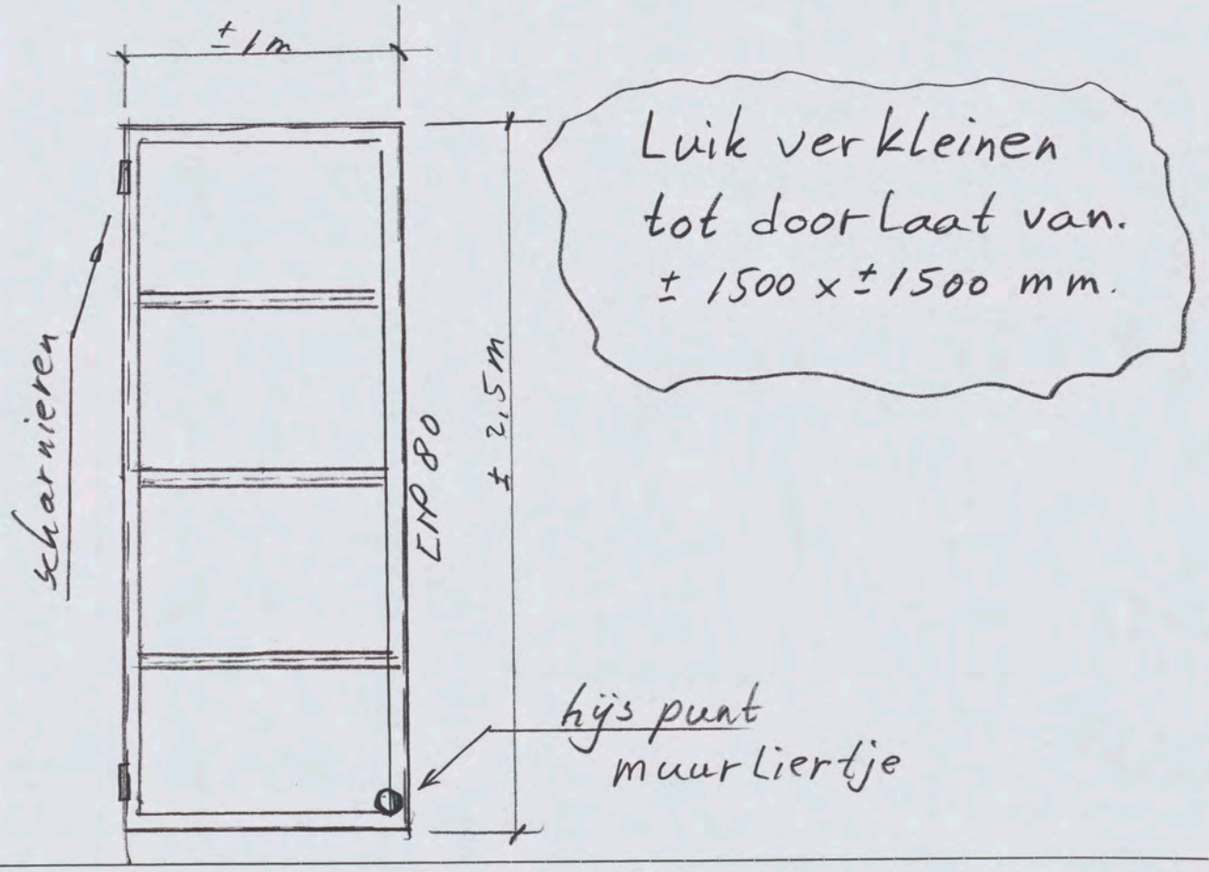
draagende breedte = ½ = 0,5 m

$u_{max} = 1/500\ l = 5\ mm$

$$I_{ben} = \frac{2{,}5^3}{5}\left[6{,}2 \times 0{,}5\,(1+2{,}5) \times 2{,}5\right] = 85\ cm^4$$

neem praktisch profiel L. min. UNP. 80

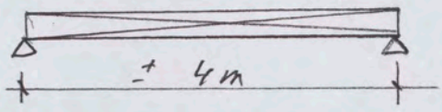
$I_x = 106\ cm^4$



Vloerbalk $\ell = 4$ m

$\ell_{kip} = 2$ m.

draagende breedte ± 0,5 m.



stel. doorbuiging 10 mm

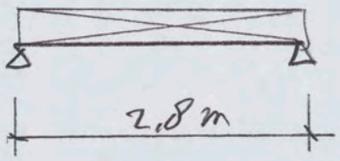
$$I_{ben} = \frac{4^3}{10}\left[6{,}2 \times 0{,}5(1+2{,}5) \times 4\right] = 278 \text{ cm}^4$$

neem praktisch IPE 140 $I_x = 541$ cm^4

Vloerbalk $\ell = 2{,}8$ m

$\ell_{kip} = 1{,}4$ m

draagende breedte = 1 m.

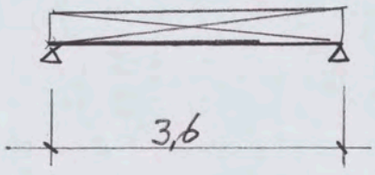


stel doorbuiging = 7 mm

$$I_{ben} = \frac{2{,}8^3}{7}\left[6{,}2 \times 1(1+2{,}5) \times 2{,}8\right] = 190 \text{ cm}^4$$

neem praktisch IPE 140 $I_x = 541$ cm^4

Vloerbalk +4800 bij vide



draagende breedte = 1,2/2 = 0,6 m

q e.g. = 1 × 0,6 = 1 kN/m'

q nvb = 2,5 × 0,6 = 1,5 kN/m'

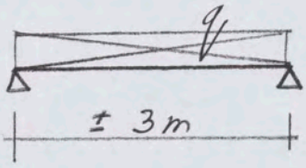
max doorbuiging u = 1/500 l = 7,5 mm

$I_{ben} = \frac{3,6^3}{7,5}\left[6,2 \times (1+1,5) \times 3,6\right] = 348\ cm^4$

neem min UNP 140 of IPE 140

$I_x = 541\ cm^4$

Vloerbalk naast hijsluik



draagende breedte = ± 1,5 m

q e.g. = 1,5 × 1 = 1,5 kN/m'

q nvb = 1,5 × 2,5 = 3,75 kN/m'

5,5 kN/m' rep

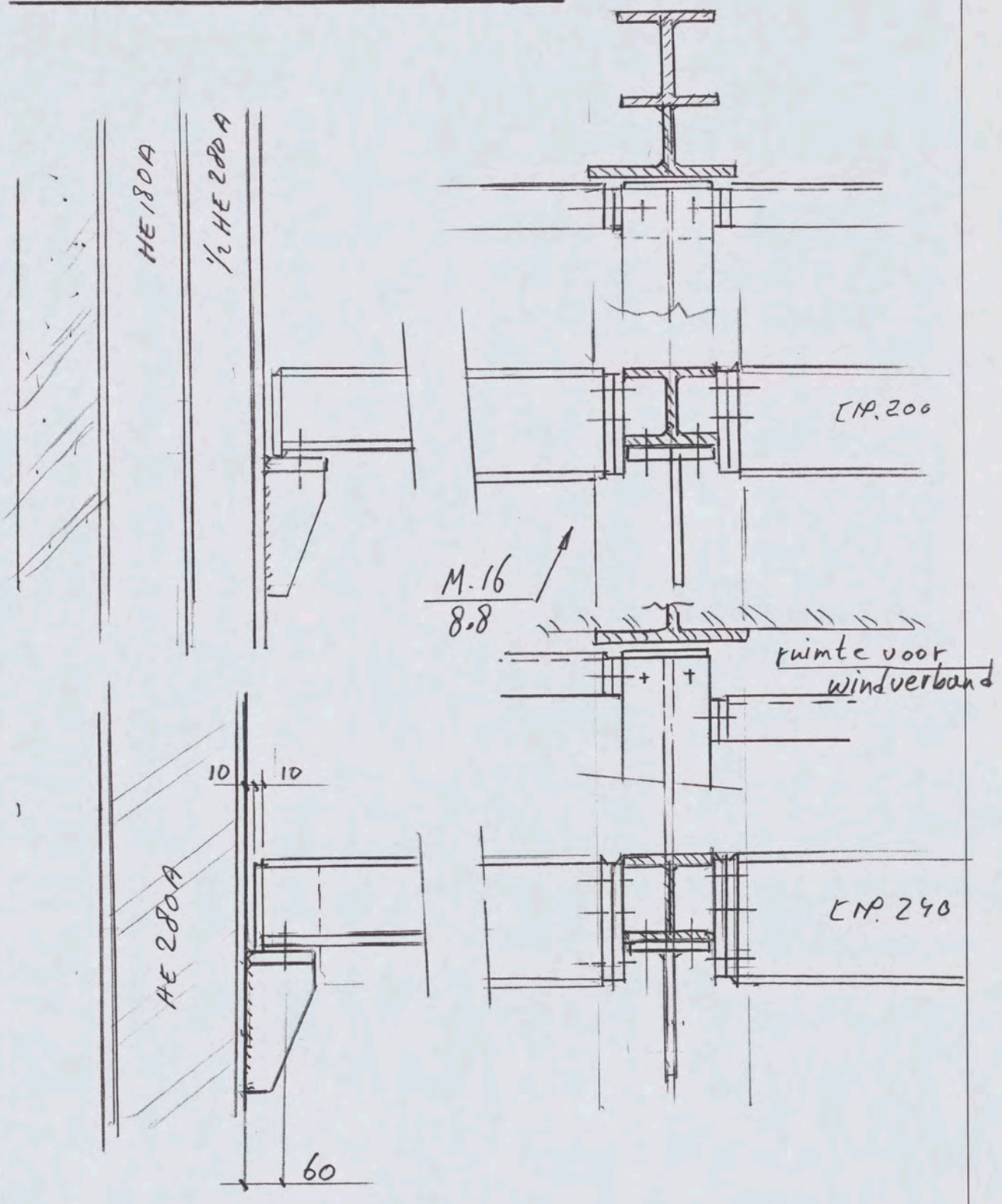
stel max. doorbuiging u = 1/500 l = 6 mm

$I_{ben} \frac{3^3}{6}\left[6,2 \times 5,5 \times 3\right] = 460\ cm^4$

neem praktisch IPE 160 $I_x = 869\ cm^4$

Vervolgblad: 3.13

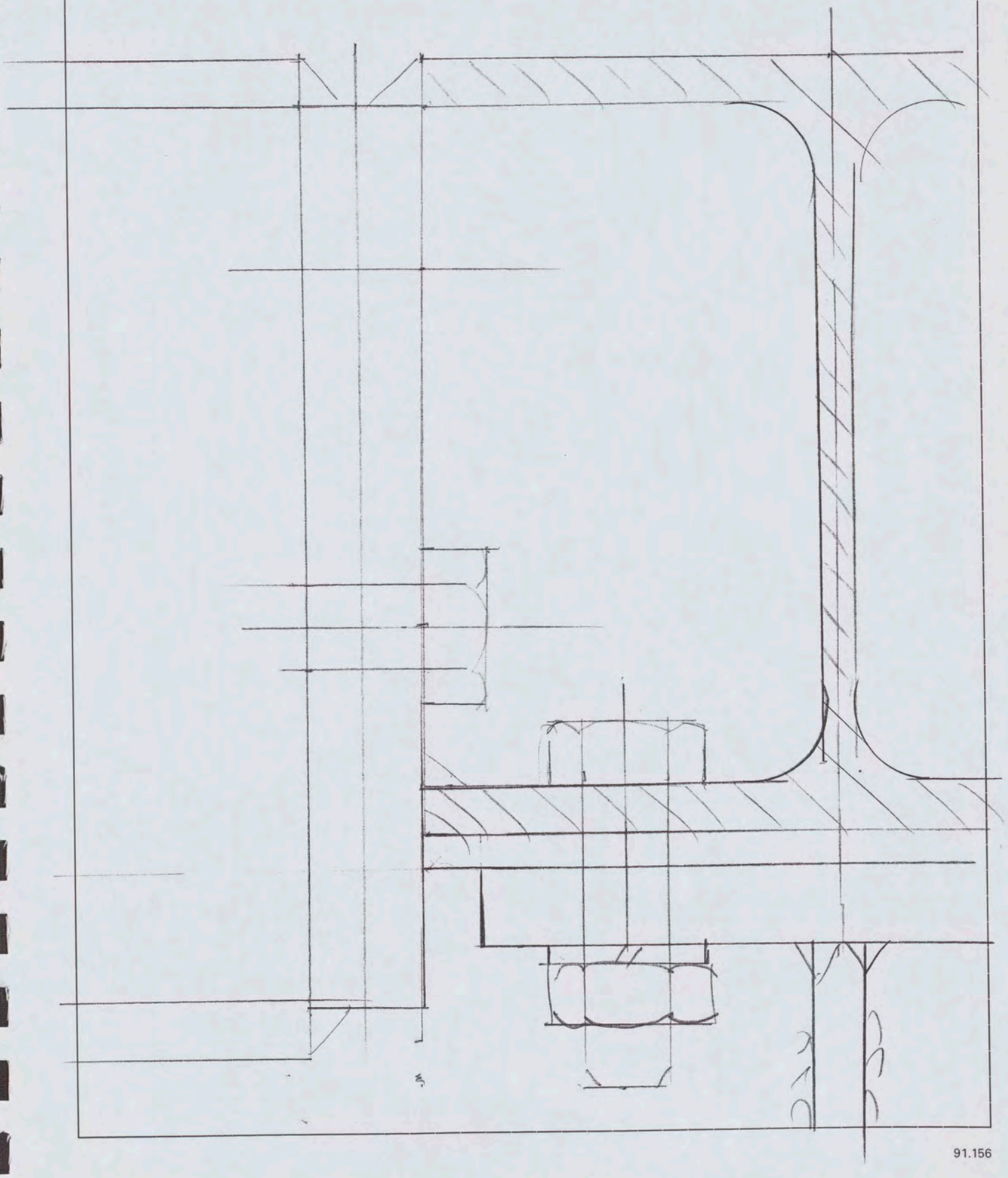
vloer kolom aansluiting



91.156

Vervolgblad: 3.14

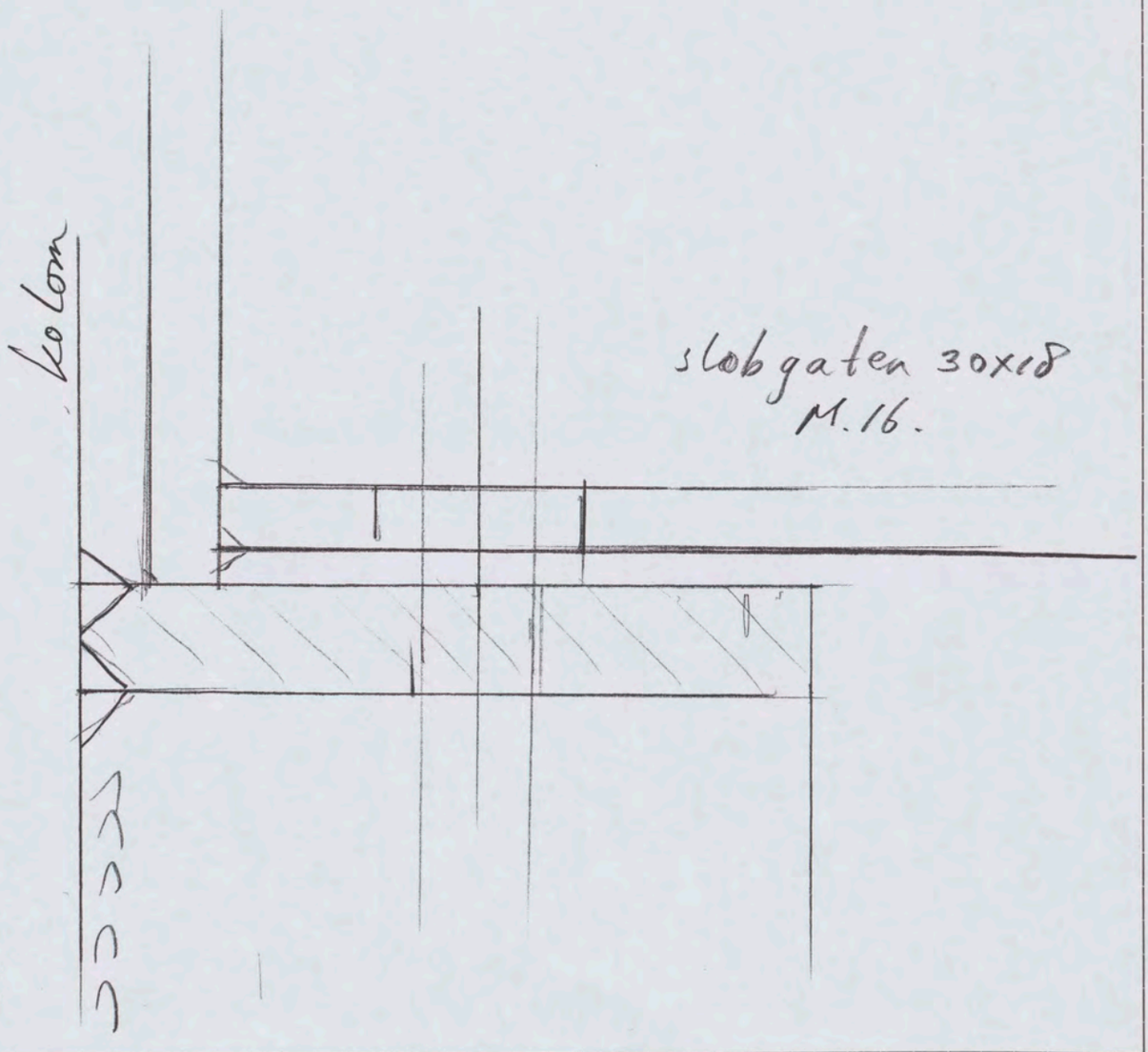
detail aansluiting randligger aan vloerligger



91.156

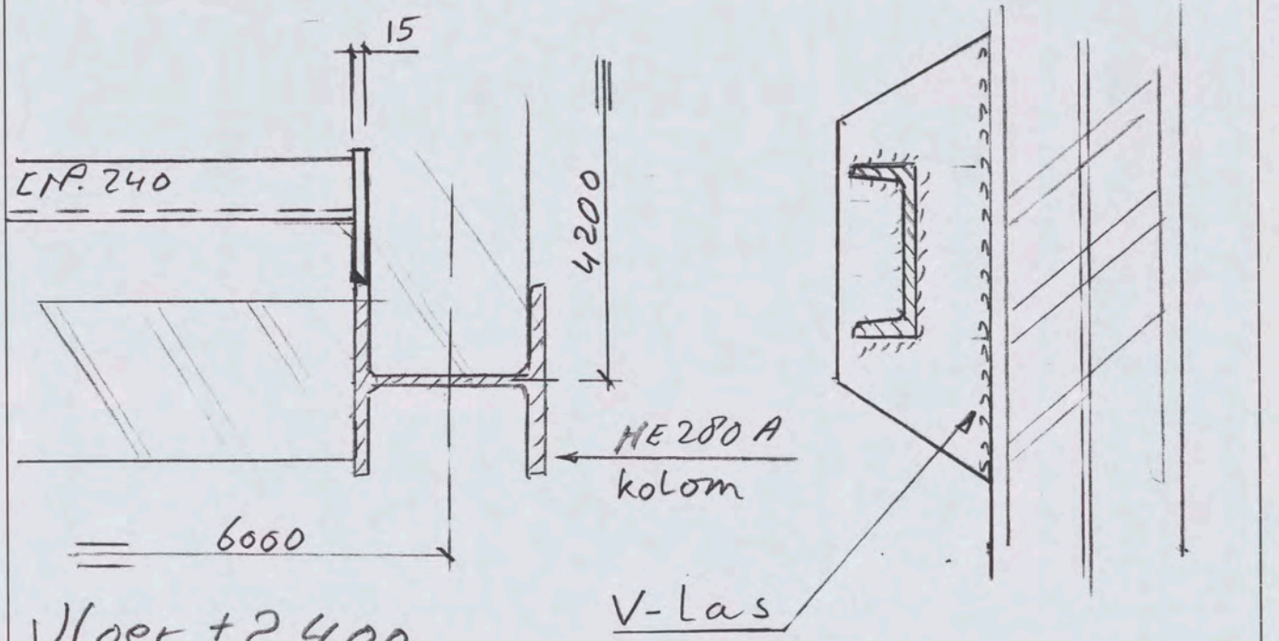
Vervolgblad: 3.15

detail kolom konsole

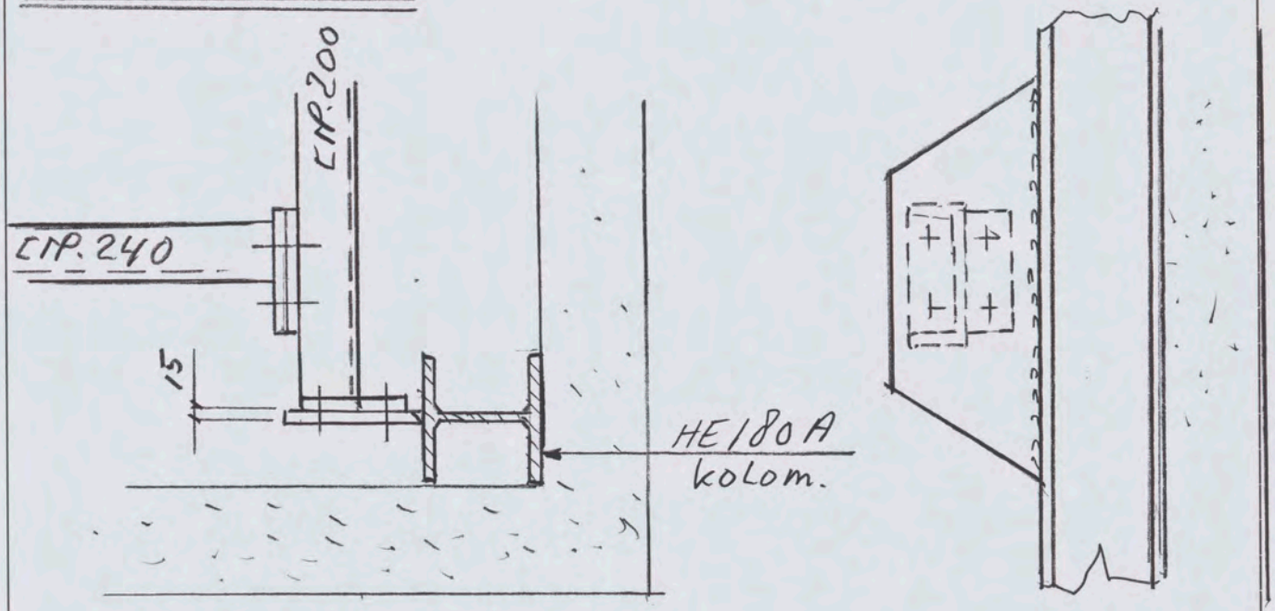


Vervolgblad: 3.16

Vloerbevestiging aan gebouw kolommen tpv. Hoekkolommen



Vloer + 2 400



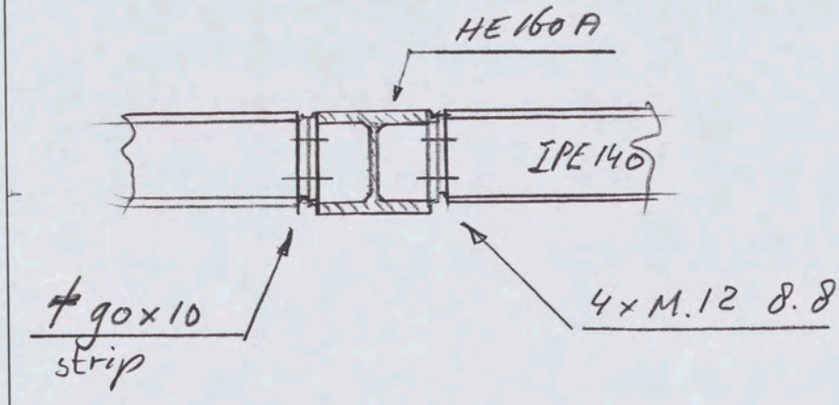
Vloer + 4.800

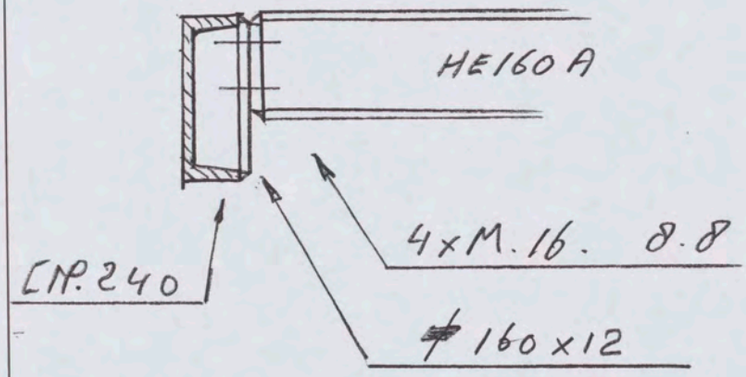
91.156

the scale towards document
Image Engineering Scan Reference Chart TE263 Serial No. 546
Patch Reference numbers on UTT

Vervolgblad: 3.17

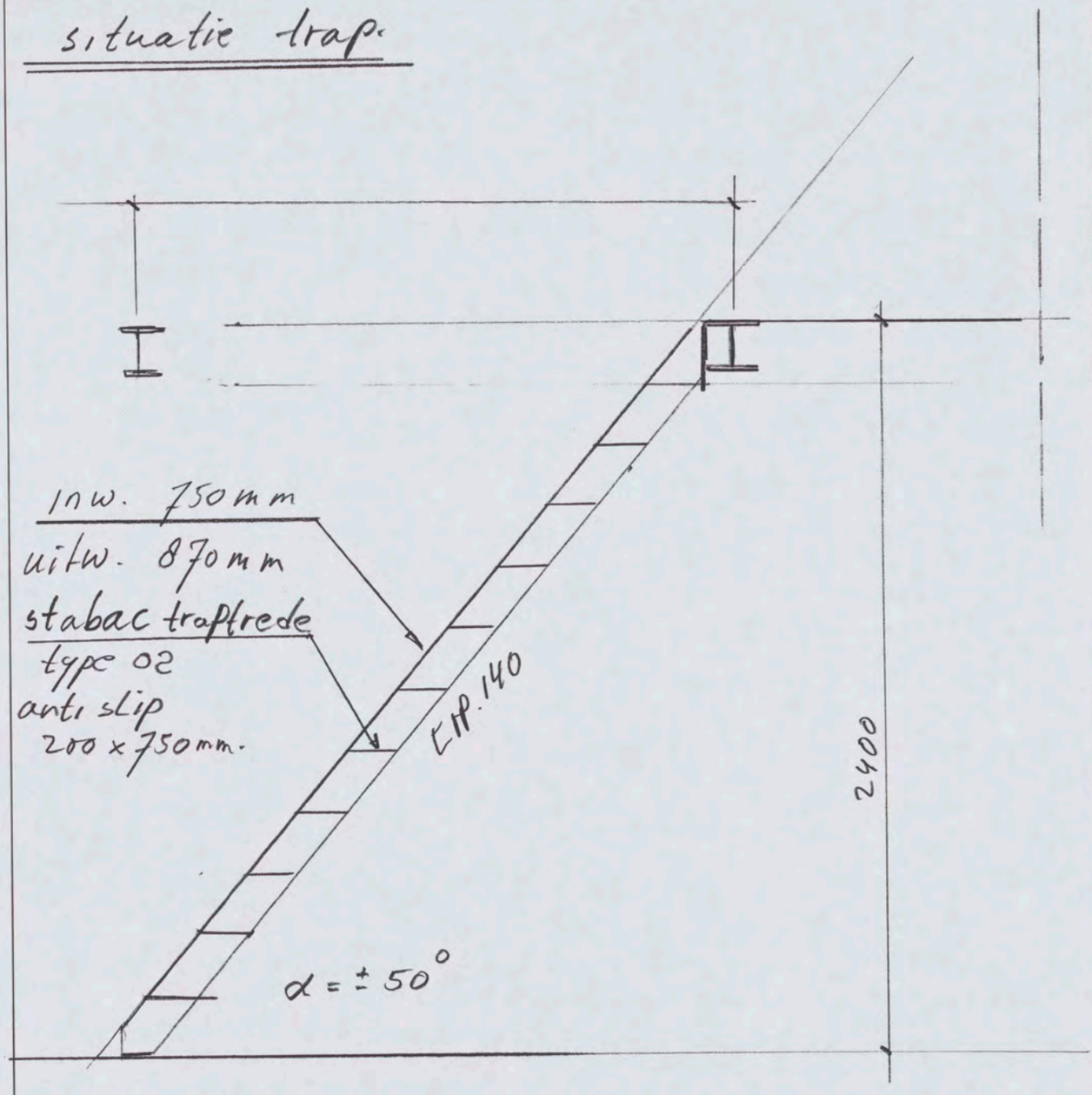
Aansluitdetails vloeren





Vervolgblad: 3.18

situatie trap.



Trappen overnemen uit hal MCB-C
Indien nodig aanpassen

91.156

Vervolgblad: 4.0

Shell. Intern. chem. bv. Amsterdam

statische berekening geb. 11C

Dak +15.500 opstelling Ventilatoren

Vervolgblad: 4.1

Dak + 15.500 hal IIC

e.g. dak (durisol)	2,5	kN/m²
N.b dak midden strook	3	kN/m²
N.b. dak zij stroken	2	kN/m²

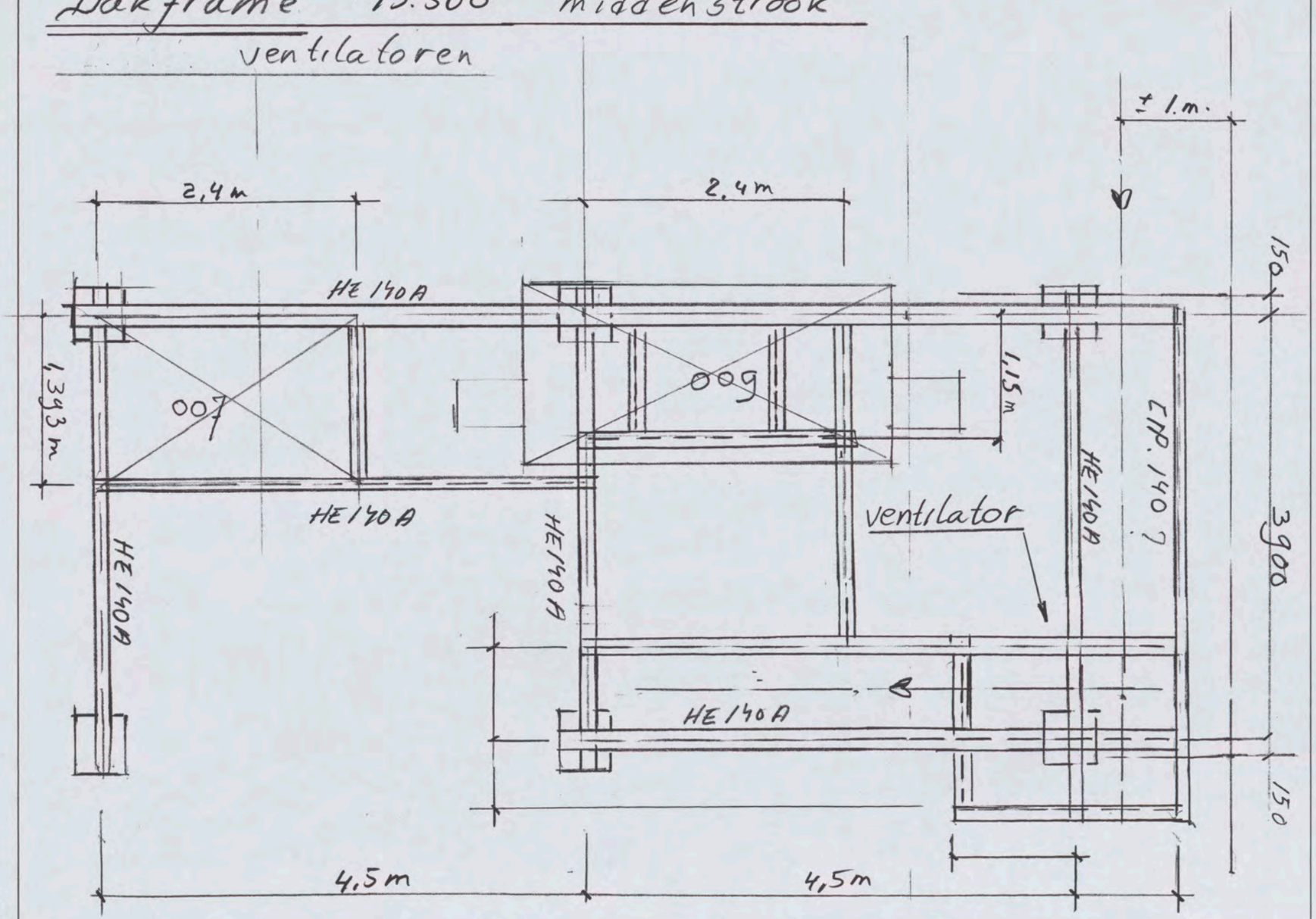
Ventilator 007 — zie tek shell
stel gew. ± 500 kg. — V303MB g8 2004-0

Ventilator oog. — zie tek shell
stel gew. ± 500 kg. — V303MB g8 1015-B

Ventilator
stel gew. ± 450 kg.

Dakframe +15.500 middenstrook

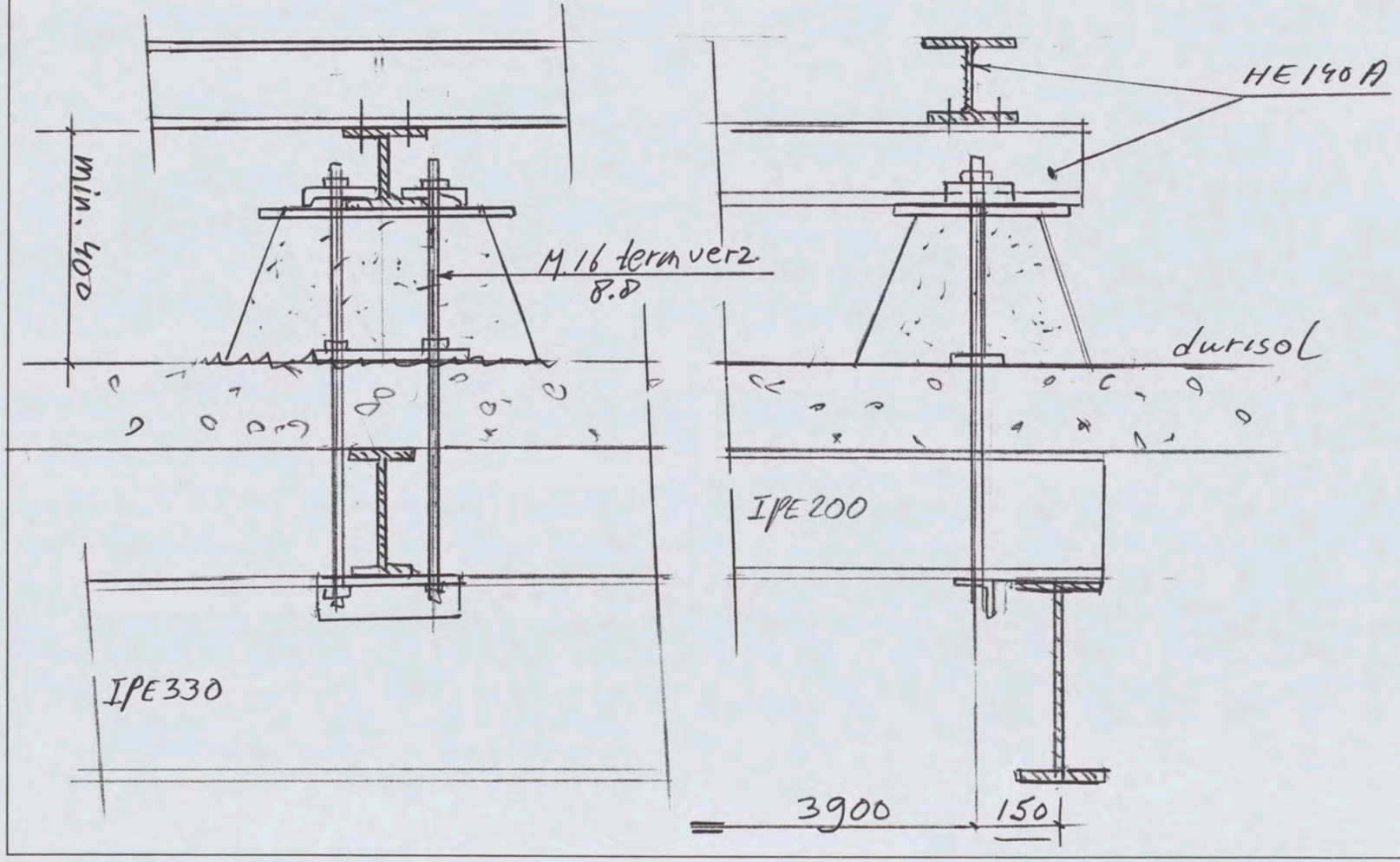
ventilatoren



Vervolgblad: 4.2

91.156

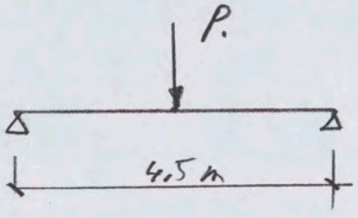
Details dakpoeren



Vervolgblad: 4.3

91.156

dakframe balk



stel : P. ventilatie kast = ± 5 kN

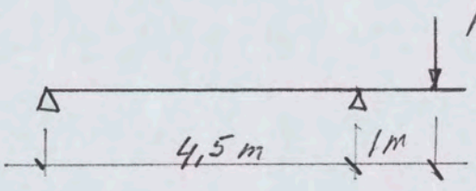
stel max doorbuiging
u max. = 1/500 l = 9 mm

$I_{ben.} = \frac{4,5}{9}^{3} [9,92 \times 5] = 502\ cm^4$

neem min. HE 140 A $I_x = 1033\ cm^4$

doorbuiging $u = 4,5\ mm = 1/1000\ l.$

dakframe balk



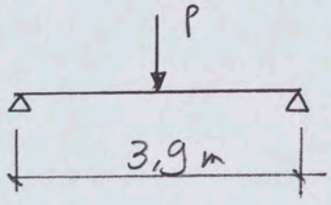
P = Ventilator
P = ± 300 kg = 3 kN

HE 140 A

doorbuiging $u = \frac{3 \times 100^2 \times 550}{3 \times 2100 \times 1033} = 2,5\ mm$

$= 1/400\ l.$

Onderslagbalk dakframe



stel $P_{max} = \pm 7$ kN

neem HE 140 A

doorbuiging $u = \frac{3,9^3}{1033}[9,92 \times 7] = 4\text{mm} = 1/980\ l.$

Vervolgblad: 5.0

shell. Intern. chem. bv. Amsterdam

statische berekening geb 11c

Dak +4.000 opstelling L.b.k

(zÿbeuk)

Vervolgblad: 5.1

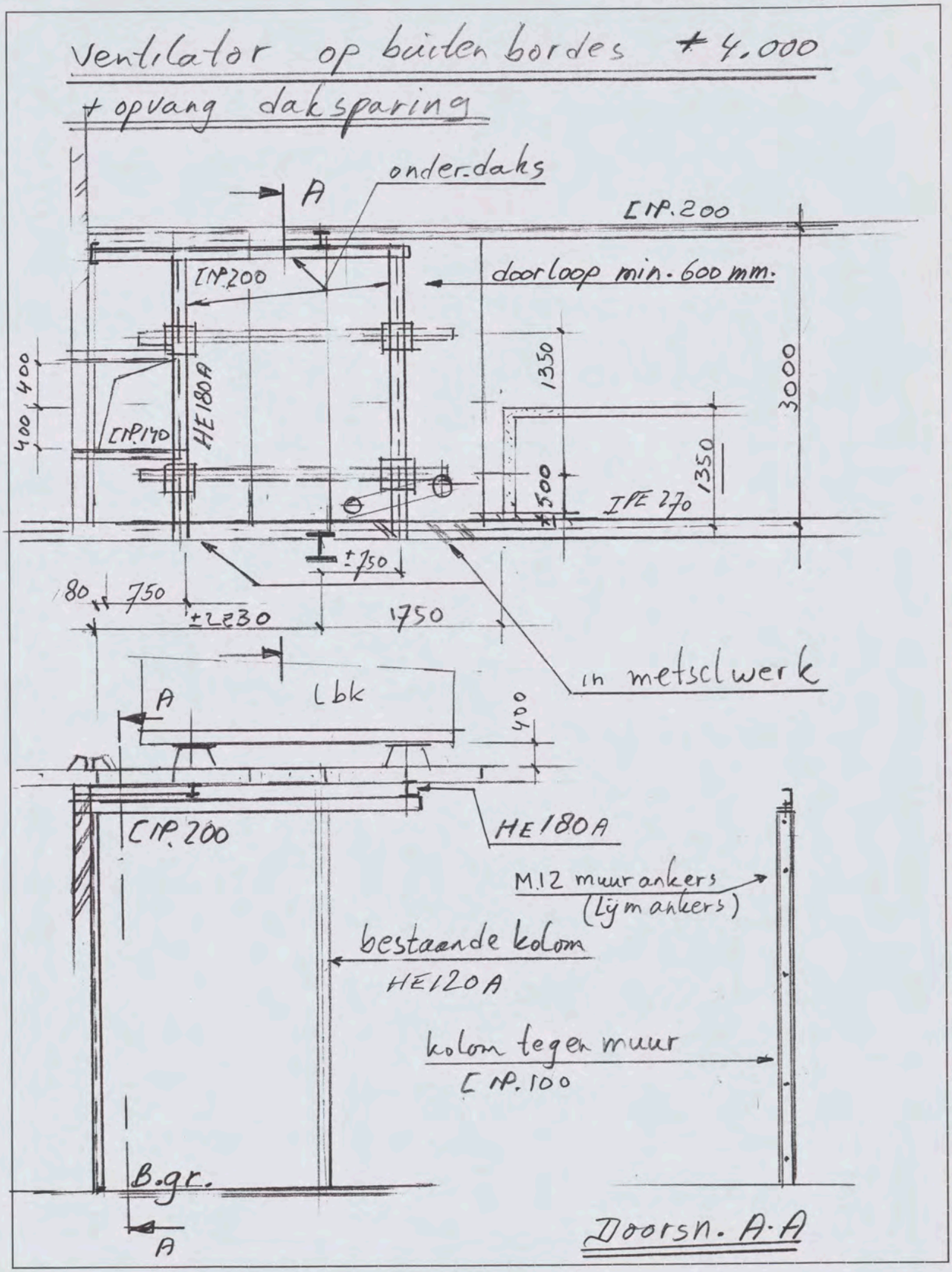
Dak +4.000 zij beuk (Laagbouw)

e.g. = 12 cm durisol neem 2,5 kN/m²
dakrand neem 250 kg/m'

Nb. sneeuwophoping/water. neem 1,5 kN/m²

belasting per poer
uit Lbk. + e.g. poer } ± 8,5 kN.

2 x Lbk op elkaar geplaatst
hoogte wordt dan ± 3 m
Lbk horizontaal afsteunen tegen
gebouw kolom op +7.250 vloer.


Ventilator op buiten bordes + 4.000
+ opvang dakspaning
onder.daks
A
INP.200
INP.200
doorloop min. 600 mm.
400
400
INP.170
HE180A
1350
3000
1350
500
IPE 270
±750
80
±750
±2230
1750
in metselwerk
A
Lbk
400
INP.200
HE180A
M12 muurankers
(Lijmankers)
bestaande kolom
HE120A
kolom tegen muur
INP.100
B.gr.
A
Doorsn. A-A

91.156