

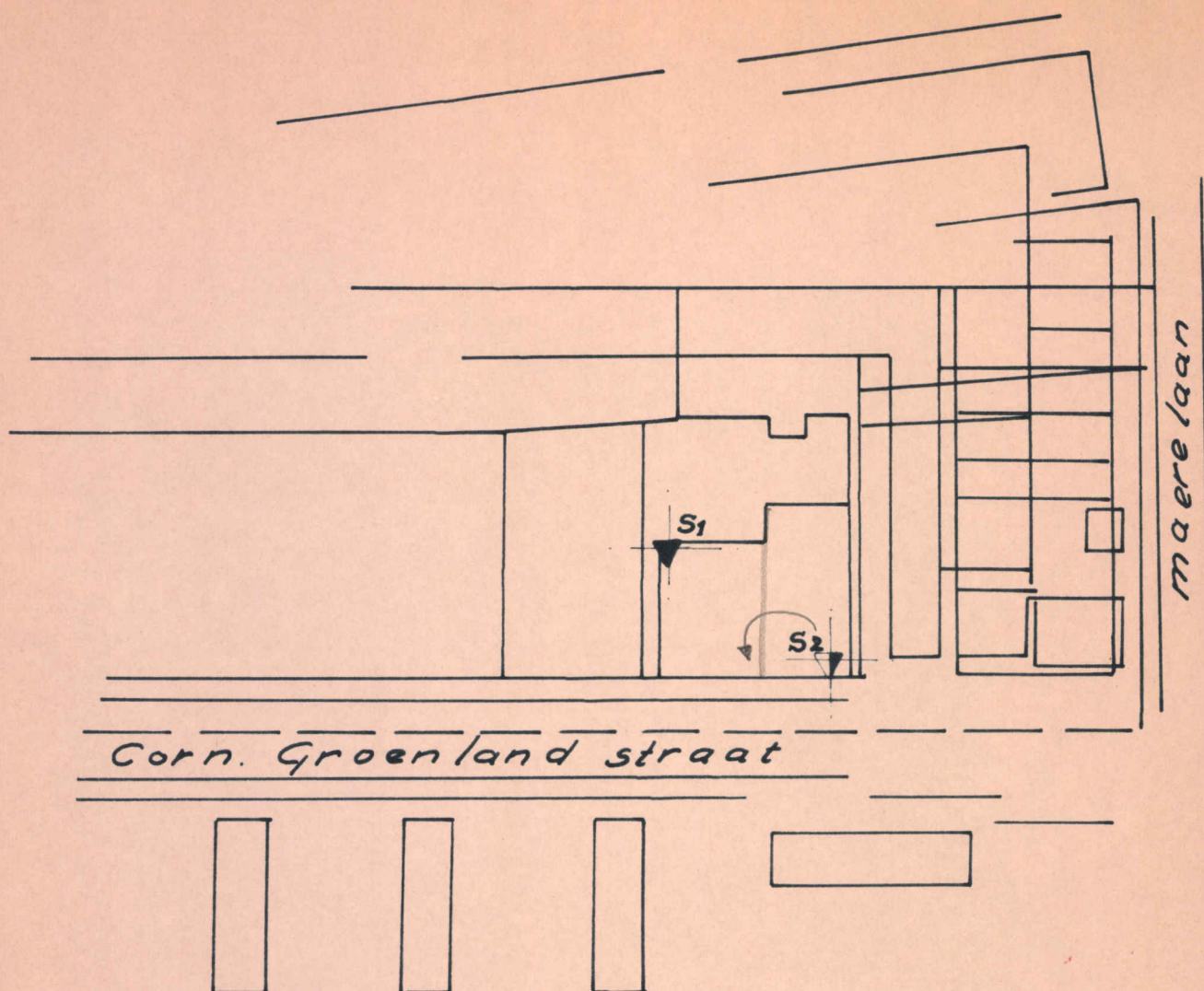
Gemeente Heemskerk

A.W. Grootestraat 1

Bouw woonhuis



1966-029



TJADEN

bronbemaling
pompputten



diepsonderingen
grondboringen

HAARLEM

HOLLAND

SITUATIE BODEMONDERZOEK
WERKPLAATS + WONING
te HEEMSKERK

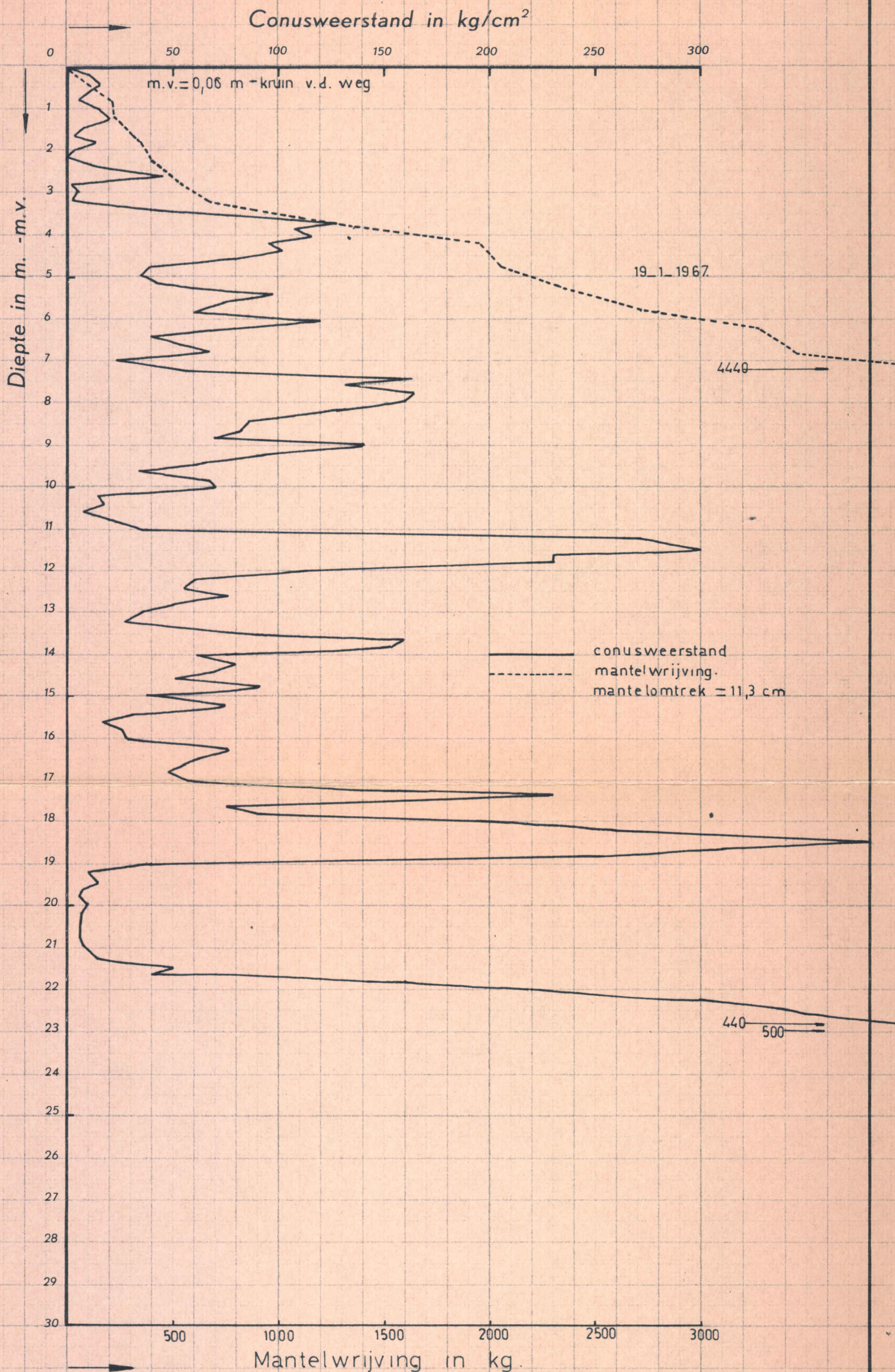
Kaart blad 19 C

Coörd. 106 - 502

Get.:	AaB	
Gew.:	24-1-67	
Gew.:		
Schaal:	1 : 1000	
Tek. nr.	S 3336	

WERK:

WERKPLAATS + WONING TE HEEMSKERK.



Let op: m.v. = maaiveld t.p.v. de diepsondering tijdens de uitvoering!

n.v. H. J. Tjaden & Zn

Haarlem 24_1 1967

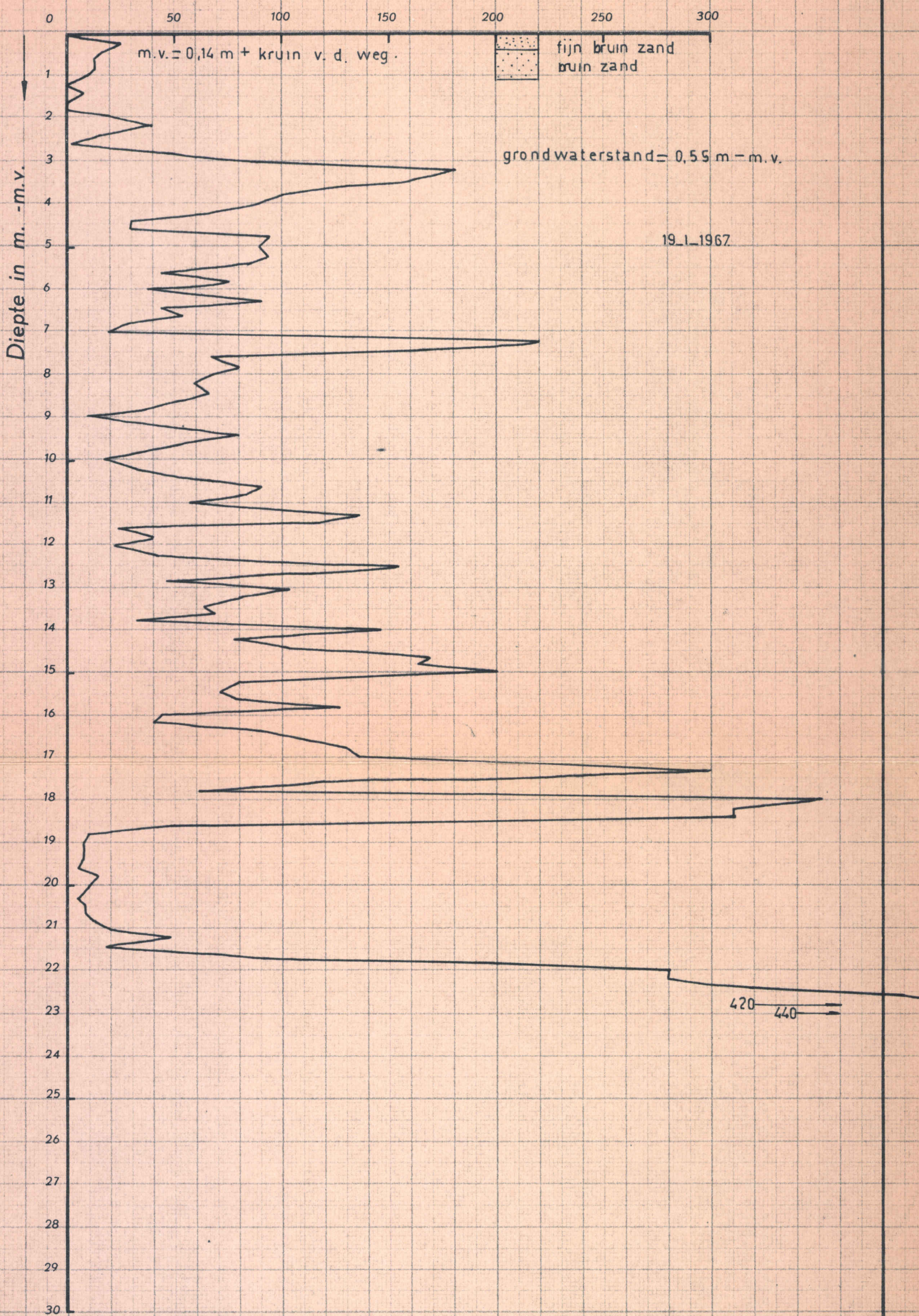
BLAD _ **No.**

S. 3336 _ 1

WERK:

HEEMSKERK.

Conusweerstand in kg/cm^2



Let op: m.v. = maaiveld t.p.v. de diepsondering tijdens de uitvoering!

n.v. H. J. Tjaden & Zn

Haarlem 24-1 1967.

BLAD _No._

S. 3336 _2

Berekening fundamente t.b.v. de werkplaats voor de Hr. de Groot te Heemskerk.

1

Linker gevel.

Belasting

kolom. dak $6 \times 583 = 3498$ kg.
console 2360 "
bordes 715 "
e.g. kolom. 247 "

6820 kg.

(zie ben. staal constructie)

metselwerk $3,6 \times 6 \times 0,105 \times 1800 = 4060$ "

gew. beton plaat $0,12 \times 1,7 \times 1,8 \times 2400 = 875$ "

" balk $0,3 \times 0,38 \times 3,6 \times 2400 = 985$ "

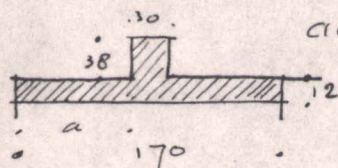
" grond $0,68 \times 1,4 \times 1,8 \times 1400 = 2400$ "

zonder grond.

15140 kg $\rightarrow 12740$ kg.

per m' $\frac{15140}{1,8} = 8400$ kg. per m' $\frac{12740}{1,8} = 7100$ kg.

aanleg br. $8400 : (0,5 \times 100) = 170$ cm. $\sigma_{gr} = \frac{7100}{170} = 0,42$ kg/cm²



bal. strook a.

3500 kg $\rightarrow 0,42 \times 0,7 \times 10000 = 2920$

voor opname moment af
beton $0,12 \times 0,7 \times 2400 = 200$

grond $0,68 \times 0,7 \times 1400 = 670$ " zonder grond. $\frac{200}{2630}$ kg.

$L = a + \frac{b}{2} = 37,5$ cm

$M = 0,375 \times 2720 = 1030$ kgm.

$M = 0,35 \times 2630 = 920$ kgm.

$h' = 9,4$ cm.

$\nabla_b / \nabla_v = 60 / 1400$

$f_y = 0,262 \times 30,3 = 7,94$ cm²

$k = \frac{9,4}{1030} = 0,293$ $A = 0,997 \cdot 9,4 = 9,4$ cm²

gekozen $\phi 12-12$

$7 \phi 12$ m' $\phi 12-14$

Rachter gevel

kolom 6820 - bordes 715 = 6105 kg.
muur 4060 "
balk 985 "
11150 kg.

per m' $\frac{11150}{3,6} = 3097$ kg

plaat $0,12 \times 0,8 \times 2400 = 230$ "

grond $0,68 \times 0,5 \times 1400 = 470$ "

3797 kg.

aanleg br. 80 cm.

wap. $\phi 8-20$

minimum wapening
toepassen $\phi 8-16$ cm.

flock penant.

kolom.

dak $2,25 \times 1,8 \times 150 = 610$ kg.

console 2360 "

bordes 360 "

muur werk $1,8 \times 0,55 \times 6 \times 0,105 \times 1800 = 2660$ "

6000 kg.

opp. 12000 cm² = 110×110

wap als linker gevel

$\phi 12-14$ ✓

Voor en achtergevel.

tussen stijl $\frac{440 + 310}{2} \times 180 \times 150 = 1020 \text{ kg.}$

cleun. 300 "
muurwerk 4200 "
beton 1650 "

per m' $\frac{7170}{385} = 1870 \text{ kg.}$

$\frac{7170}{7170 \text{ kg.}}$

aanleg b.r. $1870 : (0,5 \times 100) = 37,4 \text{ cm.}$

410 cm. ✓

Behoort bij besluit van	
de Raad	van Heemskerk
B. en W.	
dd. 31 MAART 1966	no. 32
Mij bekend.	
De Secretaris van Heemskerk,	

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Statische berekening t.b.v. de Staalconstructies voor een te bouwen werkplaats.

Mobiele kraan

e.g. 2000 kg.

per tol 500 kg.

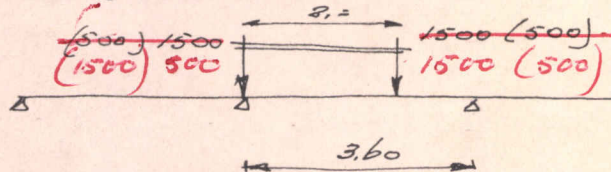
Nuttige last 2000 kg.

Bij last links is de belasting per tol:

Links: $500 + \frac{2000}{2} = 1500 \text{ kg}$

Rechts: 500 kg

Bepaling console belasting



e.g. kraan rail. KS. 22

22.2 kg/m'

e.g. stoomboiler. DIN 12

26.5 kg/m'

aftroeding

1.3 kg/m'

50 kg/m'

Belasting A =

2150

e.g. rail

193

last

e.g. kraan

770

max.

2343

min.

console belasting e.g.

3.6 x 50 =

180 kg

e.g. console

13 kg

kraan last Links $1500 + \frac{1500 \times 1.6}{3.6} =$

2167 kg

kraan last Rechts $500 + \frac{500 \times 1.6}{3.6} =$

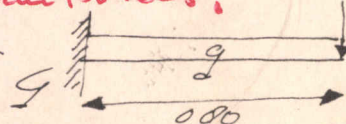
722 kg

max. console belasting dus 2360 kg.

min. " 922 kg.

Waarschuwing: constructie tekening van Bordes?

Belasting door Bordes.



g.e.g. =

65 kg/m²

huttig

150 kg/m²

215 kg/m²

Per m' $3.6 \times 215 = 775 \text{ kg/m'}$

heuring 20 kg/m' $P = 3.6 \times 20 = 72 \text{ kg}$

E.g. console 20 kg/m'

$M = 775 \times \frac{1}{2} \times 0.8 \times 0.8 + 72 \times 0.8 + 20 \times \frac{1}{2} \times 0.8 \times 0.8 = 312 \text{ kgm}$

$W_{ben} = \frac{312}{14} = 22.3 \text{ cm}^3$ [10 $W_{L} = 41.3 \text{ cm}^3$ of I-PE 100

Constructie? ontblijft op de tekening.

Langsliggers: $M = \frac{1}{8} \times 215 \times 3.6^2 + \frac{1}{8} \times 20 \times 3.6^2 = 382.5 \text{ kgm}$ $W_{ben} = \frac{382.5}{14} = 27.3 \text{ cm}^3$

Gekozen 2 Liggers I-EP 80 $W = 2 \times 20 = 40 \text{ cm}^3$

Vloerplaat: $M = 10 \times 215 \times 0.8^2 = 172 \text{ kgm}$ $W_{ben} = \frac{172}{14} = 12.3$ Plaat/dikte 5mm.

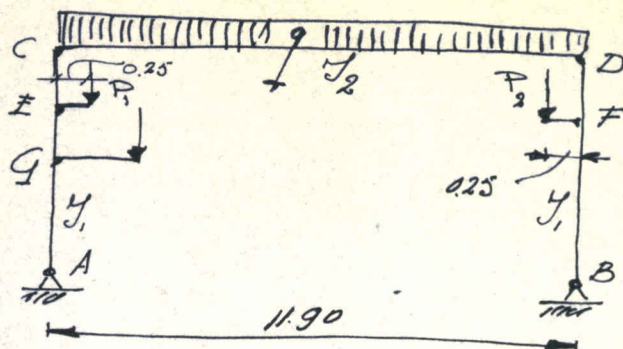
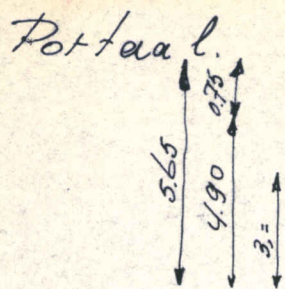
$W = \frac{1}{6} \times 100 \times 0.5^2 = 4.17 \text{ cm}^3$

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$$6 \times 16 \text{ i.}$$

$$0.65 \text{ dm} \times 1.65 \text{ dm} \times 10 \text{ to } 6 \text{ i.} =$$

$$\frac{0.65}{1.65} = \frac{1.65}{1.65} \times 100$$



Spanten h.o.h 3.60 m.
Stijlen DIN 16
Ligger I-PE 300
Geen windbelasting volgens N1055

$$P_1 = 2360 \text{ kg} \quad P_2 = 922 \text{ kg}$$

Belasting q - e.g. I-PE 300

gordrigen
halmplanken
rubbetoid
nuttig

$$\begin{array}{r} 15 \text{ kg/m}^2 \\ 20 \text{ kg/m}^2 \\ 15 \text{ kg/m}^2 \\ 100 \text{ kg/m}^2 \\ \hline 150 \text{ kg/m}^2 \end{array}$$

$$43 \text{ kg/m}^2$$

$$\text{of per m}^2 \quad 3.6 \times 150 =$$

$$\text{totaal } q =$$

$$540 \text{ kg/m}^2$$

$$583 \text{ kg/m}^2$$

Bepaling Cross eenheden:

$$I_1 = 2630 \text{ cm}^4 \quad S_1 = \frac{1}{4} \cdot \frac{2630}{5.65} =$$

$$I_2 = 8356 \text{ cm}^4 \quad S_2 = \frac{8356}{11.90} =$$

$$\frac{3.50}{7.03} =$$

$$V_1 = \frac{3.50}{11.53} = 0.338$$

$$V_2 = \frac{7.03}{11.53} = \frac{0.668}{1.000}$$

Primaire Momenten:

$$\text{Ligger: } M_p = \frac{1}{2} \times 583 \times 11.9^2 = 6880 \text{ kgm} \quad M_v = \frac{1}{8} \times 583 \times 11.9^2 = 10300 \text{ kgm}$$

$$\text{Stijlen: } M_E = 2360 \times 0.25 = 580 \text{ kgm} \quad M_F = 922 \times 0.25 = 230 \text{ kgm}$$

$$M_C = +0.635 \times 580 = +368 \text{ kgm}$$

$$M_D = -0.635 \times 230 = -146 \text{ kgm}$$

$$\left. \begin{array}{l} M_C \\ M_D \end{array} \right\} \frac{b}{l} = \frac{0.75}{5.65} = 0.1326 \text{ door kraan lasten.}$$

Door botroles:

$$M_G = 312 \text{ kgm} \quad \frac{b}{l} = \frac{2.65}{5.65} = 0.48$$

$$M_C = -0.09 \times 312 = -28 \text{ kgm.}$$



Tabel voor verticale volbelasting

Van naar verl fael PH	C		D	
	A	D	C	B
	0,332	0,668	0,668	0,332
		+6886		
	-2290	-4590		
		+2295		
	-760	-1535		
		+768		
	-255	-513		
		+257		
	-85	-172		
		+86		
	-28	-58		
		+29		
	-10	-19		
		+10		
	-3	-7		
		+4		
	-1	-3		
	-3432	+3432	-3432	+3432
	$\frac{H_A}{\rightarrow} = \frac{H_B}{\leftarrow} = \frac{3432}{5,65} = 607 \text{ kg}$			

Tabel voor kraanbelasting

Van	C		D		
naar	A	D	C	B	
verl fact	0,332	0,668	0,668	0,332	$H_A = \frac{-212+580}{5,65} = 65 \text{ kg}$
P.H.	+368			-146	$H_B = \frac{-44+230}{5,65} = 33 \text{ kg}$
	-122	-246	+98	+48	Verschil $\rightarrow 31 \text{ kg}$ E.H. $\neq 0$
		+49	-123		
	-16	-33	+82	+41	Nu momenten bevoegen Gekozen +1000 kgm
		+41	-17		
	-14	-27	+11	+6	$H = \frac{500+2}{5,65} = 177 \text{ kg}$
		+6	-14		
	-2	-4	+9	+5	Dit is te groot dus we te voegen:
		+5	-2		
	-2	-3	+1	+1	$O = -31 + 2 \times 177$ $\alpha = 0,1768$
		+0	-2		
			+1	+1	$H_C = 0,1752 \times 500 = 88 \text{ kgm}$
	+212	212	+44	-44	
	+88	-88	-88	+88	Nu is
	+300	-300	-44	+44	
Tabel voor 1000 kgm					
P.H.	+1000				$H_A = \frac{-300+580}{5,65} = 49 \text{ kg}$
	-332	-668			
		+334			$H_B = \frac{44+230}{5,65} = 49 \text{ kg}$
	-110	-224			
		+112			
	-38	-75			
		+38			
	-13	-25			
		+13			
	-4	-9			
		+5			
	-2	-3			
		+2			
	-1	-1			
	+500	-500	-500	+600	

Cross voor Bordas belasting.

Van	C		D	
maat verol. fact.	A	D	C	B
	0,332	0,668	0,668	0,332
R.H.	- 28			
	+ 19	+ 9		
			+ 5	
			- 3	- 2
		- 2		
	+ 1	+ 1		
	- 8	+ 8	+ 2	- 2
	+ 162	- 162	- 162	+ 162
	+ 154	- 154	- 160	+ 160
	$H/A = \frac{312 + 8}{5,65} = \underline{\underline{57 \text{ kg}}}$			
	$H/B = \frac{-2}{5,65} = \underline{\underline{0,4 \text{ kg.}}}$			
	$\underline{\underline{57,4 \text{ kg}}}$			

Geen evenwicht dus:

$$0 = -57,4 + x \times 177. \quad x = 0,324$$

$$m_{C=D} = 0,324 \times 500 = 162 \text{ kgm.}$$

Nu te:

$$H/A = \frac{312 - 154}{5,65} = \underline{\underline{28 \text{ kg.}}}$$

$$H/B = \frac{+160}{5,65} = \underline{\underline{28 \text{ kg}}}$$

Bepaling M_{max} .

uit vert. bel:	- 3432	+ 3432	- 3432	+ 3432	(1)
uit kraan bel:	+ 300	- 300	- 44	+ 44	(2) links
uit sodes bel:	+ 154	- 154	- 160	+ 160	(3)
	- 2978	+ 2978	- 3636	+ 3636	(1)+(2)+(3)
uit kraan bel	+ 44	- 44	- 300	+ 300	(4) Rechts
	- 3234	+ 3234	- 3892	+ 3892	(1)+(4)+(3)

$$M_V C-D_{max} = 10300 - \frac{2978 + 3636}{2} = +6993 \text{ kgm.}$$

$$M_{max} C en D = -3892 \text{ kgm.}$$

$$\begin{aligned} \text{Last I} \left\{ \begin{aligned} R_{AV} &= \frac{1}{2} \times 583 \times 11.9 - \frac{-2978}{5.65} + \frac{-3636}{5.65} + 2360 + 775 + 258 = 6747 \text{ kg} \\ R_{BV} &= 3470 - 527 + 643 + 922 + 258 = 4766 \text{ kg} \end{aligned} \right. \end{aligned}$$

$$\begin{aligned} \text{Last II} \left\{ \begin{aligned} R_{AV} &= 3470 - \frac{-3234}{5.65} + \frac{-3892}{5.65} + 922 + 258 + 775 = 5310 \text{ kg} \\ R_{BV} &= 3470 - 572 + 689 + 2360 + 258 = 6205 \text{ kg} \end{aligned} \right. \end{aligned}$$

$$\bar{\sigma} = 1400 \text{ kg/cm}^2 \quad L_k = 5.65 \times \frac{1}{2} \sqrt{2} = 4 \text{ m.} \quad \lambda = \frac{400}{6.71} = 60$$

$$\alpha = 0.753$$

$$\sigma_{AI} = \frac{6747}{0.753 \times 58.4} + \frac{297800}{329} = 153 + 904 = 1057 \text{ kg/cm}^2$$

$$\sigma_{BI} = \frac{4766}{0.753 \times 58.4} + \frac{363600}{329} = 109 + 1105 = 1214 \text{ kg/cm}^2$$

$$\sigma_{AII} = \frac{5310}{0.753 \times 58.4} + \frac{323400}{329} = 121 + 983 = 1104 \text{ kg/cm}^2$$

$$\sigma_{BII} = \frac{6205}{0.753 \times 58.4} + \frac{389200}{329} = 142 + 1183 = 1325 \text{ kg/cm}^2$$

$$\Sigma H = 607 + 49 + 28 = 684 \text{ kg.}$$

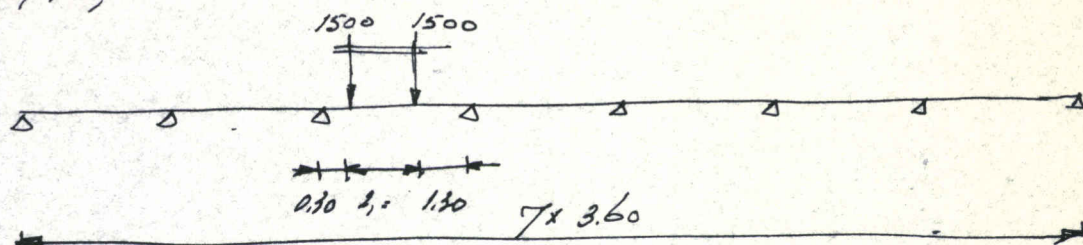
$$V_{max} = 6747 \text{ kg.}$$

$$\sigma_{veld C-D} = \frac{699300}{55.7} = 1260 \text{ kg/cm}^2$$

Pet stijl 2 of ankerbouten $\phi 12 \text{ mm}$

$$\sigma = \frac{684}{2 \times 3,14 \times 0,6^2} = 302 \text{ kg/cm}^2$$

Raillijger:

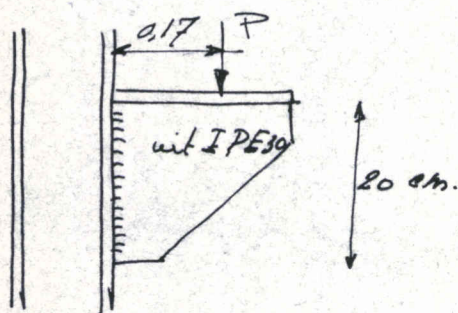


$$M_{\text{max}} = 110 \times 50 \times 3,6^2 + \left(\frac{1500 \times 2,3}{3,6} + \frac{1500 \times 0,3}{3,6} \right) 1,30 = 1475 \text{ kgm}$$

$$K_{\text{ben}} = \frac{147500}{1400} = 105,5 \text{ cm}^3$$

Gekozen DIN 12 $K = 14/3 \text{ cm}^3$

Consôle voor kraantaillijger.



$$P = 2360 \text{ kg (max)}$$

$$M = 2360 \times 0,17 = 400 \text{ kgm}$$

Lijf IPE30 = 7 mm dik.

Gekozen 2 zijlussen lang 18 cm $\frac{46}{56}$

Elke las een schuif kracht van $\frac{2360}{2} = 1180 \text{ kg}$.

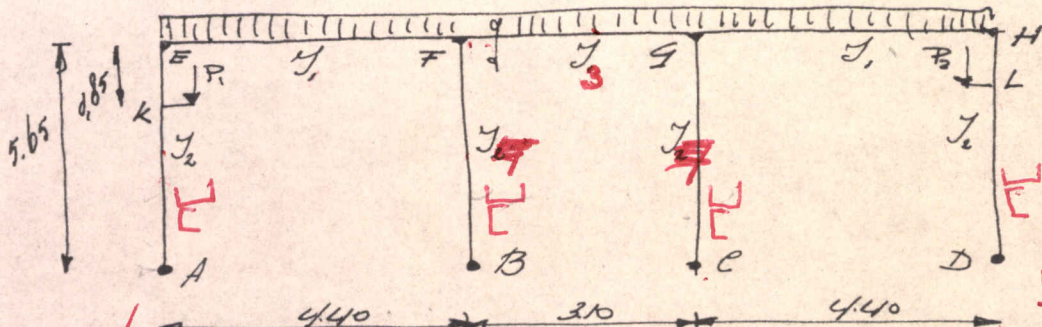
$$\tau_v = \frac{1180}{18 \times 0,6} = 109 \text{ kg/cm}^2$$

$$K = 40000 \text{ kgcm} \quad \sigma_t = \frac{40000}{16 \times 0,7 \times 18^2} = 1060 \text{ kg/cm}^2$$

$$T = 1 \times 0,7 \times 1060 = 742 \text{ kg}$$

$$\sigma = \tau_h = \frac{1/2 \times 1 \times 0,7 \times 742 \times 1/2 \sqrt{2}}{1 \times 0,6} = 310 \text{ kg/cm}^2$$

$$\sigma_i = \sqrt{(2 \times 310)^2 + 3 \times 109^2} = 650 \text{ kg/cm}^2$$



alle kolommen
zelfde profiel.
volgens berekening

150 kg/m blad.

$q = 175 \times 1,8 + 30 = 345 \text{ kg/m}$ $P_1 = 2360$ $P_2 = 922 \text{ kg}$
 of $P_1 = 922$ $P_2 = 2360 \text{ kg}$

in mil-in
overeenkomstig
met tekening.

$I_{x_1} = 364 \text{ cm}^4$ $I_{x_2} \text{ van } \text{NP 12} = 364 \text{ cm}^4 + 43,2 = 407 \text{ cm}^4$
 $I_{y_1} = 364 \text{ cm}^4$ $I_{y_2} \text{ van } \text{NP 12} = 364 \text{ cm}^4$

Constructie eindspan-
ontbrekt 0,605 op de
tekening.

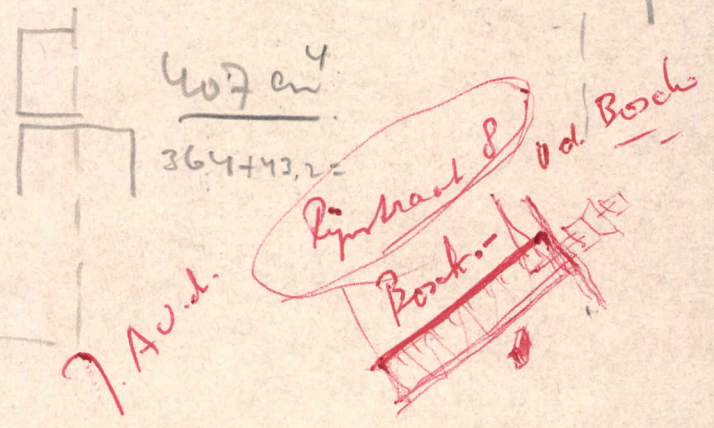
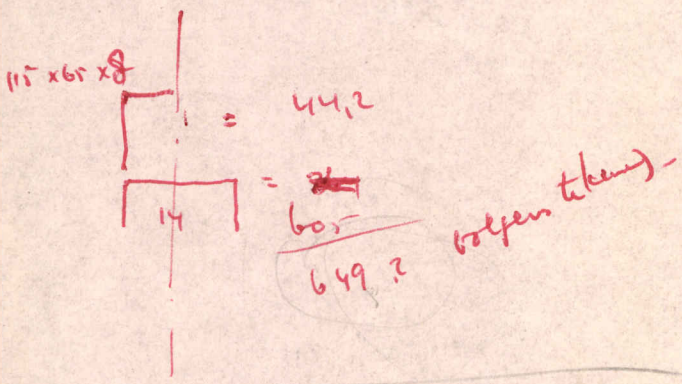
$S_1 = \frac{364}{440} = 0,827$ $V_1 = \frac{0,827}{0,541 + 0,827} = 0,395$
 $S_2 = \frac{407}{5,65} \cdot \frac{3}{4} = 0,541$ $V_2 = \frac{0,541}{0,541 + 0,827} = 0,395$
 $S_3 = \frac{364}{310} = 1,172$ $V_3 = \frac{0,827}{0,827 + 0,541 + 1,172} = 0,325$
 $V_4 = \frac{0,541}{0,827 + 0,541 + 1,172} = 0,213$
 $V_5 = \frac{1,172}{0,827 + 0,541 + 1,172} = 0,462$

gegeven komen niet overeen
met die op de tekening vermeldt.

Primaire momenten

$M_{E-F} = M_{H-G} = \frac{1}{12} \times 345 \times 4,4^2 = 557 \text{ kgm}$
 $M_{F-G} = \frac{1}{12} \times 345 \times 3,1^2 = 276 \text{ kgm}$
 $M_L = 580 \text{ kgm}$ $M_H = 230 \text{ kgm}$
 $M_E = +338 \text{ kgm}$ $M_H = -134 \text{ kgm}$ } zie blad 2.

321
78,3
399,3



7. Av. d.

Zie blad 8
Bouwk. v.d. Bosch

Cross voor verticale volbelasting

Van	F		F		
naar	A	F	E	B	G
verol. fact.	0,395	0,605	0,325	0,213	0,462
P.M.		+557	-557		+276
	-220	-337	+91	+60	+130
		+46	-168		-65
	-18	-28	+76	+50	+107
		+38	-14		-54
	-15	-23	+22	+14	+32
		+11	-12		-16
	-4	-7	+9	+6	+13
		+5	-4		-7
	-2	-3	+4	+2	+5
		+2	-2		-3
	-1	-1	+2	+1	+2
	-260	+260	-553	+133	+420

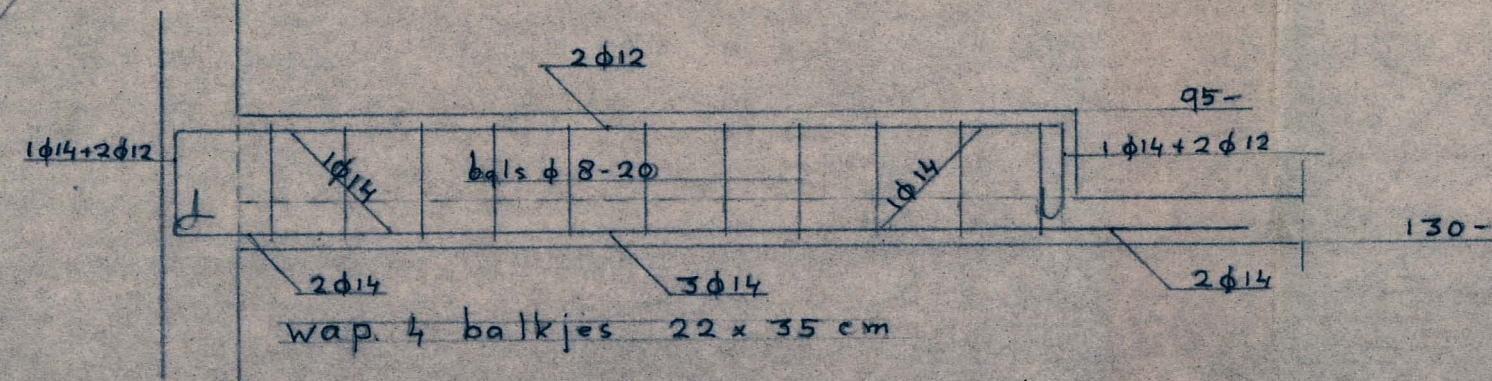
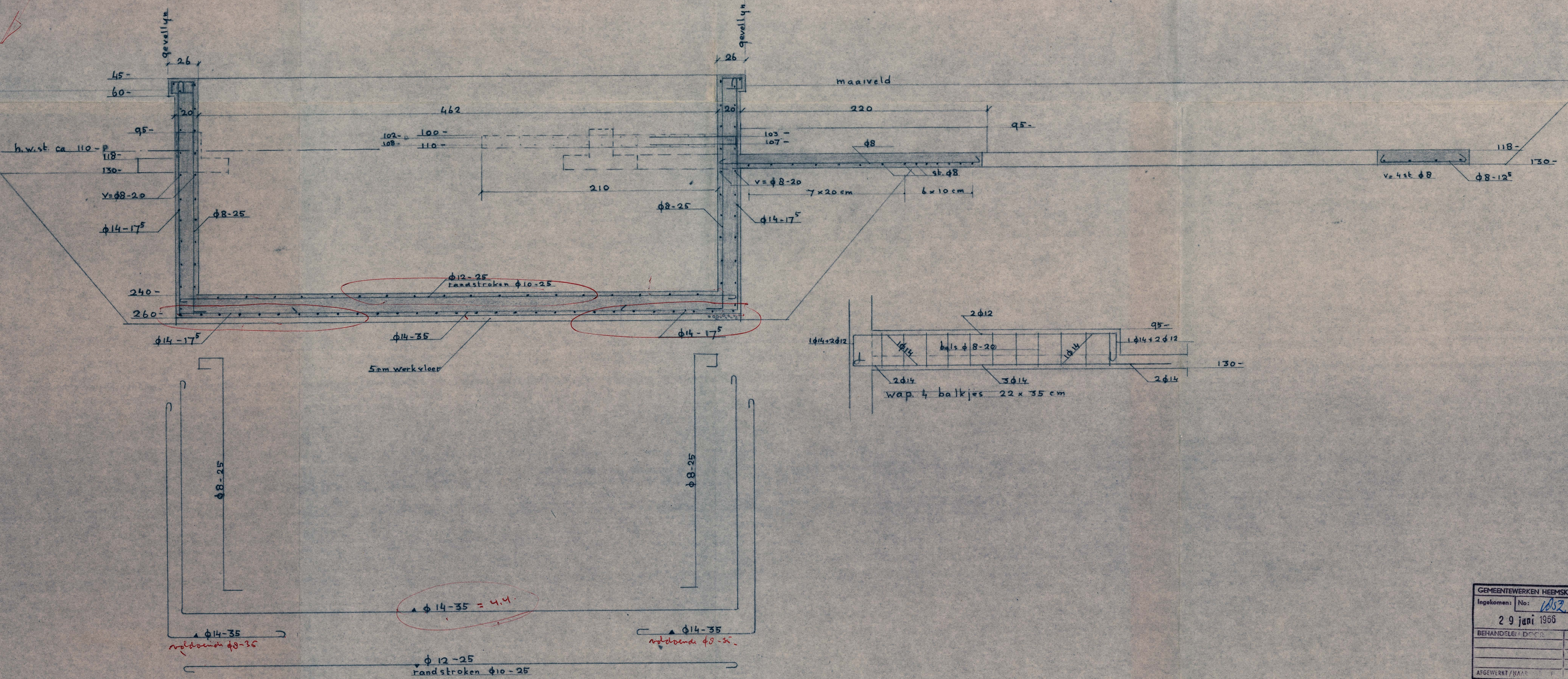
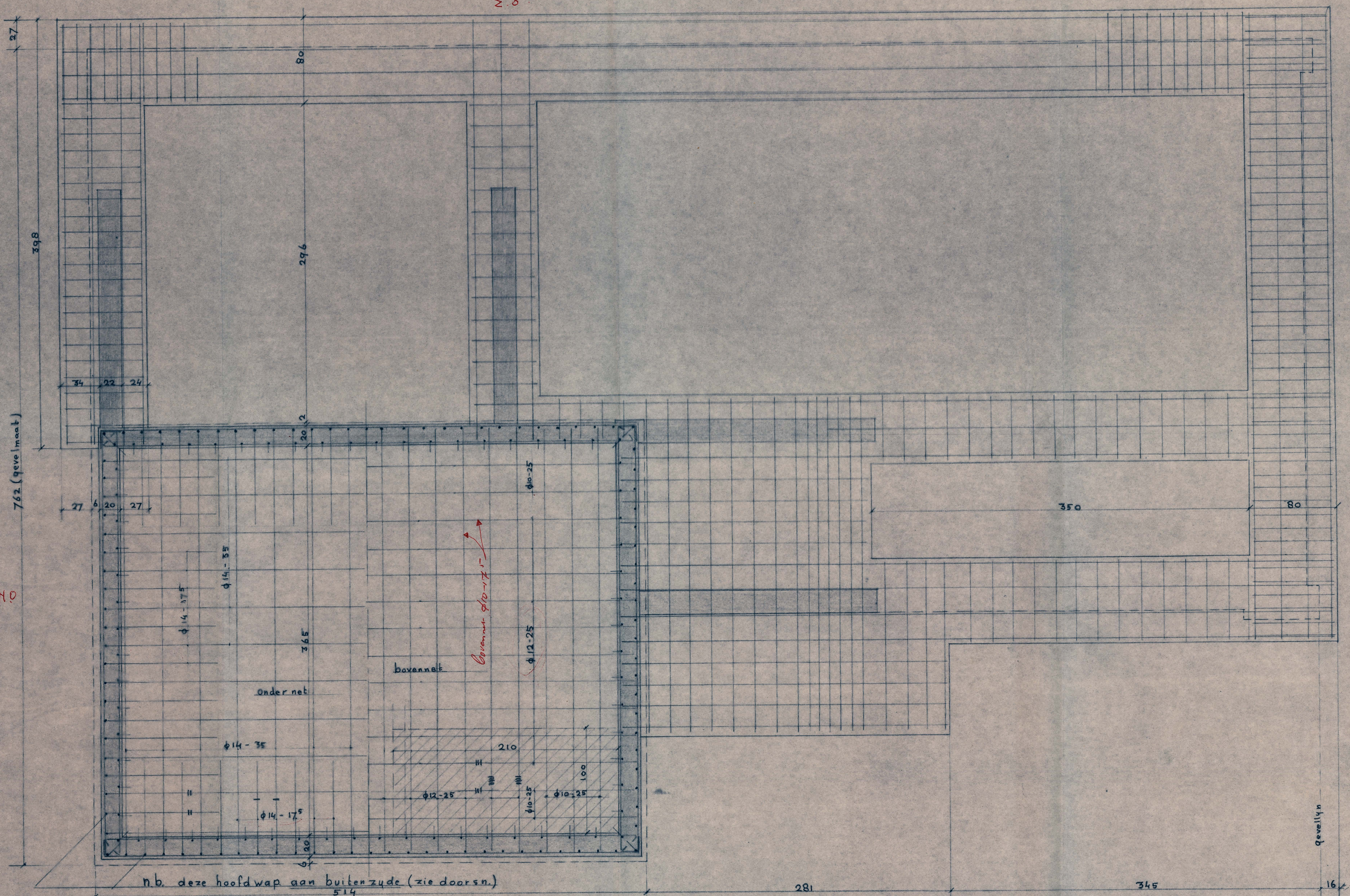
Cross voor vereffenings momenten.

P.M.	+1000			+1000	
	-395	-605	-325	-213	-462
		-163	-303		-261
	+65	+98	+183	+120	+261
		+92	+49		+131
	-36	-56	-59	-38	-83
		-30	-20		-42
	+12	+18	+23	+15	+32
		+12	+9		+16
	-5	-7	-8	-5	-12
		-4	-4		-6
	+2	+2	+3	+2	+5
		+2	+1		+3
	-1	-1	-1	-1	-2
	+642	-642	-460	+880	-420

$$\Sigma +1 = +642 + 880 \times 2 = 2 \times \frac{1522}{5,65} = 539 \text{ kg}$$

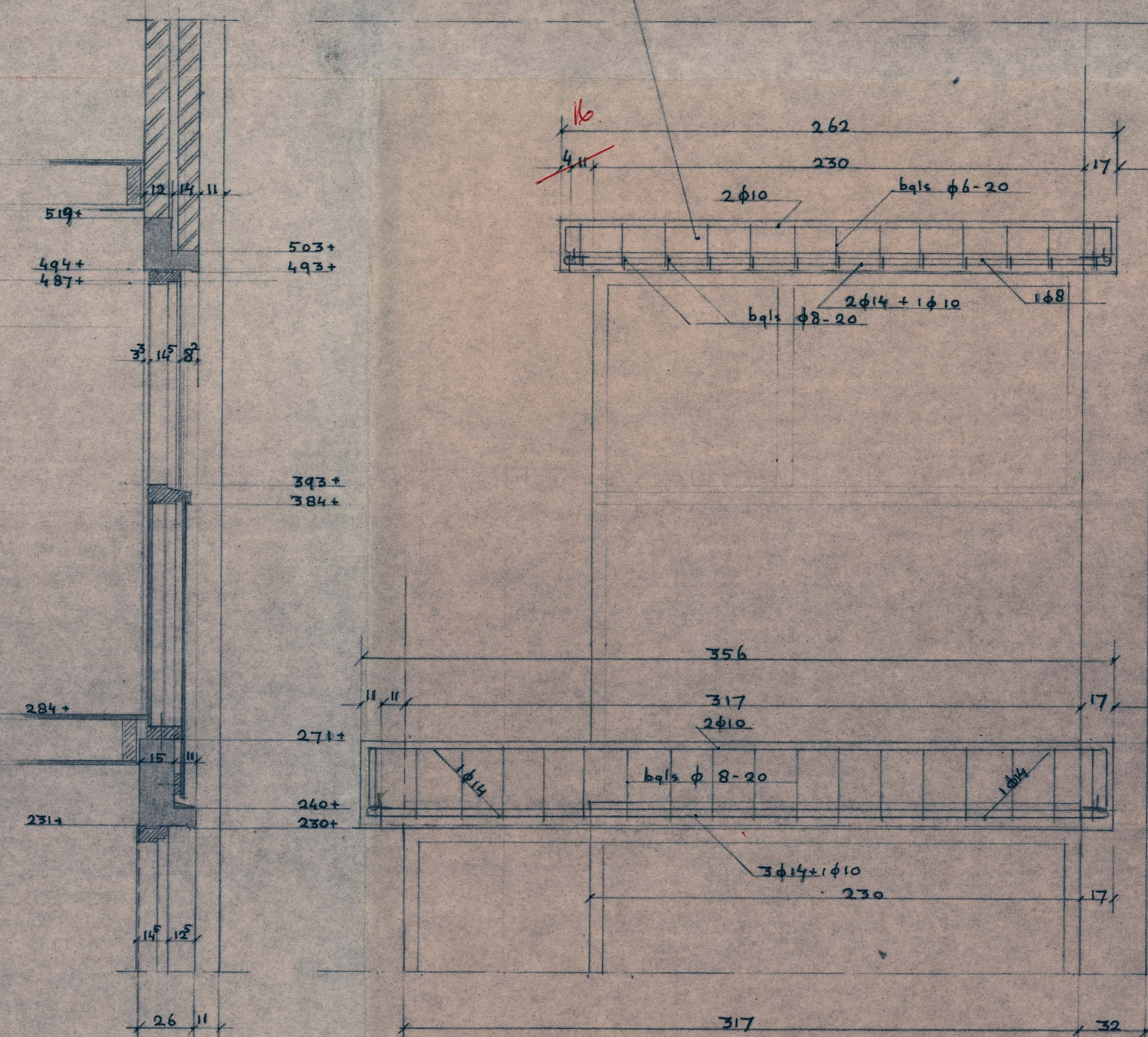
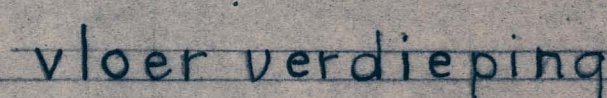
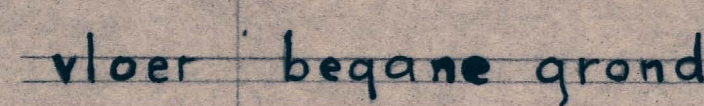
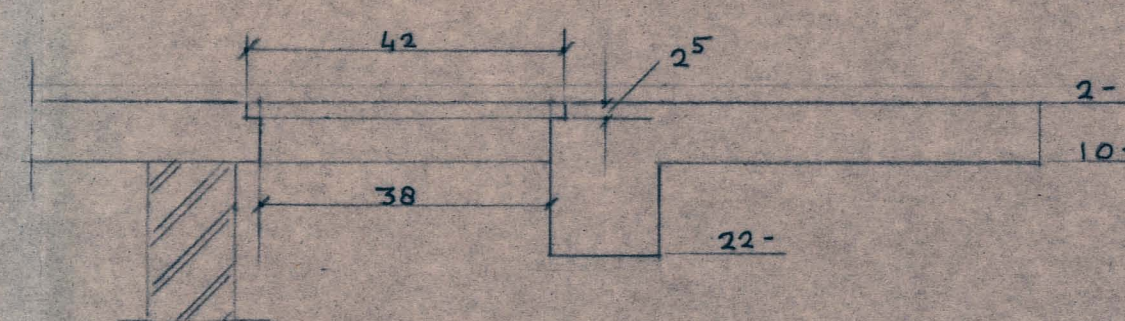
6 72.

5.600



GEMEENTEWERKEN HEEMSKERK	
Ingekomen:	No: 152
29 juni 1966	
BEHANDELT DOOR:	per:
Afgeleverd door:	per:

gewapend beton constructies
 woonhuis ir. J. Schoen te Heemskerk
 Krommenie, Juni '66

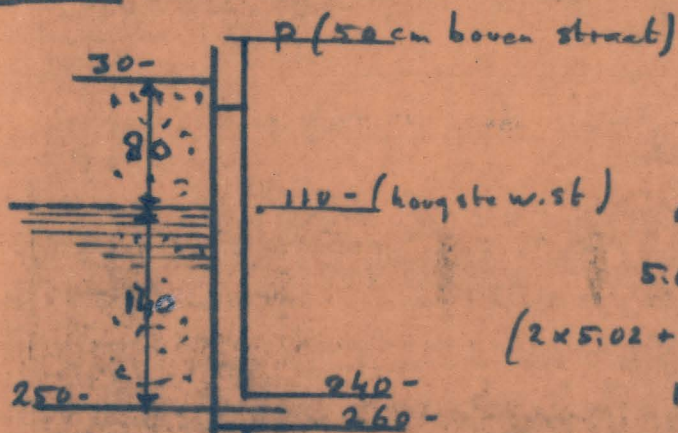


Bijlage bij nr.	1852
Ingekomen d.	129 jun. 1988

gewapend beton constructies
woonhuis nr. 7. Schoen te Heemskerk
Krommenie, Juni '66

Gew. beton berekeningen woonhuis
in J. Schoen. Heemskerk

Kelder



Opw. reactie waterdruk op

$$\text{Kelder } 5,02 \times 4,05 \times 1500 = 30400 \text{ kg}$$

eigen gew.

$$5,02 \times 4,05 \times 480 = 9750 \text{ kg}$$

$$(2 \times 5,02 + 2 \times 3,65) \times 1,95 \times 180 = 16250$$

rand

$$\begin{array}{r} 400 \\ 26400 - \hline 26800 \\ 4000 \text{ kg} \end{array}$$

hly Rk

$$25 \text{ cm water in kelder is } 4,62 \times 3,65 \times 250 = 4200 \text{ kg}$$

wanden: $Q = \{ (1600 \times 0,8 + 1000 \times 1,4) \times 0,406 + 1,4 \times 1000 \} \times 0,5 \times 220 = \text{kg}$

$$Dg = \left(\frac{1}{2} \cdot 1700 \cdot 2,10^3 \times 0,271 \right) + \frac{Dw = 500 \cdot 1,3^2}{2} = 1860 \text{ kg}$$

$$M = Q \times \frac{1}{3} \times 2,20 = 2007 \text{ kgm}$$

$$M_2 = (520) \text{ kg} \rightarrow M = \frac{2}{15} Ql =$$

$$17,3 = a \sqrt{2007} \quad a = \frac{17,3}{44,9} = 0,385$$

$$f_j = 0,174 \times 44,9 = 7,71 \text{ cm}^2 \text{ d.w.z. } \phi 14-17,5 (8,8)$$

$$v_{\min} = 1,76 \text{ of } \phi 8-22,5$$

put in ooldoende.

Genomen $\phi 8-120$ (art. 33-3)

vloer:

Opw. waterdr.

eigen gew. vloer

$$\begin{array}{r} 1500 \text{ kg/m}^2 \\ 480 \text{ " } \\ \hline 1020 \text{ " } \end{array}$$

$$\frac{4}{3} = \frac{4,67}{3,70} = 1,26$$

$$\begin{array}{l} M_{vx} \text{ op } 0,30 \text{ of } 3,7^2 = 420 \\ M_{vy} \text{ op } 0,20 \text{ of } 3,7^2 = 280 \\ M_{ix} \text{ op } 0,67 \text{ of } 3,7^2 = 930 \\ M_{iy} \text{ op } 0,57 \text{ of } 3,7^2 = 800 \end{array}$$

$$M_{vx} = 0,0484 \times 1020 \times 3,7^2 = 680 \text{ kgm}$$

$$M_{vy} = 0,038 \times 1020 \times 3,7^2 = 535$$

$$M_{vx} : 17,6 = a \sqrt{680} \quad a = \frac{17,6}{26} = 0,675 \quad f_j = 0,114 \times 26 = 2,98 \text{ cm}^2$$

of $\phi 8-17$. Om art 32-7 en praktische redenen genomen $\phi 12-25 (4,5 \text{ cm})$ beter $\phi 10-17,5$

opening in vloerplaat.

min. wap.

	$\frac{a}{b}$	$\frac{k}{b}$	k_a	w	$\frac{A}{b}$
$M_{vx} \text{ } 420$	18,3	0,9	0,0764	0,188	3,5
$M_{vy} \text{ } 280$	18,3	1,1	"	0,188	3,5
$M_{ix} \text{ } 930$	17,3	0,57	0,0770	0,235	4,1
$M_{iy} \text{ } 800$	17,3	0,66	0,0767	0,188	3,1

Bijlage bij nr. 1052
Ingekomen d.d. 29 jun. 1966

2)

Gew. beton berekening woonhuis nr. 7, Schoen Heemskerk.

Funderings staken onder muren:

<u>Zymuur Z.O.</u>	dak $4 \times 120 =$	480 kg
	Zolder $1,75 \times 250 =$	440 "
	goot $0,5 \times 100$	50 "
	muur $5,65 \times 0,23 \times 1900 +$	2460 "
	$0,7 \times 0,38 \times 1900$	425 "
	vloeren $2 \times 1,625 \times 300$	975 "
	voering $0,12 \times 0,8 \times 2400$	230 "
	per m'	5060 kg.

normaal: 9,6.

$$\frac{9,6}{\sqrt{480}} = 0,438 \quad w = 0,413 \quad A = 3,95 \text{ cm}^2$$

bij aanleg breedte 80 cm, per cm² 0,63 kg.

Opw. reactie op strook is $\frac{4830}{8000} = 0,6 \text{ kg/cm}^2$

$$M = 0,4 \times 6000 \times 0,2 = 480 \text{ kgm.}$$

$$9,6 = a \sqrt{480} \quad a = \frac{9,6}{21,8} = 0,440 \quad f_f = 3,64 \text{ cm}^2$$

of $\phi 8 - 13,5$. Bij beton dikking 2,5 cm wordt
 $f_f = 3,9 \text{ cm}^2$ of $\phi 8 - 12,5$, hetgeen wordt aangehouden
 met $v = \phi 8 - 25$

$$\frac{8,9}{\sqrt{480}} = 0,41 \quad w = 0,417 \quad A = 0,57 \cdot 2,9 = 1,65 \text{ cm}^2$$

Kapwand M.O.

metseelwerk $9 \times 0,23 \times 1900 =$	3950 kg.
dakoverstek $0,6 \times 120 \sqrt{2} =$	100 "
voering	230 "
	4280 kg.

per cm² 0,535 kg. $M = 5060 \times 0,1 \times 0,2 = 406 \text{ kgm}$

$$9,1 = a \sqrt{406} \quad a = \frac{9,1}{20,2} = 0,450 \quad f_f = 0,164 \times 20,2 = 3,3 \text{ cm}^2$$

of $\phi 8 - 15$.

3)

gew. betonsluitingen woonhuis
ir. J. Schoen Heemskerk.

balkjes funderingsstroken bij kelderwand.
(grondslag door aanvulling niet betrouwbaar)

Ongunstijst geval HO-munt. l. gerekend 2 m

balkjes 22 x 35 cm.

$$q = 4280 \text{ kg/m}^2$$

$$\text{waarbij} \text{ zand } 1 \times 0,5 \times 0,9 \times 1400$$

$$\approx \frac{620}{4900} \text{ kg/m}^2$$

$$M = \frac{1}{11} \times 4900 \times 4 = 1785 \text{ kgm.}$$

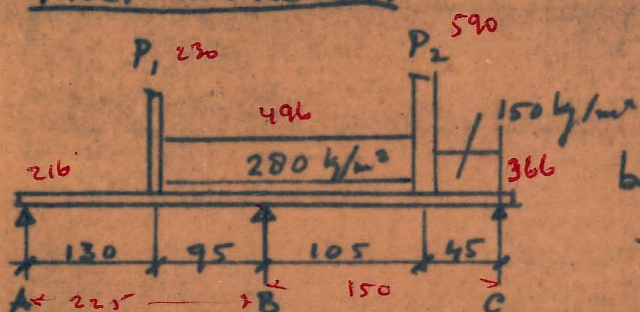
$$31 = a \sqrt{\frac{1785}{0,22}} \quad a = \frac{31}{90} = 0,345$$

$$f_y = 0,219 \times 0,22 \times 90 = 4,32 \text{ cm}^2 \text{ of } 3 \phi 14$$

$$M_1 = -\frac{1}{16} \times 4900 \times 4 = 1230 \text{ kgm.} \quad f_y = 2,9 \text{ cm}^2 \text{ (1 geg. n. } \phi 14 + 2 \text{ n. } \phi 12)$$

Overig: 2 balkjes worden gelijk gehouden.

Vloer badkamer



$$P_1 = 1,7 \times (7 \times 12 + 2,5 \times 20) = 230 \text{ kg/m}^2$$

$$P_2 = 2,6 \times 0,12 \times 1900 = 590 \text{ kg/m}^2$$

$$\text{badk. vloer (n.b. + g.m. n.b.)} = 280 \text{ kg/m}^2$$

$$\text{e.g. vloer} = 216 \text{ kg/m}^2$$

$$B_1 = \frac{130}{225} \times 230 + \frac{177,5}{225} \times 0,95 \times 280 + \frac{22,5}{2} \times 216 = 587 \text{ kg/m}^2$$

$$B_2 = \frac{45}{150} \times 590 + \frac{97,5}{150} \times 1,05 \times 280 + \frac{22,5}{150} \times 0,95 \times 150 + 0,75 \times 216 = 539 \text{ kg/m}^2$$

$$B = 1126 \text{ kg/m}^2$$

$$A = 395 \text{ kg/m}^2 \quad \text{Mun. l.p. } P_1 = 395 \times 1,3 = 1,3 \times 216 \times 0,65 = 330 \text{ kgm}$$

$$M_B = -330 \text{ kgm}$$

$$M_P = \frac{5}{8} \times 330 = 206 \text{ kgm}$$

$$\text{By vloer dikte 8 cm: } b.b. = a \sqrt{330} \quad a = \frac{6,6}{18,2} = 0,363$$

$$f_y = 0,221 \times 18,2 = 4,02 \text{ cm}^2 \text{ of } \phi 8-12,5$$

$$k = \frac{6,6}{\sqrt{330}} = 0,363$$

$$C = 1730$$

$$A = w \cdot l$$

$$= 0,6 \times 6,6 = 3,96$$

Bijlage bij nr. 1052
Ingekomen d. 23 JUN. 1966

4/

gem. beton betonnen woonhuis in J. Schreer
Heemskerk.

Vloer studeerkamer en toilet

n. b.
vloer afw.
eigen gew. 8×24

200	kg/m ²
38	"
192	"
<u>440</u>	kg/m ²

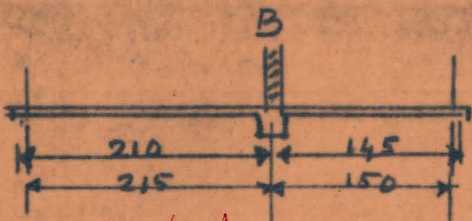
$$M_{\max} = -\frac{1}{8} \times 440 \times 2,1^2 = -243 \text{ kgm.}$$

$$6,6 = a \sqrt{243} \quad a = \frac{6,6}{15,6} = 0,424$$

$$f_y = 0,188 \times 15,6 = 2,94 \text{ cm (48-17)}$$

opening wordt $\phi 8-15$ met $\approx 3,3'$

$$v = \phi 6-25. \quad \text{...}$$



$$\frac{1}{30} \times 440 \times 2,1^2 = 63 \text{ kgm.}$$

Balk

van vloervelden $(1,05 + 0,72^2) \times 440 =$

eigen gew. $0,22 \times 0,22 \times 2400$

munt $2,7 \times 0,12 \times 1900 =$

van rest. vloer (B)

780	kg/m ²
115	"
613	"
<u>1126</u>	"
2634	kg/m ²

$$M = \frac{1}{8} \times 2634 \times 2,5^2 = 2060 \text{ kgm.}$$

$$26,4 = a \sqrt{\frac{2060}{0,22}} \quad a = \frac{26,4}{96,8} = 0,273$$

$$\times 0,22 \times 96,8 = 6,53 \text{ cm (1 } \phi 16 + 3 \phi 14)$$

$$p_{\max} = \frac{1,25 \times 2634 \times 1,5}{22 \times 30} = 7,45 \text{ kg/m². dus}$$

2 staven $\phi 14$ op trigen.

$$R = 1,25 \times 2634 = 3300 \text{ kg. —}$$

$$10 \times 22 = 220 \text{ cm².}$$

latei Z.W. gevel verdiepingraam.

eigen gewicht $(0,12 \times 0,3 + 0,14 \times 0,12) \times 2400 =$

gem. munt belasting $2 \times 0,23 \times 1900 =$

125	kg/m ²
875	"
<u>1000</u>	kg/m ²

Bijlage bij nr. 1052
Ingekomen d.d. 29 jun. 1966

5)

gew. beton berekeningen voor huis
in J. Schoen Heemskerk

$$M = \frac{1}{8} \times 1000 \times 2,46^2 = 720 \text{ kgm.}$$

$$21,5 = a \sqrt{\frac{720}{0,12}}$$

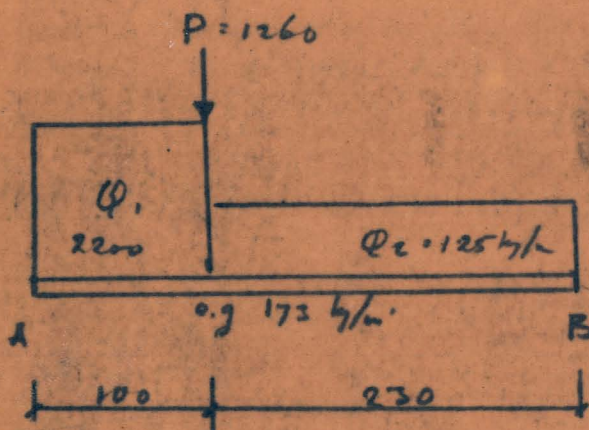
$$a = \frac{21,5}{77,5} = 0,277$$

$$f_y = 0,301 \times 0,12 \times 77,5 = 2,8 \text{ cm}^2 \text{ a.w.z.}$$

2 $\phi 14$ (3.08)

$$f_{\text{max}} = \frac{1200 \times 1,5}{12 \times 25} = 6 \text{ kg/cm}^2$$

Laken balk voor raam voor kamer ZW gevel



eigen gew. balk $(0,15 \times 0,4$

$$+ 0,11 \times 0,11) \times 2400 = 173 \text{ kg/m'}$$

$$P = \text{ca. } 1,15 \times 2,5 \times 0,23 \times 1900 = 1260 \text{ kg.}$$

$$Q_1 = 1 \times 5 \times 0,23 \times 1900 = 2200 \text{ kg.}$$

$$Q_2 \text{ per m' } 2,5 \times 50 = 125 \text{ kg.}$$

$$B \times 3,3 = 173 \times 3,3 \times 1,65 + 125 \times 2,3$$

$$\times 2,15 + 1260 \times 1 + 2200 \times 0,5 \quad \text{w.w.v. } B = 1190 \text{ kg}$$

$$A = 3315 - 1190 = 3125 \text{ kg.}$$

$$M = 1190 \times 2,3 - 2,3 \times 298 \times 1,15 = 1950 \text{ kgm.} \quad 650 \text{ kg.}$$

$$36,5 = a \sqrt{\frac{1950}{0,15}}$$

$$a = \frac{36,5}{114} = 0,320$$

$$f_y = 0,256$$

$$\times 0,15 \times 114 = 4,36 \text{ cm}^2 \quad (3 \phi 14)$$

$$f_{\text{max}} = \frac{3125 \times 1,5}{15 \times 20} = 7,8 \text{ kg/cm}^2 \quad \text{dus 1 of 2 rijen}$$

$\phi 14$ voldoende.

$$h = 36,5 \quad b = 15$$

$$k = \frac{36,5}{\sqrt{\frac{650}{0,15}}} = 0,556$$

$$0,200 \times 0,15 \times 36,5 = 1,4$$

J. P. van der Kolk, 21-6-'66



overeenkomst

Bijlage bij nr. 1052
Ingekomen d.d. 29 jun 1966