

Werk : Woonzorggebouw SDW Zuidwal Steenbergen.

Werknummer : 15-1017

Opdrachtgever : Aan de Stegge Roosendaal
Vijfhuizenberg 46
Roosendaal

Datum : 16 oktober 2015 / 2 APRIL 2016

Onderdeel : Statistische berekening.



Constructeur : Juridisch beleidsmedewerker
Publiekszaken / vergunningen

nr.(s) : ZK16002016

d.d. : 29-06-2016

Behoort bij beschikking

Algemene Constructieve uitgangspunten:**Zuidwal Steenbergen.****Te hanteren normen:**

- Eurocode 1 Belastingen
- Eurocode 2 Beton
- Eurocode 3 Staal
- Eurocode 5 Hout

- : NEN-EN 1991
- : NEN-EN 1992
- : NEN-EN 1993
- : NEN-EN 1995

Ontwerplevensduur, gevolg- en betrouwbaarheidsklasse:

- Gebouw categorie : A (Woongebouw)
- Ontwerp levens duur : 3
- Gevolg klasse : CC2
- Betrouwbaarheids klasse : RC2 - $K_{FL} = 1,0$

Beganegrond vloer (systeemvloer):

Permanent:	Systeemvloer	3,00	kN/m ²
	Afwerking 70 mm	1,40	kN/m ²
		4,40	kN/m ²
Variabel:	Verdeelde belasting.	2,50	kN/m ²
	Scheidings wanden	0,80	kN/m ²
		3,30	kN/m ²

$\psi_0 = 0,4$

1e verdieping:

Permanent:	Breedplaat 240 mm	6,00 kN/m ²
	Afwerking 75 mm	1,50 kN/m ²
		<hr/> 7,50 kN/m ²

Variabel: Verdeelde belasting:
Scheidings wanden

	1,75 kN/m ²	$\psi_0 = 0,4$
	0,75 kN/m ²	
	<hr/> 2,50 kN/m ²	

2e verdieping:

Permanent:	Breedplaat 240 mm	6,00 kN/m ²
	Afwerking 75 mm	1,50 kN/m ²
		<hr/> 7,50 kN/m ²

Variabel: Verdeelde belasting:
Scheidings wanden

	1,75 kN/m ²	$\psi_0 = 0,4$
	0,75 kN/m ²	
	<hr/> 2,50 kN/m ²	

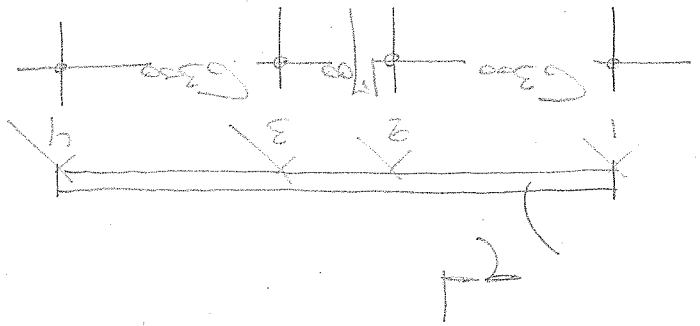
Balkon:

Permanent:	Prefab balkon, Dik 270 mm	6,75 kN/m ²
Variabel:	Verdeelde belasting:	2,50 kN/m ²

Dak vloer:

Permanent:	Breedplaat 220 mm	5,50 kN/m ²
	Afwerking 50 mm	1,00 kN/m ²
		<hr/> 6,50 kN/m ²
Variabel:	Verdeelde belasting:	1,50 kN/m ²

Overstroom overschrijving



$R_{D1} = 9,5$
 $R_{D2} = 9,5$
 $R_{D3} = 9,5$
 $R_{D1} = R_{D2} = R_{D3} = 33$
 $R_{D1} = R_{D2} = R_{D3} = 59$

$R_{D1} = 9,5$
 $R_{D2} = 9,5$
 $R_{D3} = 9,5$
 $R_{D1} = R_{D2} = 33$
 $R_{D1} = R_{D2} = R_{D3} = 59$

$M_1 = 119 \text{ KNm}$
 $M_2 = 128 \text{ KNm}$

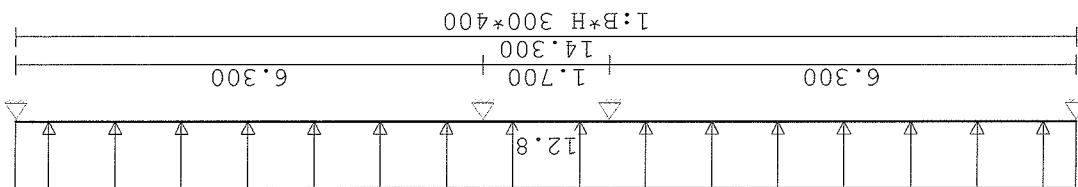
ΔC_1

DR

Project.....: -
 Onderdeel.....:
 Constructeur.: karel
 Opdrachtgever:
 Dimensies.....: KN/m/rad
 Datum.....: 27/02/2015

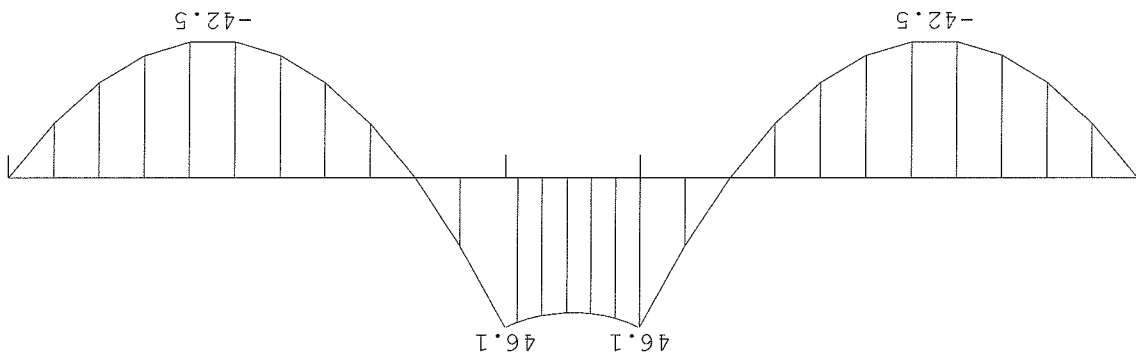
VELD BELASTINGEN

Ligges: 1 B.G: 1



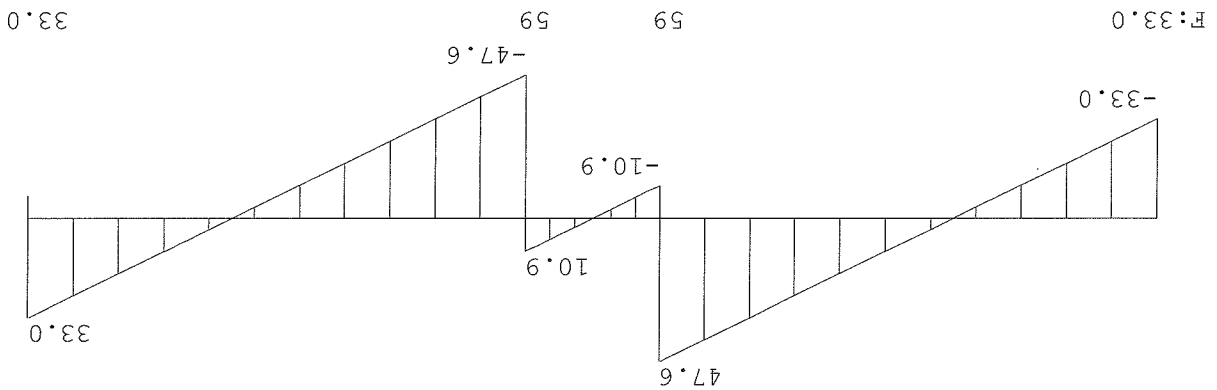
MOMENTEN

Ligges: 1 B.G: 1

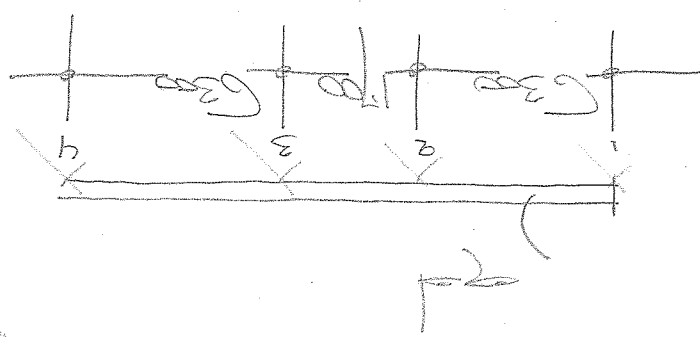


DWARSKRACHTEN

Ligges: 1 B.G: 1



Overstroomdele:



$T_{per} = G/S$
 $T_{ver} = 1.5$
 kN/m^2

$q_{d1} = q_{d2} = 25$
 $q_{d1} = q_{d3} = 46$
 kN

$q_d = (1.35 \times G_{10} + 1.5 \times 0.4) = 9.9$
 $q_d = (1.35 \times G_{20} + 1.5 \times 1.0) = 10.0$
 kN/m

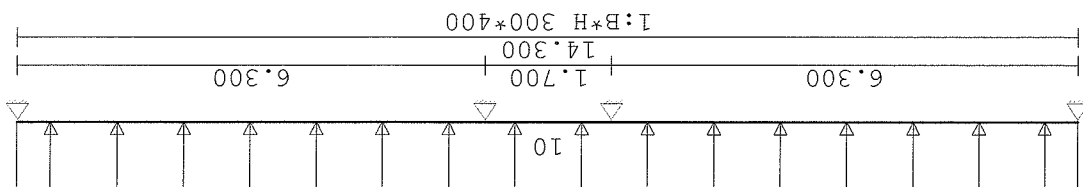
7.0 C2?

Project.....: -
 Onderdeel.....: Constructeur.: karel
 Opdrachtgever: Dimensies.....: kN/m/rad
 Datum.....: 27/02/2015



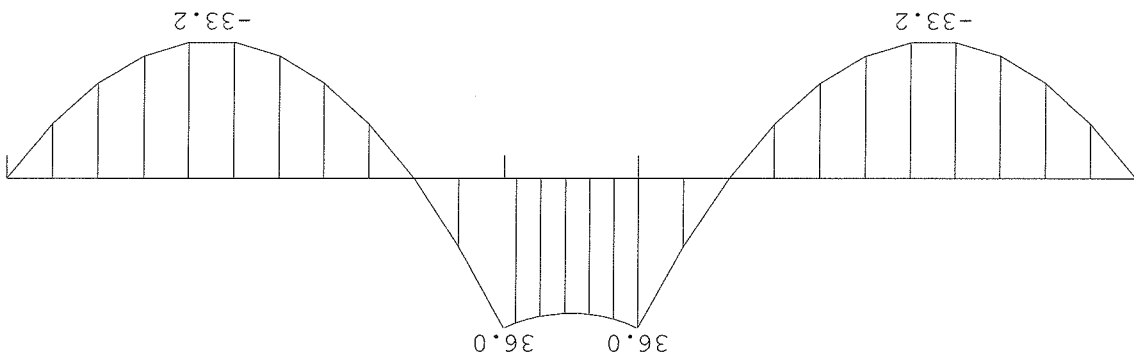
VELDBEELASTINGEN

Ligger: 1 B.G:1



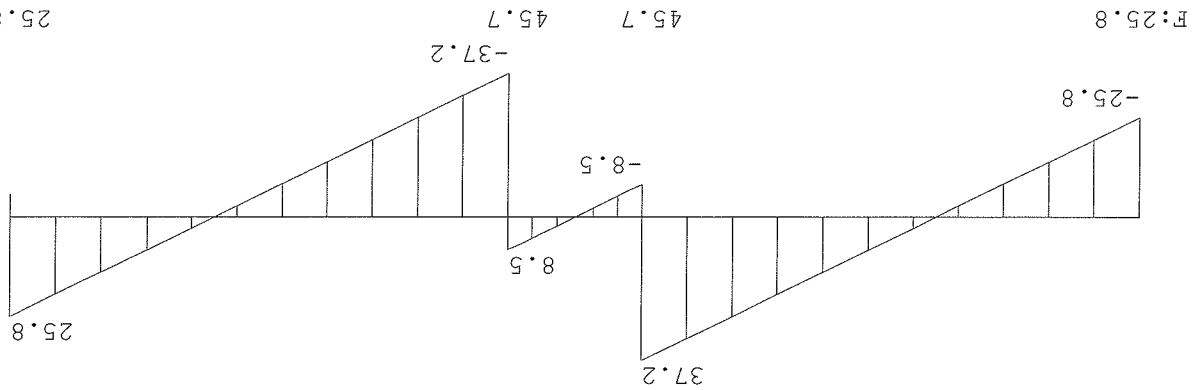
MOMENTEN

Ligger: 1 B.G:1



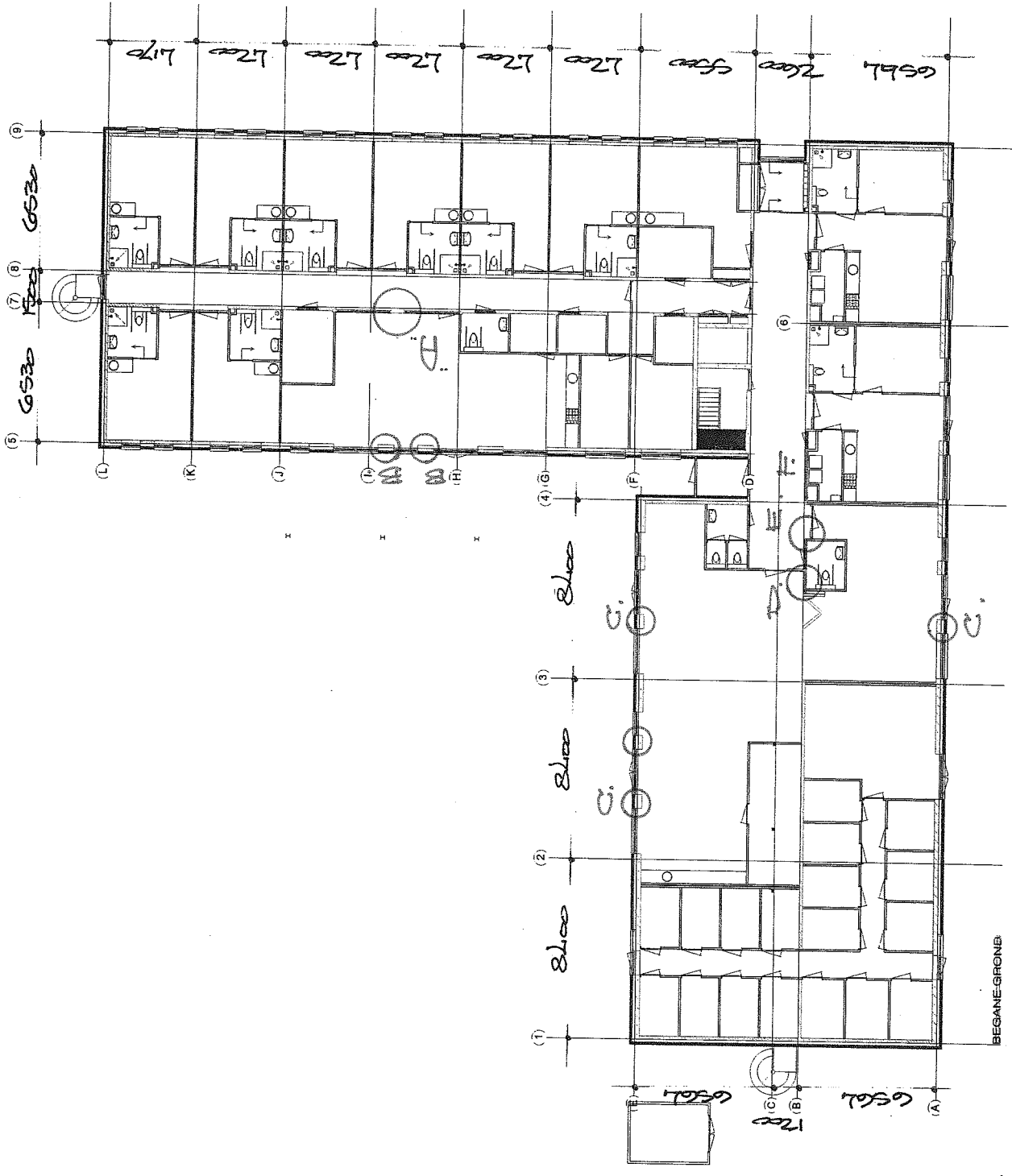
DWARSKRACHTEN

Ligger: 1 B.G:1



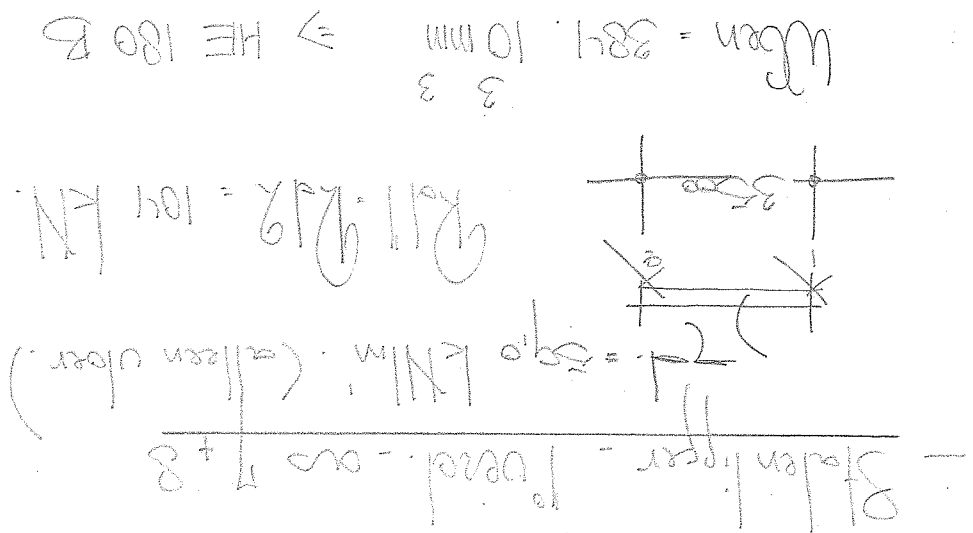
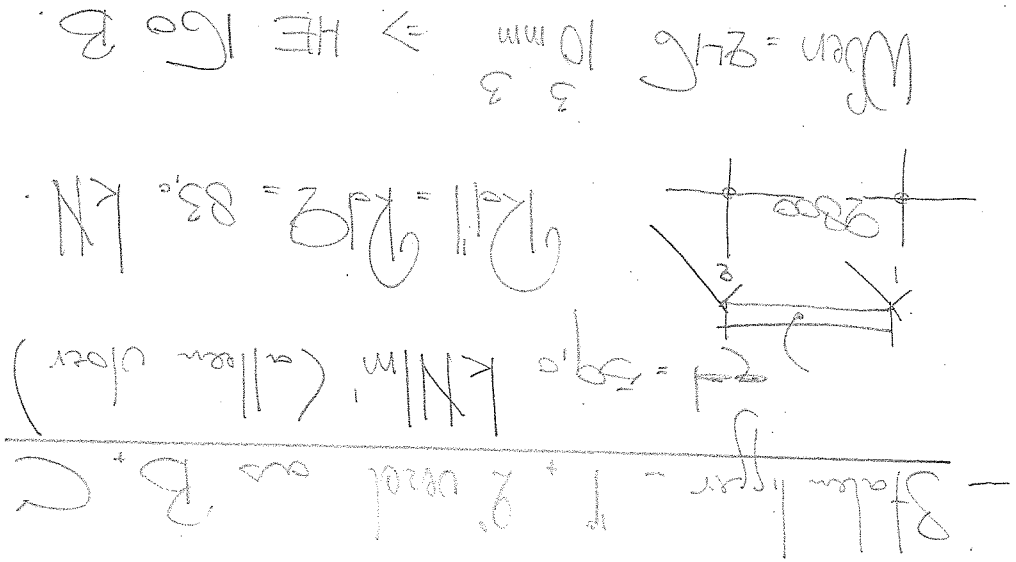
3

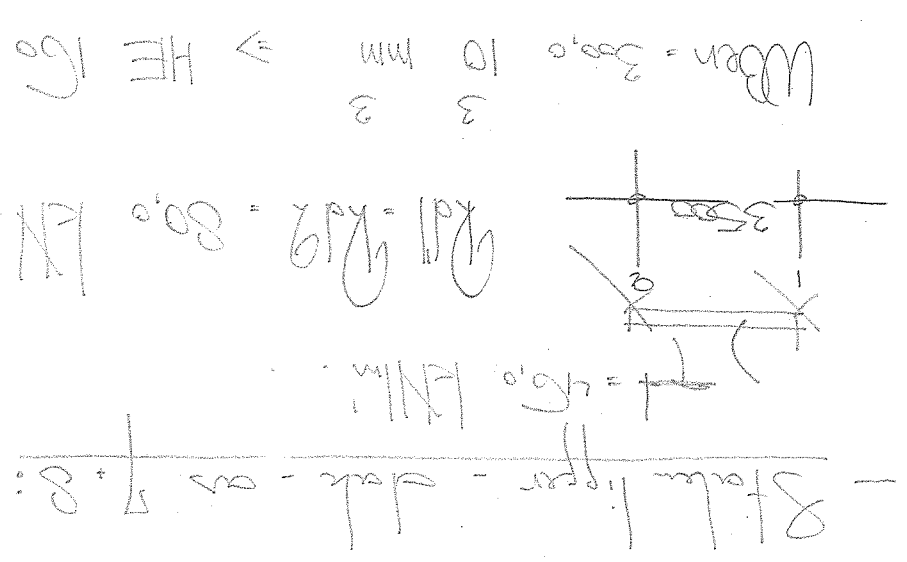
Übersicht



BEGANNE GRÜNDE

FCIND



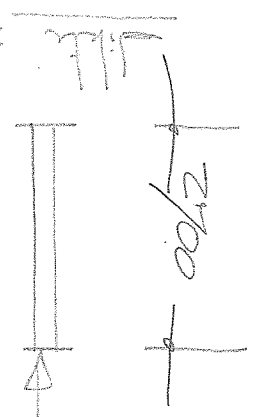


- Controle kniklength m.w. (T.G.B. 1990.)

- D-baarsen:

$e = 10 \text{ mm}$

Tijd η



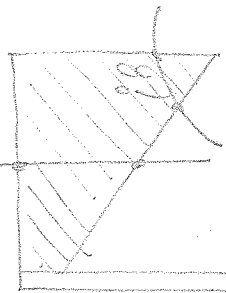
Lijst:	e_0/η	$1/\eta$	ρ
$d = 100 \text{ mm}$	0,1	0,7	$\Rightarrow 0,03$
$d = 120 \text{ mm}$	0,083	0,5	$\Rightarrow 0,37$
$d = 150 \text{ mm}$	0,067	18,0	$\Rightarrow 0,53$
$d = 214 \text{ mm}$	0,05	12,6	$\Rightarrow 0,73$
$d = 300 \text{ mm}$	0,033	9	$\Rightarrow 0,9$

Control m.w. op 7+8

(184)

$$P_{\uparrow} = 80 + 104 + 1,6(46 + 59) = 352$$

$$100 \times 150 \Rightarrow C = 0,53$$



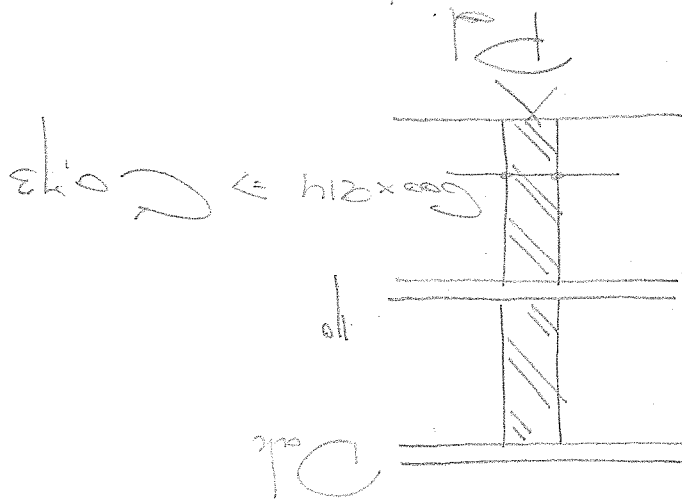
$$P_{\downarrow} = \frac{1000 \times 150 \times 1,8 \times 0,53}{6} = 932$$

$$> 352$$

KN

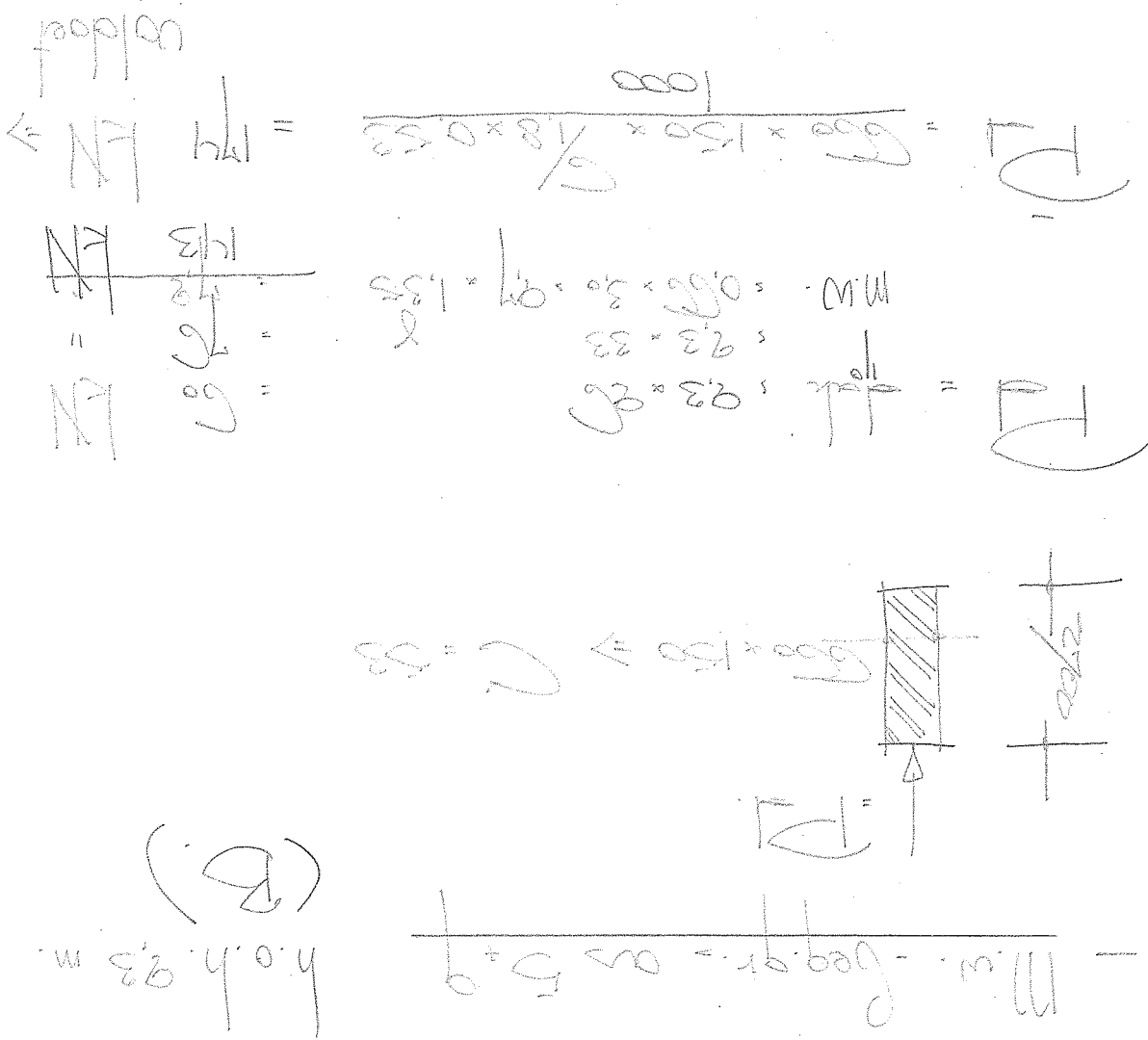
→ ovlapt

Control m.w.-beg.gr. - 1/I: (A) (A) 3,0 m h.o.h.



$$D = 30 (46 + 50) = 191 \text{ kN}$$

$$D = \frac{214 \times 600 \times 1000}{18 \times 0,13} = 312 \text{ kN}$$



Balken: dikte 200 mm.

$$2 \text{ paar} = 0,27 \times 0,25 = \text{voor}$$

$$2l = 1,2 \times 0,75 + 1,5 \times 0,25 = 1,0$$

$$2l = 1,35 \times 0,75 + 1,5 \times 0,25 = 0,9$$

$$2l = 0,9$$

$$2l = 1,185$$

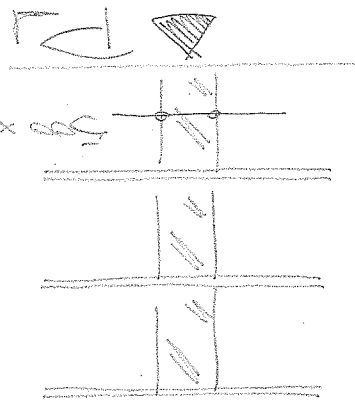
$$2l = 1,0$$

Opvallende ballen: $4 \times 1,8 = 7,2 \text{ m}$

Gewicht totaal: $7,2 \times 11,85 = 85,3 \text{ kN}$

kN/m^2
 kN/m
 kN/m^2

- m.w. beg. as B



$$D = \frac{1}{2} \times 1.0 \times \frac{1.38}{3.0} = 0.023$$

$$D = 0.023 \times 5.0 = 0.115$$

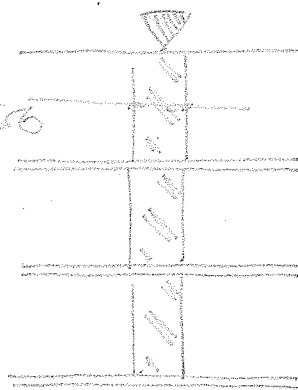
$$H = 3.19 \text{ kN}$$

$$V = 4.50 \text{ kN}$$

\Rightarrow voldoet

(E) h.o.h. 1.6 m.

- m.w. beg. as B: (F) h.o.h. 3,8 m.



9550 x 150 → C = 0,55

$P_1 = 812 \text{ kN}$

(m.u.v. m.w. = 150 k/kin. ker.)

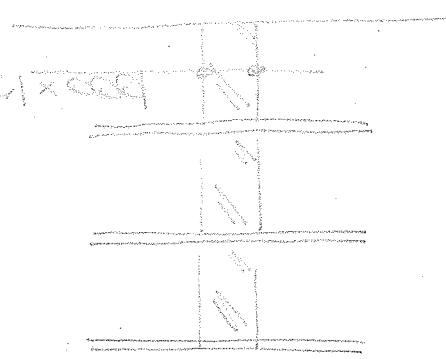
$P_1 = 794 \text{ kN}$

\Rightarrow voldoet

$$P_1 = \frac{9550 \times 150}{1,8 \times 0,55} = 1000$$

* = $CS \cdot G_0$

- m.w. beg. gr. op B. algemeen h.o.h. ho.



$1000 \times 150 \Rightarrow C=0,55$

$$F = \frac{1000 \times 150}{18 \times 0,55} = 15789,47$$

$$F = 15789,47$$

$$1000 \times 150 = 150000$$

$$150000 / 18 \times 0,55 = 15789,47$$

$$15789,47 \times 0,55 \times 18 = 150000$$

$$15789,47 \times 0,55 = 8684,21$$

$$8684,21 \times 18 = 156315,78$$

$$F = \frac{1000 \times 150}{18 \times 0,55} = 15789,47$$

$$15789,47 \times 0,55 = 8684,21$$

$$8684,21 \times 18 = 156315,78$$

$$156315,78 \times 0,55 = 86073,38$$

$$86073,38 \times 18 = 154932,08$$

$$154932,08 \times 0,55 = 85212,72$$

$$85212,72 \times 18 = 153382,90$$

$$153382,90 \times 0,55 = 84360,59$$

$$84360,59 \times 18 = 151849,06$$

$$151849,06 \times 0,55 = 83527,18$$

$$83527,18 \times 18 = 150348,92$$

$$150348,92 \times 0,55 = 82702,62$$

$$82702,62 \times 18 = 148864,72$$

$$148864,72 \times 0,55 = 81886,21$$

$$81886,21 \times 18 = 147395,18$$

$$147395,18 \times 0,55 = 81087,35$$

$$81087,35 \times 18 = 145937,23$$

$$145937,23 \times 0,55 = 80305,53$$

$$80305,53 \times 18 = 144489,95$$

$$144489,95 \times 0,55 = 79540,37$$

$$79540,37 \times 18 = 143152,67$$

$$143152,67 \times 0,55 = 78791,86$$

$$78791,86 \times 18 = 141825,35$$

$$141825,35 \times 0,55 = 78059,26$$

$$78059,26 \times 18 = 140506,67$$

$$140506,67 \times 0,55 = 77342,36$$

$$77342,36 \times 18 = 139196,25$$

$$139196,25 \times 0,55 = 76640,93$$

$$76640,93 \times 18 = 137893,67$$

$$137893,67 \times 0,55 = 75954,62$$

$$75954,62 \times 18 = 136598,32$$

$$136598,32 \times 0,55 = 75283,14$$

$$75283,14 \times 18 = 135309,65$$

$$135309,65 \times 0,55 = 74626,21$$

$$74626,21 \times 18 = 133927,18$$

$$133927,18 \times 0,55 = 73983,25$$

$$73983,25 \times 18 = 132549,85$$

$$132549,85 \times 0,55 = 73354,77$$

$$73354,77 \times 18 = 131178,61$$

$$131178,61 \times 0,55 = 72740,74$$

$$72740,74 \times 18 = 129813,33$$

$$129813,33 \times 0,55 = 72140,73$$

$$72140,73 \times 18 = 128455,31$$

$$128455,31 \times 0,55 = 71553,92$$

$$71553,92 \times 18 = 127103,06$$

$$127103,06 \times 0,55 = 70979,88$$

$$70979,88 \times 18 = 125757,78$$

$$125757,78 \times 0,55 = 70418,28$$

$$70418,28 \times 18 = 124418,90$$

$$124418,90 \times 0,55 = 69868,91$$

$$69868,91 \times 18 = 123086,04$$

$$123086,04 \times 0,55 = 69331,83$$

$$69331,83 \times 18 = 121761,29$$

$$121761,29 \times 0,55 = 68806,61$$

$$68806,61 \times 18 = 120443,90$$

$$120443,90 \times 0,55 = 68292,97$$

$$68292,97 \times 18 = 119133,35$$

$$119133,35 \times 0,55 = 67790,46$$

$$67790,46 \times 18 = 117829,83$$

$$117829,83 \times 0,55 = 67298,96$$

$$67298,96 \times 18 = 116534,13$$

$$116534,13 \times 0,55 = 66818,33$$

$$66818,33 \times 18 = 115245,00$$

$$115245,00 \times 0,55 = 66348,41$$

$$66348,41 \times 18 = 113963,14$$

$$113963,14 \times 0,55 = 65889,04$$

$$65889,04 \times 18 = 112688,27$$

$$112688,27 \times 0,55 = 65440,99$$

$$65440,99 \times 18 = 111421,78$$

$$111421,78 \times 0,55 = 65003,99$$

$$65003,99 \times 18 = 110163,18$$

$$110163,18 \times 0,55 = 64577,75$$

$$64577,75 \times 18 = 108912,15$$

$$108912,15 \times 0,55 = 64162,06$$

$$64162,06 \times 18 = 107668,71$$

$$107668,71 \times 0,55 = 63756,81$$

$$63756,81 \times 18 = 106432,26$$

$$106432,26 \times 0,55 = 63361,90$$

$$63361,90 \times 18 = 105203,42$$

$$105203,42 \times 0,55 = 62977,24$$

$$62977,24 \times 18 = 103981,03$$

$$103981,03 \times 0,55 = 62602,68$$

$$62602,68 \times 18 = 102764,82$$

$$102764,82 \times 0,55 = 62238,11$$

$$62238,11 \times 18 = 101554,60$$

$$101554,60 \times 0,55 = 61883,53$$

$$61883,53 \times 18 = 100350,35$$

$$100350,35 \times 0,55 = 61538,94$$

$$61538,94 \times 18 = 99152,09$$

$$99152,09 \times 0,55 = 61204,43$$

$$61204,43 \times 18 = 97960,00$$

$$97960,00 \times 0,55 = 60879,90$$

$$60879,90 \times 18 = 96774,02$$

$$96774,02 \times 0,55 = 60565,36$$

$$60565,36 \times 18 = 95594,65$$

$$95594,65 \times 0,55 = 60260,71$$

$$60260,71 \times 18 = 94421,28$$

$$94421,28 \times 0,55 = 60000,00$$

$$60000,00 \times 18 = 93254,00$$

$$93254,00 \times 0,55 = 59753,70$$

$$59753,70 \times 18 = 92092,66$$

$$92092,66 \times 0,55 = 59511,96$$

$$59511,96 \times 18 = 90937,53$$

$$90937,53 \times 0,55 = 59273,77$$

$$59273,77 \times 18 = 89788,59$$

$$89788,59 \times 0,55 = 59039,03$$

$$59039,03 \times 18 = 88645,25$$

$$88645,25 \times 0,55 = 58807,69$$

$$58807,69 \times 18 = 87508,44$$

$$87508,44 \times 0,55 = 58579,76$$

$$58579,76 \times 18 = 86377,57$$

$$86377,57 \times 0,55 = 58355,22$$

$$58355,22 \times 18 = 85252,60$$

$$85252,60 \times 0,55 = 58134,07$$

$$58134,07 \times 18 = 84133,73$$

$$84133,73 \times 0,55 = 57916,26$$

$$57916,26 \times 18 = 83020,27$$

$$83020,27 \times 0,55 = 57701,74$$

$$57701,74 \times 18 = 81912,73$$

$$81912,73 \times 0,55 = 57490,46$$

$$57490,46 \times 18 = 80810,83$$

$$80810,83 \times 0,55 = 57282,31$$

$$57282,31 \times 18 = 79714,16$$

$$79714,16 \times 0,55 = 57077,28$$

$$57077,28 \times 18 = 78622,90$$

$$78622,90 \times 0,55 = 56875,29$$

$$56875,29 \times 18 = 77537,33$$

$$77537,33 \times 0,55 = 56676,33$$

$$56676,33 \times 18 = 76457,39$$

$$76457,39 \times 0,55 = 56480,46$$

$$56480,46 \times 18 = 75382,83$$

$$75382,83 \times 0,55 = 56287,65$$

$$56287,65 \times 18 = 74313,57$$

$$74313,57 \times 0,55 = 56097,90$$

$$56097,90 \times 18 = 73249,62$$

$$73249,62 \times 0,55 = 55911,19$$

$$55911,19 \times 18 = 72190,74$$

$$72190,74 \times 0,55 = 55727,51$$

$$55727,51 \times 18 = 71136,71$$

$$71136,71 \times 0,55 = 55546,83$$

$$55546,83 \times 18 = 70087,49$$

$$70087,49 \times 0,55 = 55369,12$$

$$55369,12 \times 18 = 69042,82$$

$$69042,82 \times 0,55 = 55194,35$$

$$55194,35 \times 18 = 68002,63$$

$$68002,63 \times 0,55 = 55022,51$$

$$55022,51 \times 18 = 66966,91$$

$$66966,91 \times 0,55 = 54853,60$$

$$54853,60 \times 18 = 65935,08$$

$$65935,08 \times 0,55 = 54687,60$$

$$54687,60 \times 18 = 64907,08$$

$$64907,08 \times 0,55 = 54524,48$$

$$54524,48 \times 18 = 63882,86$$

$$63882,86 \times 0,55 = 54364,23$$

$$54364,23 \times 18 = 62862,41$$

$$62862,41 \times 0,55 = 54206,83$$

$$54206,83 \times 18 = 61845,69$$

$$61845,69 \times 0,55 = 54052,28$$

$$54052,28 \times 18 = 60832,70$$

$$60832,70 \times 0,55 = 53900,57$$

$$53900,57 \times 18 = 59823,43$$

$$59823,43 \times 0,55 = 53751,69$$

$$53751,69 \times 18 = 58817,42$$

$$58817,42 \times 0,55 = 53605,68$$

$$53605,68 \times 18 = 57814,63$$

$$57814,63 \times 0,55 = 53462,62$$

$$53462,62 \times 18 = 56815,00$$

$$56815,00 \times 0,55 = 53322,45$$

$$53322,45 \times 18 = 55818,61$$

$$55818,61 \times 0,55 = 53185,14$$

$$53185,14 \times 18 = 54825,45$$

$$54825,45 \times 0,55 = 53050,69$$

$$53050,69 \times 18 = 53835,44$$

$$53835,44 \times 0,55 = 52919,00$$

$$52919,00 \times 18 = 52848,60$$

$$52848,60 \times 0,55 = 52790,73$$

$$52790,73 \times 18 = 51864,53$$

$$51864,53 \times 0,55 = 52664,81$$

$$52664,81 \times 18 = 50883,06$$

$$50883,06 \times 0,55 = 52541,18$$

$$52541,18 \times 18 = 49904,13$$

$$49904,13 \times 0,55 = 52419,82$$

$$52419,82 \times 18 = 48927,68$$

$$48927,68 \times 0,55 = 52300,61$$

$$52300,61 \times 18 = 47953,10$$

$$47953,10 \times 0,55 = 52183,51$$

$$52183,51 \times 18 = 46980,30$$

$$46980,30 \times 0,55 = 52068,52$$

$$52068,52 \times 18 = 46009,28$$

$$46009,28 \times 0,55 = 51955,63$$

$$51955,63 \times 18 = 45040,93$$

$$45040,93 \times 0,55 = 51844,84$$

$$51844,84 \times 18 = 44075,29$$

$$44075,29 \times 0,55 = 51736,14$$

$$51736,14 \times 18 = 43112,26$$

$$43112,26 \times 0,55 = 51629,58$$

$$51629,58 \times 18 = 42151,84$$

$$42151,84 \times 0,55 = 51525,07$$

$$51525,07 \times 18 = 41193,53$$

$$41193,53 \times 0,55 = 51422,61$$

$$51422,61 \times 18 = 40237,32$$

$$40237,32 \times 0,55 = 51322,20$$

$$51322,20 \times 18 = 39283,18$$

$$39283,18 \times 0,55 = 51223,84$$

$$51223,84 \times 18 = 38331,10$$

$$38331,10 \times 0,55 = 51127,51$$

$$51127,51 \times 18 = 37381,05$$

$$37381,05 \times 0,55 = 51033,22$$

$$51033,22 \times 18 = 36433,00$$

$$36433,00 \times 0,55 = 50940,96$$

$$50940,96 \times 18 = 35487,17$$

$$35487,17 \times 0,55 = 50850,73$$

$$50850,73 \times 18 = 34543,53$$

$$34543,53 \times 0,55 = 50762,51$$

$$50762,51 \times 18 = 33602,05$$

$$33602,05 \times 0,55 = 50676,31$$

$$50676,31 \times 18 = 32662,78$$

$$32662,78 \times 0,55 = 50592,12$$

$$50592,12 \times 18 = 31725,68$$

$$31725,68 \times 0,55 = 50509,94$$

$$50509,94 \times 18 = 30790,79$$

$$30790,79 \times 0,55 = 50429,77$$

$$50429,77 \times 18 = 29858,00$$

$$29858,00 \times 0,55 = 50351,61$$

$$50351,61 \times 18 = 28927,29$$

$$28927,29 \times 0,55 = 50275,46$$

$$50275,46 \times 18 = 28008,79$$

$$28008,79 \times 0,55 = 50201,31$$

$$50201,31 \times 18 = 27092,39$$

$$27092,39 \times 0,55 = 50129,16$$

$$50129,16 \times 18 = 26178,05$$

$$26178,05 \times 0,55 = 50059,00$$

$$50059,00 \times 18 = 25265,82$$

$$25265,82 \times 0,55 = 50000,81$$

$$50000,81 \times 18 = 24355,64$$

$$24355,64 \times 0,55 = 49944,60$$

$$49944,60 \times 18 = 23447,53$$

$$23447,53 \times 0,55 = 49890,37$$

$$49890,37 \times 18 = 22541,50$$

$$22541,50 \times 0,55 = 49838,12$$

$$49838,12 \times 18 = 21637,56$$

$$21637,56 \times 0,55 = 49787,86$$

$$49787,86 \times 18 = 20735,71$$

$$20735,71 \times 0,55 = 49739,59$$

$$49739,59 \times 18 = 19835,94$$

$$19835,94 \times 0,55 = 49693,30$$

$$49693,30 \times 18 = 18938,28$$

$$18938,28 \times 0,55 = 49648,99$$

$$49648,99 \times 18 = 18042,71$$

$$18042,71 \times 0,55 = 49606,66$$

$$49606,66 \times 18 = 17149,19$$

$$17149,19 \times 0,55 = 49566,31$$

$$49566,31 \times 18 = 16257,74$$

$$16257,74 \times 0,55 = 49527,92$$

$$49527,92 \times 18 = 15368,33$$

$$15368,33 \times 0,55 = 49491,51$$

$$49491,51 \times 18 = 14480,97$$

$$14480,97 \times 0,55 = 49457,08$$

$$49457,08 \times 18 = 13595,66$$

$$13595,66 \times 0,55 = 49424,63$$

$$49424,63 \times 18 = 12712,41$$

$$12712,41 \times 0,55 = 49394,16$$

$$49394,16 \times 18 = 11831,15$$

$$11831,15 \times 0,55 = 49365,69$$

$$49365,69 \times 18 = 10951,80$$

$$10951,80 \times 0,55 = 49339,23$$

$$49339,23 \times 18 = 10074,36$$

$$10074,36 \times 0,55 = 49314,78$$

$$49314,78 \times 18 = 9208,86$$

$$9208,86 \times 0,55 = 49292,35$$

$$49292,35 \times 18 = 8355,33$$

$$8355,33 \times 0,55 = 49271,94$$

$$49271,94 \times 18 = 7513,75$$

$$7513,75 \times 0,55 = 49253,56$$

$$49253,56 \times 18 = 6684,03$$

$$6684,03 \times 0,55 = 49237,23$$

$$49237,23 \times 18 = 5866,10$$

$$5866,10 \times 0,55 = 49222,87$$

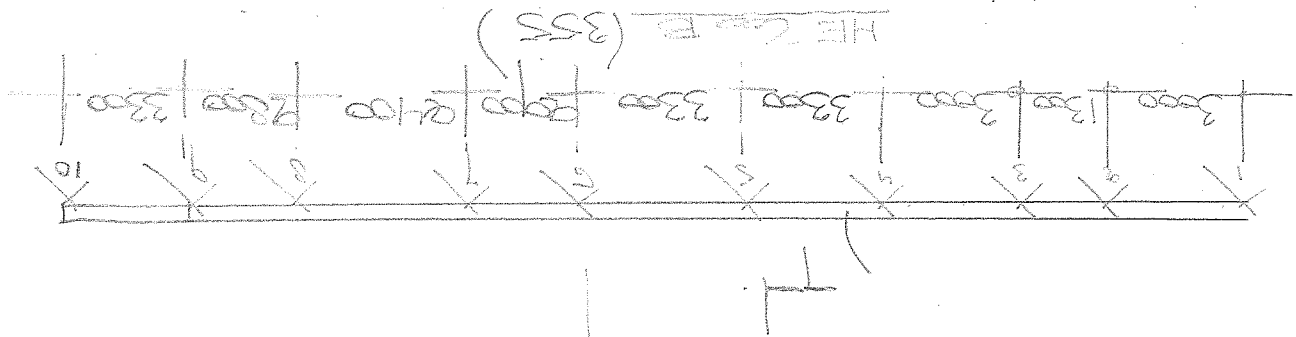
$$49222,87 \times 18 = 5059,91$$

$$5059,91 \times 0,55 = 49210,52$$

$$49210,52 \times 18 = 4275,49$$

$$4275,49 \times 0,5$$

Stalen I-profiel - Venel-C



HE 200 B (355)

Span (m)	Load (kN/m)	Reaction (kN)
3000	188.3	188.3
1300	188.3	188.3
3000	188.3	188.3
3000	188.3	188.3
3200	188.3	188.3
3200	188.3	188.3
3200	188.3	188.3
3200	188.3	188.3
2400	188.3	188.3
2400	188.3	188.3
3300	188.3	188.3

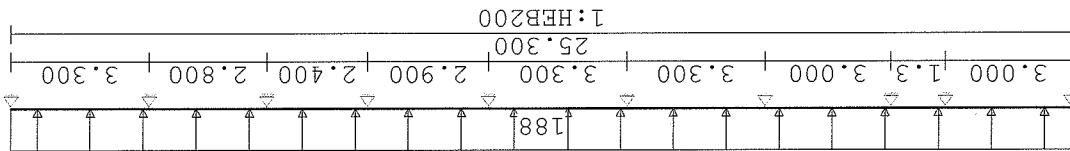
7.12 C 15" Staal
C 15" I-profiel
D 1000
=> HE 200 B (355)

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TS/Liggers
 Project..... : -
 Onderdeel..... :
 Constructeur.: karel
 Opdrachtgever:
 Dimensies..... : KN/m/rad
 Datum..... : 05/10/2015

VELDBELASTINGEN

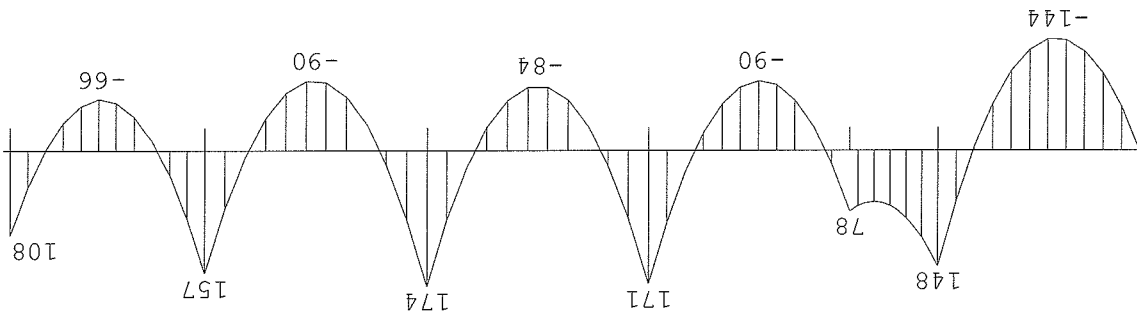
Liggr: 1 B.G: 1



MOMENTEN

Liggr: 1 B.G: 1

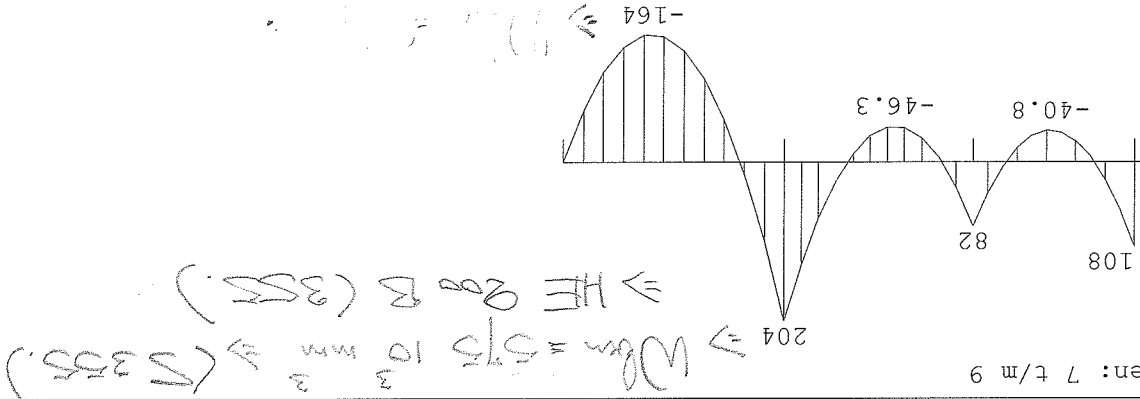
Velden: 1 t/m 6



MOMENTEN

Liggr: 1 B.G: 1

Velden: 7 t/m 9



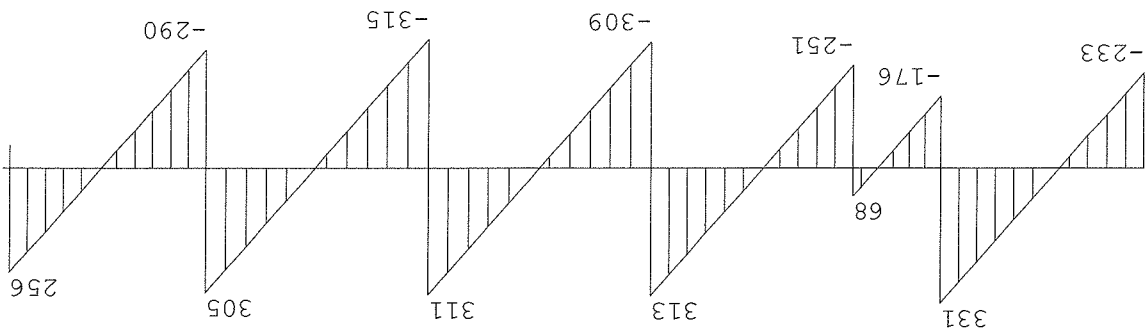
Liggr: 1 B.G: 1

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DWARSKRACHTEN

Ligger: 1 B.G:1

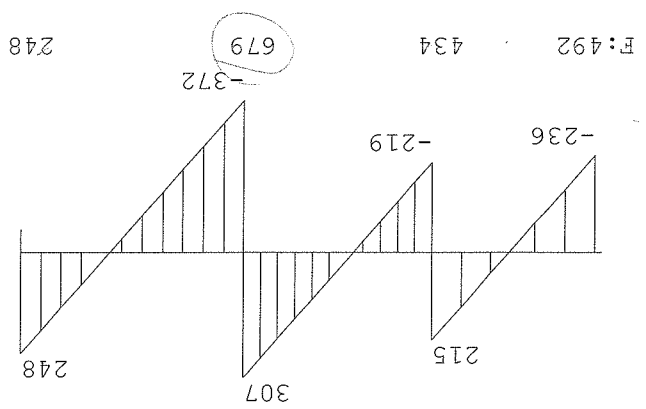
Velden: 1 t/m 6



DWARSKRACHTEN

Ligger: 1 B.G:1

Velden: 7 t/m 9



F:492 434

248

679

Project.....: -

Onderdeel.....: -

Constructeur.: karel

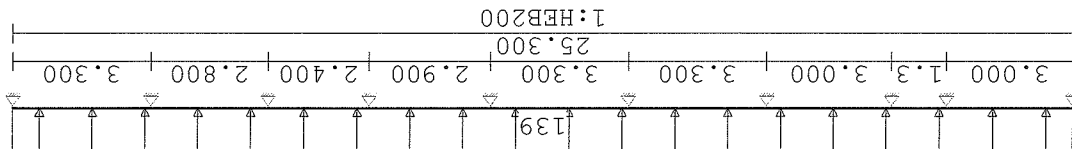
Opdrachtgever:

Dimensies.....: kN/m/rad

Datum.....: 05/10/2015

VELDBEELASTINGEN

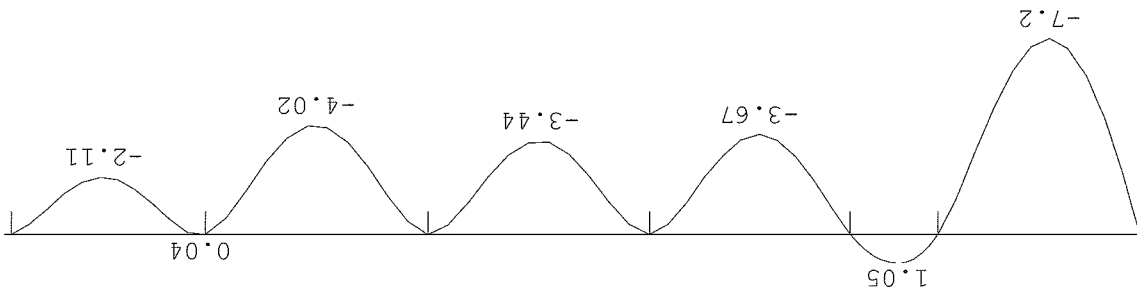
Ligget: 1 B.G:1



VERPLAATSINGEN [mm]

Ligget: 1 B.G:1

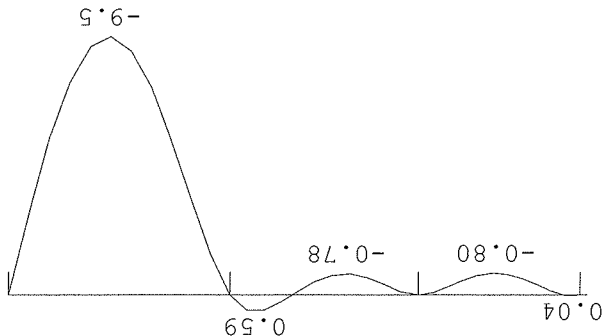
Velden: 1 t/m 6



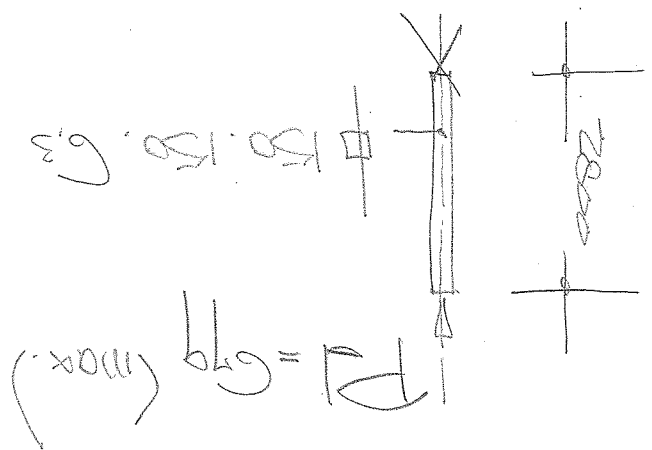
VERPLAATSINGEN [mm]

Ligget: 1 B.G:1

Velden: 7 t/m 9



Staan op C

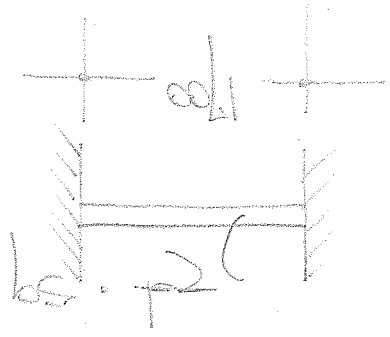


$\Rightarrow \varnothing = 3580 \text{ mm}$
 $? = 588 \text{ mm}$

$\lambda = \frac{850}{522} = 1.63$
 $\gamma_c = 0.87$
 $\Rightarrow \text{VOGuc} = 0.87$

$\Rightarrow \text{voltoef}$
 $\Rightarrow 813 \text{ kN}$
 $\frac{1000}{3580 \times 0.87 \times 0.87} = 3580$

- v.s. f.p.v. entree kamer: (middengang)



$$f_m = 500 \times 0.40$$

$$M = 10 \times 59 \times 1.7 = 111$$

$$N = 50 \times 1.7 = 85 \text{ KN}$$

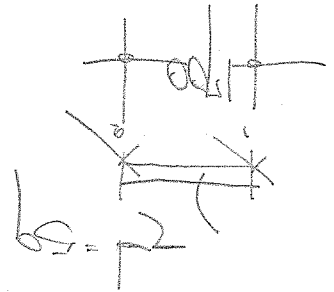
$$V = 0.45 \text{ N/mm}^2$$

$$T = \frac{2}{1.7} \times 59 = 69$$

$$Z = \frac{50 \times 0.000}{50 \times 0.000} = 2$$

$$= 0.45 \text{ N/mm}^2$$

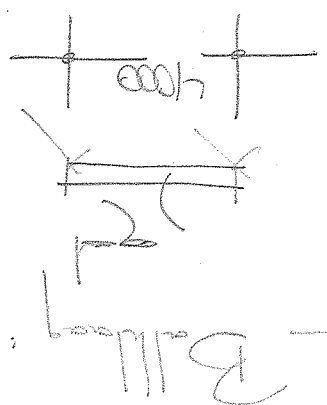
In steel:



$$M = 111 \text{ KN}$$

$$N = 85 \text{ KN}$$

$$W_{ben} = 91.0 \times 10^3 \text{ mm}^3 \Rightarrow \text{HE 12.B}$$



$$\sum M_1 + M_2 \Rightarrow 123 \times 16 \leq 11 \times 221$$

2 par = o.c
1 par = o.c
KN/m²
KN/m²

Berekening gordingen en platdakbalklagen volgens NEN-EN 1995-1-1 Incl. Nationale Bijlage (nl)

Onderdeel: **Steenbergen**

Algemene gegevens:

Klimaatklasse (1, 2, 3) : 1 HVG < 12%
 Sterkteklasse (NEN-EN338:2009 / NEN-EN1194:1999) : C18
 Rekenwaarde van de belasting (STR/GEO) : Groep B
 Ontwerplevensduurklasse : 50 jaar
 Belastingduurklasse sneeuw en wind : kort
 Gevolgklasse : CC2
 Betrouwbaarheidsklasse : RC2
 Betrouwbaarheidsklasse : $K_{FI} = 1,0$
 Categorie : Woon- en verblijfsruimtes

dakhellung in graden : 0,0 graden =
 dakvorm: Plat dak

theoretische lengten : 4,00 m, resp. 0,00 m
 balklaag max. h.o.h. : 610 mm
 maximale gebouwhoogte : 3,00 m
 gebied (I, II of III) : III
 Kust/onbebouwd/bebouwd : onbebouwd

gording :
 breedte : 71 mm
 hoogte : 221 mm
 W = 5,78E+05 mm3
 I = 6,39E+07 mm4
 k(h) = 1,00

Bepianking bovenzijde : 20 mm
 Bepianking onderzijde : 0 mm
 $E_{0,ser,rep} :$ 8700 N/mm2
 $\phi_r = 0,742$

Belastingen:

permanente belasting : 0,60 kN/m2 (dakvlak)
 permanente belasting : 0,60 kN/m2 (grondvlak)
 veranderlijke belasting : 2,50 kN/m2 (grondvlak)
 lengte p(var.) : 4,00 m
 sneeuwbelasting : 0,56 kN/m2 (grondvlak)
 puntlast : 2,00 kN

Windbelasting:

externe stuwdruk : $q_p(z) = 0,49 \text{ kN/m}^2$
 extreme stuwdruk : $q_p(z) = 0,49 \text{ kN/m}^2$
 $C_s C_d (h_{gebouw} < 15m) = 1,00$
 dak loefzijde : $C(pe) = -0,70$
 dak lijzijde : $C(pe) = 0,20$ resp. $C(pi) = 0,20$
 onder/overdruk : $C(pi) = 0,20$ resp. $C(pi) = -0,30$
 wrijving : te verwaarlozen

Berekening op enkele buiging als ligger op 2 steunpunten.

H2

Belastingcombinaties

Uiterste grenstoestand - fundamentele combinaties:

Tabel A1.2(B); vergelijking 6.10a

combinatie 1: $1,35K_{FI}G_k + 1,5K_{FI}Q_{k1}$	0,49 kN/m	(perm. + sneeuw)
combinatie 2: $1,35K_{FI}G_k + 1,5K_{FI}F_{k1}$	0,49 kN/m	(perm. + pers. en goederen (F))
combinatie 3: $1,35K_{FI}G_k + 1,5K_{FI}F_{k1}$	0,49 kN/m	(perm. + pers. en goederen (F))
combinatie 4: $1,35K_{FI}G_k + 1,5K_{FI}Q_{k1}$	0,49 kN/m	(perm. + pers. en goederen (q))
combinatie 5: $1,35K_{FI}G_k + 1,5K_{FI}Q_{k1}$	0,49 kN/m	(perm. + wind)
combinatie 6: $1,35K_{FI}G_k + 1,5K_{FI}Q_{k1}$	0,49 kN/m	(perm. + wind)

Tabel A1.2(B); vergelijking 6.10b

combinatie 1: $1,2K_{FI}G_k + 1,5K_{FI}Q_{k1}$	0,99 kN/m	(perm. + sneeuw)
combinatie 2: $1,2K_{FI}G_k + 1,5K_{FI}F_{k1}$	0,44 kN/m	(perm. + pers. en goederen (F))
combinatie 3: $1,2K_{FI}G_k + 1,5K_{FI}F_{k1}$	0,44 kN/m	(perm. + pers. en goederen (F))
combinatie 4: $1,2K_{FI}G_k + 1,5K_{FI}Q_{k1}$	2,73 kN/m	(perm. + pers. en goederen (q))
combinatie 5: $1,2K_{FI}G_k + 1,5K_{FI}Q_{k1}$	0,21 kN/m	(perm. + wind; loefzijde)
combinatie 6: $1,2K_{FI}G_k + 1,5K_{FI}Q_{k1}$	0,21 kN/m	(perm. + wind; lijfzijde)

Momenten

$M_{d-max} =$	5,45 kNm	
$\sigma_{(m;0,d)} =$	9,44 N/mm ²	$k^{(mod)} = 0,80$
$f_{(m;0,rep)} =$	18 N/mm ²	
$f_{(m;0,d)} =$	11,08 N/mm ²	akkoord

Unity check = 0,85

akkoord

Dwarskracht

$V_{d-max} =$	9,91 kN
$\tau_d =$	0,95 N/mm ²

$T_{v,rep} =$ 3,40 N/mm²

$f_{v,d} =$ 2,09 N/mm²

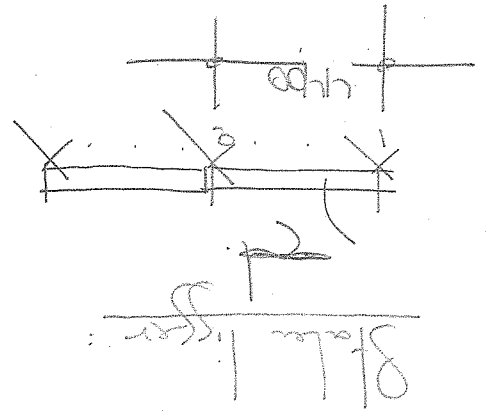
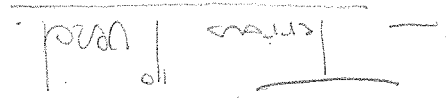
Unity check = 0,45

akkoord

Bruikbaarheidsgrenstoestand - Controle stijfheid

$K_{def} =$	0,60	
$U_{inst,G} =$	2,1mm	$U_{inst,G} = U_{inst,G} (1+K_{def})$
$U_{inst,Q1} =$	8,8mm	$U_{inst,Q1} = U_{inst,Q1} (1+\psi_2 K_{def})$
$U_{inst,Fq} =$	3,4mm	$U_{inst,Fq} = U_{inst,Q1} (1+\psi_2 K_{def})$
$U_{bji} =$	10,1 mm = kleiner dan 12,0 mm	
$U_{fn,tot} =$	12,2 mm = kleiner dan 16,0 mm	

$\psi_2 =$ 0,30



$$\begin{aligned} \sum \text{par} &= 2,0 \times 0,6 + 1,0 \\ \sum \text{var} &= 0,70 \times 0,5 \\ \sum \text{trap} &= 1,2 \times 0,2 + 1,5 \times 0,10 \end{aligned}$$

$$\begin{aligned} &= 2,2 \\ &= 0,35 \\ &= 0,72 \\ &= 10,1 \end{aligned}$$

KNm

$$\begin{aligned} R_{d1} &= 27,3 \text{ kN} \\ R_{d2} &= 44,5 \text{ kN} \end{aligned}$$

h.o.h. 9000 mm

W_{ben} = 104 10 mm 3 3
 I_{ben} = 950 10 mm 4 4
 ⇒ UNP 180

- Lijnlast op dak (G₁₀₀+) tussen F-D

$$\text{Lijnlast op dak} = 1,3 \times 5,5 = 7,15 \text{ kN/m}$$

$$\text{Lijnlast op dak} = 3,5 \times 4,0 + 1,0 = 15,0 \text{ kN/m}$$

$$\text{Lijnlast op dak} = 1,3 \times 1,5 = 1,95 \text{ kN/m}$$

$$\text{Lijnlast op dak} = 2,0 \times 1,0 = 2,0 \text{ kN/m}$$

$$\text{Lijnlast op dak} = 1,0 \times 5,5 = 5,5 \text{ kN/m}$$

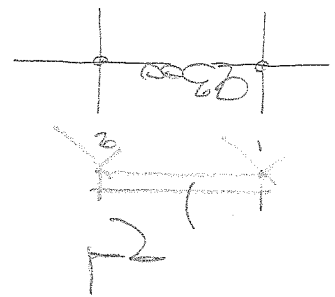
$$\text{Lijnlast op dak} = 3,5 \times 2,0 + 1,0 = 8,0 \text{ kN/m}$$

$$\text{Lijnlast op dak} = 1,0 \times 5,5 = 5,5 \text{ kN/m}$$

$$\text{Lijnlast op dak} = 1,0 \times 5,5 = 5,5 \text{ kN/m}$$

* = Beplating + randversterking

L-lijn - Totaal - 0,30



$122 = 122 \text{ kN}$

* \Rightarrow geen bovend liggend m.w., maar deuren.

*
Totaal m.w. = $0,5 \times 0,6$
Gedeker: $0,0 \times 0,6$
e.s.

$1,0 \text{ kN/m}$
 $1,2$
 $0,4$
 $2,6 \text{ kN/m}$

$10,6 \text{ kN/m}$

$5,1 \text{ kN/m}$

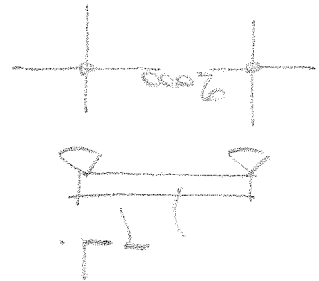
$1 = 1,2 \times 0,6 + 1,5 \times 0,6 = 1,5$
 $1,5 = 0,5 \times 1,0$

Wegen = $30,0$
 $3 \cdot 3$
 10 mm

Wegen = $9,6$
 10 mm

\Rightarrow L 150-100-10

- L-fen. hoogte (max.) h.o.h. 29 m.



$$T_d = 1.35 \cdot 97 \cdot 411 + 1.5 \cdot 97 \cdot 3.3 \cdot 0.7$$

$$T_d = 1.35 \cdot 97 \cdot 411 + 1.5 \cdot 97 \cdot 3.3 \cdot 1.5$$

$$= 219$$

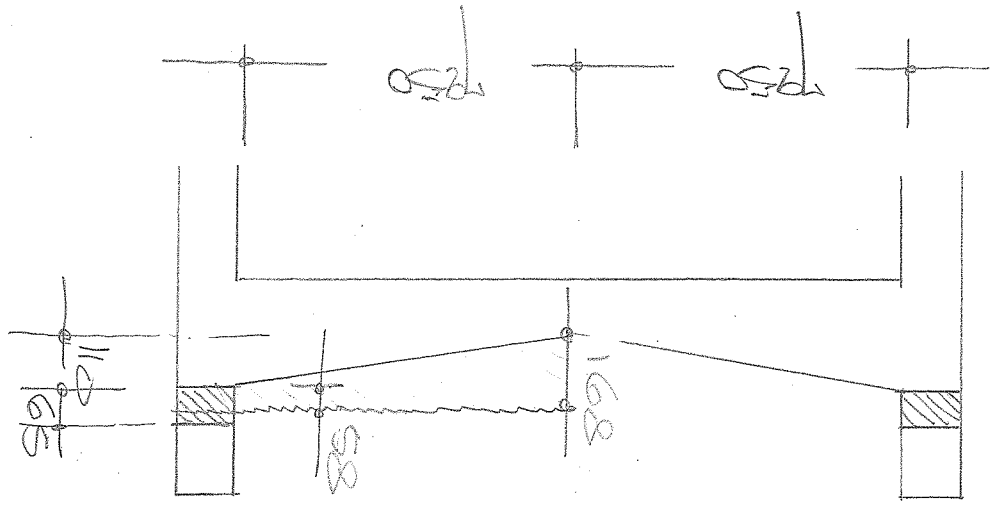
$$= 297$$

KNm

KNm

Wobm = 587 10 mm \Rightarrow L 150.100.12.

Berekening N.O. $(q_m = 20 \times 65 \Rightarrow 11 \text{ strek.})$



N.O. h.o.h. ± 130 m. $\Rightarrow f = 130 \times 7,05 = 99$ m
 $\ln 1 = 11000$
 $0,02$
 58 mm.