



Berekening 4 Dijkwoningen – Nieuwbouw  
Document w222073-BER-04

Datum 21-12-2023

*Bij deze berekening behoren de volgende tekeningen en berekeningen:*  
– Zie tekeningenlijst dd 21-12-2023

*Deze berekening dient in combinatie gelezen te worden met:*  
– Berekening w222073-BER-02 dd 21-12-2023

## **Berekening 4: Dijkwoningen**

### **Nieuwbouw**

**Dorpsstraat  
Heerjansdam**

Opdrachtgever:  
Boomgaardhof BV

Architect:  
Thuis in Bouwen B.V.

**werknr. : 222.073**

Constructeur: Ing. M.N.D. den Exter / MSEng

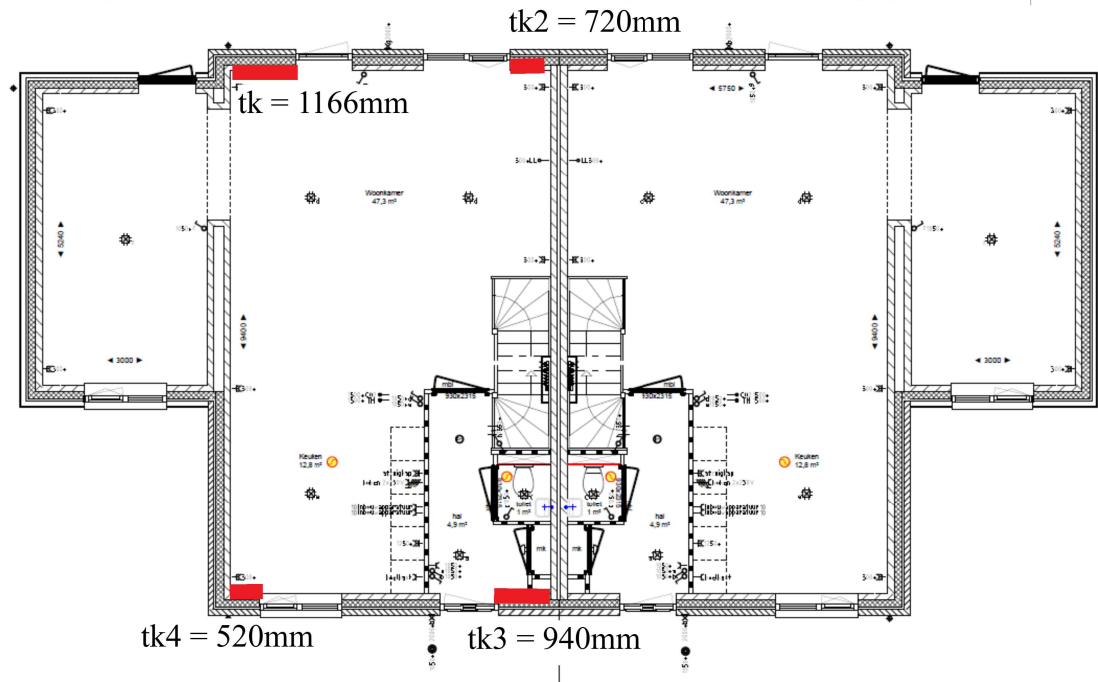
[illegible]

## Berekeningen: Dijkwoningen

| Perm | Opgelegd |
|------|----------|
|------|----------|

### Stabiliteit

\* Andere woning is spiegelbeeld tov aangegeven



De penanten zijn gespiegeld in de andere woning.

Uitgangspunten:  
Breedte penanten zie plattegrond  
hiernaast (tk = breedte penant).  
Dikte kalkzandsteen min 120mm.

NPR 9096 – Tabel 8

Windgebied 2, bebouwd

Steenconstructietype 1

Gesommeerde breedte penanter  $2,30 + 0,12 \cdot n$

n = aantal actieve penanten 4 stuks (4 van links en 4 van rechts)

Tot. benodigd conform tabel:  $2,30 + 0,12 \cdot 4$

= 2,78

m

Minimaal toegepaste penantbreedte tk = 300mm volgens de NPR 9096.

In dit project wordt de breedte van de penanten, zie plattegrond hierboven.

Stabiliteit van links naar rechts:

$(1166 + 720 + 940 + 520) = 3,35$

m

> 2,78m, dus akkoord

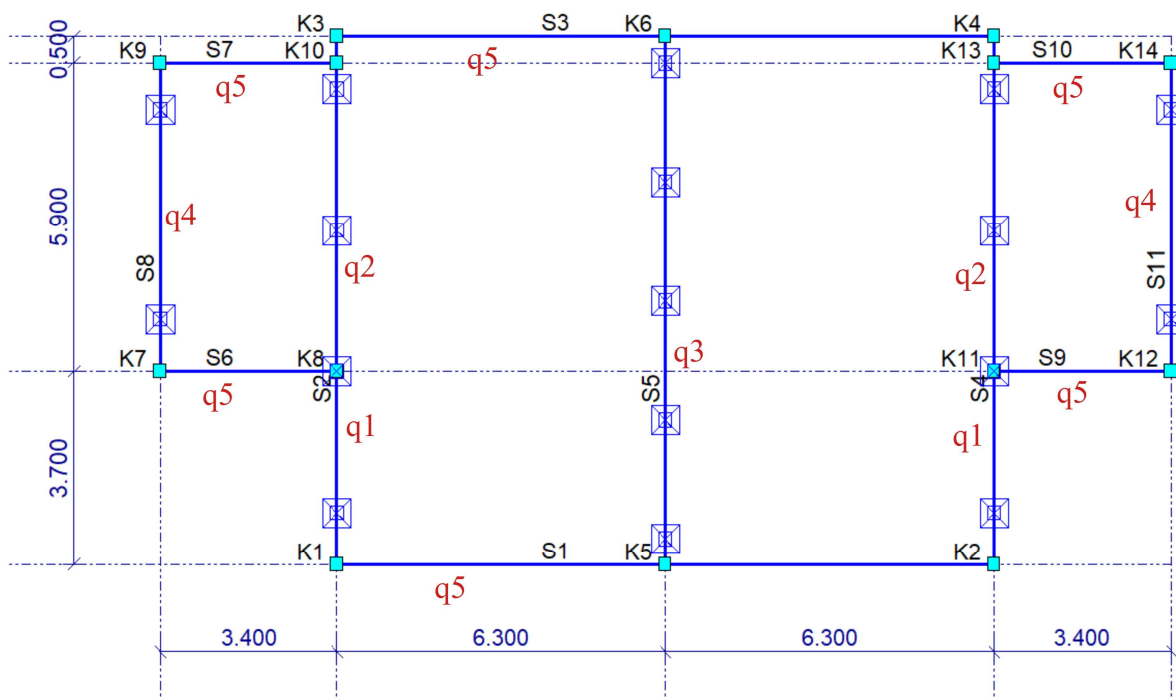
Stabiliteit van rechts naar links:

$(1166 + 720 + 940 + 520) = 3,35$

m

> 2,78m, dus akkoord

## Fundering



## Schema

### Eindgevels

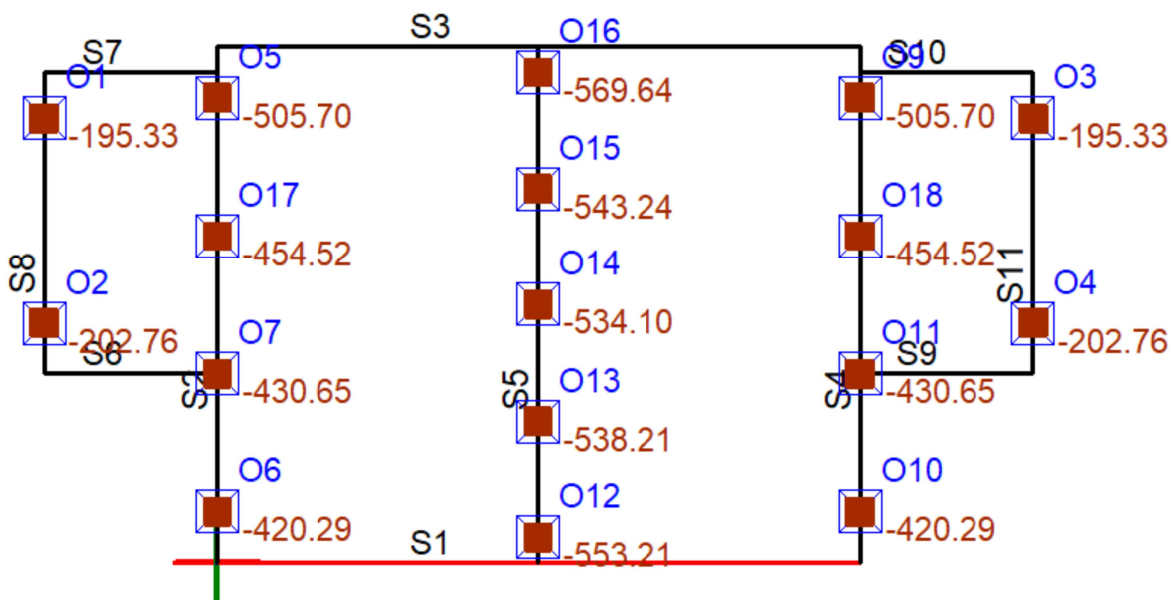
#### q1

|                         |                                                         |   |       |       |       |
|-------------------------|---------------------------------------------------------|---|-------|-------|-------|
| Uit dak – schuin        | $6,3/2 \cdot P_{\text{dak\_s}} [V_{\text{dak\_s}}]$     | = | 4,73  | 0,00  | kN/m1 |
| Uit 2 <sup>e</sup> verd | $6,3/2 \cdot P_{\text{ver\_200}} [V_{\text{ver\_200}}]$ | = | 16,70 | 9,29  |       |
| Uit 1 <sup>e</sup> verd | $6,3/2 \cdot P_{\text{ver\_200}} [V_{\text{ver\_200}}]$ | = | 16,70 | 9,29  |       |
| Uit bg                  | $6,3/2 \cdot P_{\text{bg\_rib}} [V_{\text{bg\_rib}}]$   | = | 11,66 | 9,29  |       |
| Uit wand                |                                                         |   |       |       |       |
| - Metselwerk buitenblad | $(6,5+3,0/2) \cdot Mw_{110}$                            | = | 17,60 |       |       |
| - Uit kzst binnenblad   | $(6,0+3,0/2) \cdot Kzst_{120}$                          | = | 18,00 |       | +     |
|                         |                                                         |   | 85,37 | 27,88 | kN/m1 |

#### q2

|                               |                                                         |   |        |       |       |
|-------------------------------|---------------------------------------------------------|---|--------|-------|-------|
| Uit dak – schuin              | $6,3/2 \cdot P_{\text{dak\_s}} [V_{\text{dak\_s}}]$     | = | 4,73   | 0,00  | kN/m1 |
| Uit dak – plat garage/aanbouw | $3,4/2 \cdot P_{\text{dak\_p}} [V_{\text{dak\_p}}]$     | = | 9,01   | 1,70  |       |
| Uit 2 <sup>e</sup> verd       | $6,3/2 \cdot P_{\text{ver\_200}} [V_{\text{ver\_200}}]$ | = | 16,70  | 9,29  |       |
| Uit 1 <sup>e</sup> verd       | $6,3/2 \cdot P_{\text{ver\_200}} [V_{\text{ver\_200}}]$ | = | 16,70  | 9,29  |       |
| Uit bg                        | $6,3/2 \cdot P_{\text{bg\_rib}} [V_{\text{bg\_rib}}]$   | = | 11,66  | 9,29  |       |
| Uit bg – aanbouw              | $3,4/2 \cdot P_{\text{bg\_rib}} [V_{\text{bg\_rib}}]$   | = | 6,29   | 5,02  |       |
| Uit wand                      |                                                         |   |        |       |       |
| - Metselwerk buitenblad       | $(6,5+3,0/2) \cdot Mw_{110}$                            | = | 17,60  |       |       |
| - Uit kzst binnenblad         | $(6,0+3,0/2) \cdot Kzst_{120}$                          | = | 18,00  |       | +     |
|                               |                                                         |   | 100,67 | 34,59 | kN/m1 |

|                                   |                                                       |   | Perm   | Opgelegd |       |
|-----------------------------------|-------------------------------------------------------|---|--------|----------|-------|
| <u>Woningscheidende bouwmuren</u> |                                                       |   |        |          |       |
| <i>q3</i>                         |                                                       |   |        |          |       |
| Uit dak – schuin                  | $6,3 \cdot P_{\text{dak\_s}} [V_{\text{dak\_s}}]$     | = | 9,45   | 0,00     | kN/m1 |
| Uit 2 <sup>e</sup> verd           | $6,3 \cdot P_{\text{ver\_200}} [V_{\text{ver\_200}}]$ | = | 33,39  | 18,59    |       |
| Uit 1 <sup>e</sup> verd           | $6,3 \cdot P_{\text{ver\_200}} [V_{\text{ver\_200}}]$ | = | 33,39  | 18,59    |       |
| Uit bg                            | $6,3 \cdot P_{\text{bg\_rib}} [V_{\text{bg\_rib}}]$   | = | 23,31  | 18,59    |       |
| Uit wand                          |                                                       |   |        |          |       |
| - 2x Uit kzst binnenblad          | $2 \cdot (6,0 + 3,0/2) \cdot Kzst_{120}$              | = | 36,00  |          | +     |
|                                   |                                                       |   | 135,54 | 55,76    | kN/m1 |
| <u>Zijgevel aanbouw</u>           |                                                       |   |        |          |       |
| <i>q4</i>                         |                                                       |   |        |          |       |
| Uit dak – plat garage/aanbouw     | $3,4/2 \cdot P_{\text{dak\_p}} [V_{\text{dak\_p}}]$   | = | 9,01   | 1,70     | kN/m1 |
| Uit bg – aanbouw                  | $3,4/2 \cdot P_{\text{bg\_rib}} [V_{\text{bg\_rib}}]$ | = | 6,29   | 5,02     |       |
| Uit wand                          |                                                       |   |        |          |       |
| - Metselwerk buitenblad           | $3,5 \cdot Mw_{110}$                                  | = | 7,70   |          |       |
| - Uit kzst binnenblad             | $3,0 \cdot Kzst_{120}$                                | = | 7,20   |          | +     |
|                                   |                                                       |   | 30,20  | 6,72     | kN/m1 |
| <u>Voorgevel / achtergevel</u>    |                                                       |   |        |          |       |
| <i>q5</i>                         |                                                       |   |        |          |       |
| Uit wand                          |                                                       |   |        |          | kN/m1 |
| - Metselwerk buitenblad           | $3,5 \cdot Mw_{110}$                                  | = | 7,70   |          |       |
| - Uit kzst binnenblad             | $3,0 \cdot Kzst_{120}$                                | = | 7,20   |          | +     |
|                                   |                                                       |   | 14,90  |          | kN/m1 |



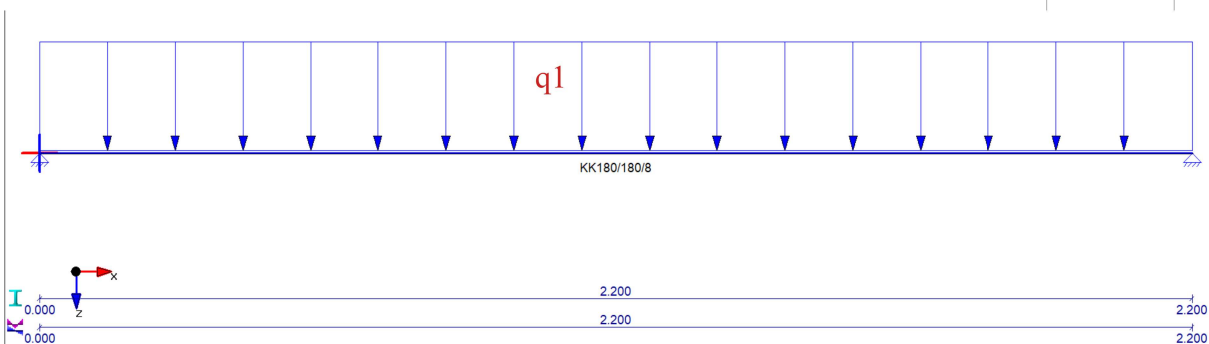
Maximaal optredende paalbelastingen

Tevens is met de voorliggende berekening ook de wapening van de funderingsbalken berekend.

### Stalen ligger ivm doorgang van woonhuis naar "uitbouw"

$q_1$

|                               |                                                       |   |       |       |       |
|-------------------------------|-------------------------------------------------------|---|-------|-------|-------|
| Uit dak – schuin              | $6,0/2 \cdot P_{\text{dak}_s}$                        | = | 4,50  |       | kN/m1 |
| Uit dak – plat garage/aanbouw | $3,4/2 \cdot P_{\text{dak}_p} [V_{\text{dak}_p}]$     | = | 9,01  | 1,70  |       |
| Uit 2 <sup>e</sup> verd       | $6,0/2 \cdot P_{\text{ver}_200} [V_{\text{ver}_200}]$ | = | 15,90 | 8,85  |       |
| Uit 1 <sup>e</sup> verd       | $6,0/2 \cdot P_{\text{ver}_200} [V_{\text{ver}_200}]$ | = | 15,90 | 8,85  |       |
| Uit mw buitenblad             | $4,7 \cdot M_w_{110}$                                 | = | 10,34 |       |       |
| Uit kzst d=120                | $4,7 \cdot K_{\text{zst}}_{120}$                      | = | 11,28 |       | +     |
|                               |                                                       |   | 66,93 | 19,40 | kN/m1 |



Schema

### Penant onder stalen ligger

|                                                                                    |   |        |    |
|------------------------------------------------------------------------------------|---|--------|----|
| Fd → Uit berekening "Stalen ligger ivm doorgang van woonhuis naar "uitbouw" → R1 → | = | 118,40 | kN |
| De lengte van het penant                                                           | = | 2650   | mm |
| Breedte van het penant                                                             | = | 400    | mm |
| Dikte van het penant (2x120)                                                       | = | 240    | mm |

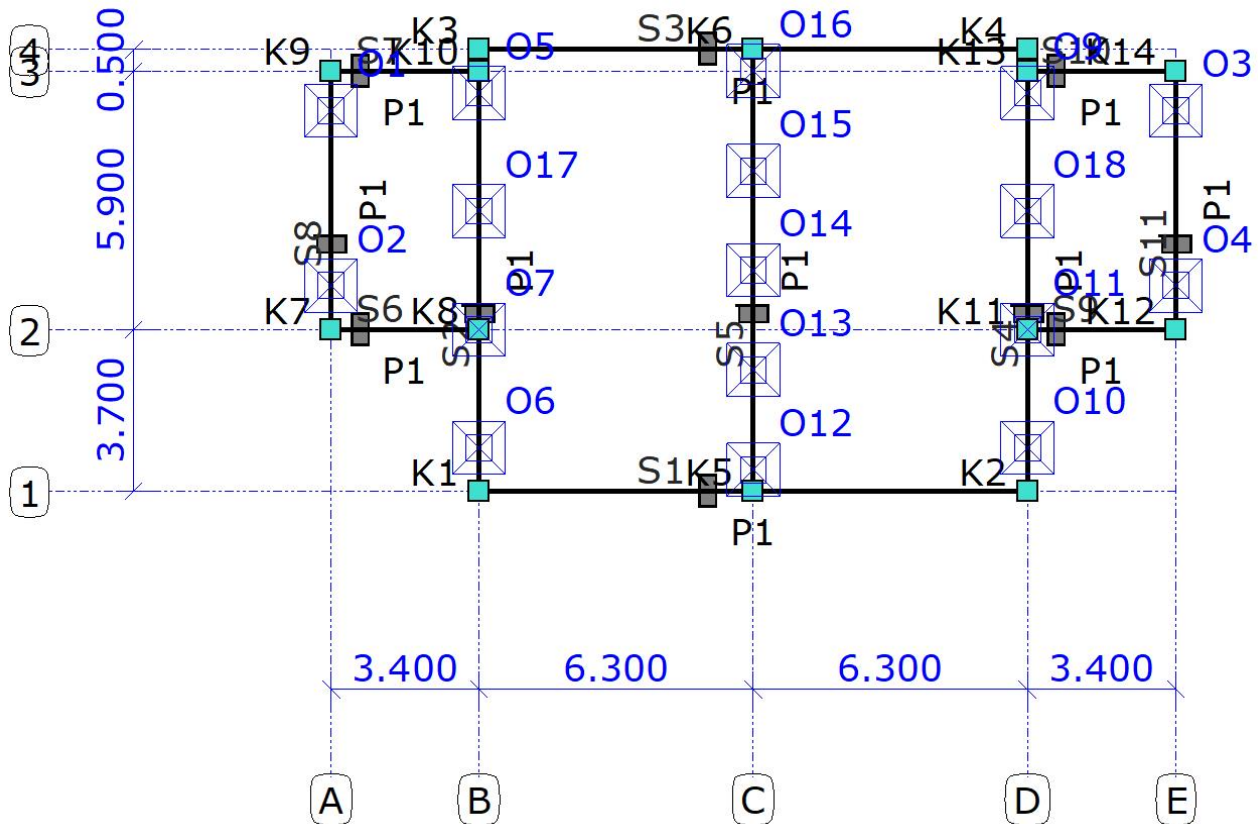
Voor berekening zie bijlage C.

## **Bijlage C**

### **Computeruitvoer**

|                               |                                                                                                                                                  |               |                  |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------|
| Bouwkundig Adviesburo Baas bv | Moltzerhof 20                                                                                                                                    |               | 3052VA Rotterdam |
| Projectomschrijving           | Heerjansdam                                                                                                                                      | Projectnummer | 222.073          |
| Onderdeel                     | Dijkwoning - Fundering - Versie A                                                                                                                | Constructeur  | M.N.D. den Exter |
| Opdrachtgever                 |                                                                                                                                                  | Eenheden      | m, mm, kN, kNm   |
| Bestand                       | C:\Users\donny\OneDrive\Bureaublad\Diverse_werken\Te doen\dd15122023\222073\ber-Baas\BER-04_Dijkwoningen_versie_A\w222073-Fundering_versie_A.mxf |               |                  |

Constructie

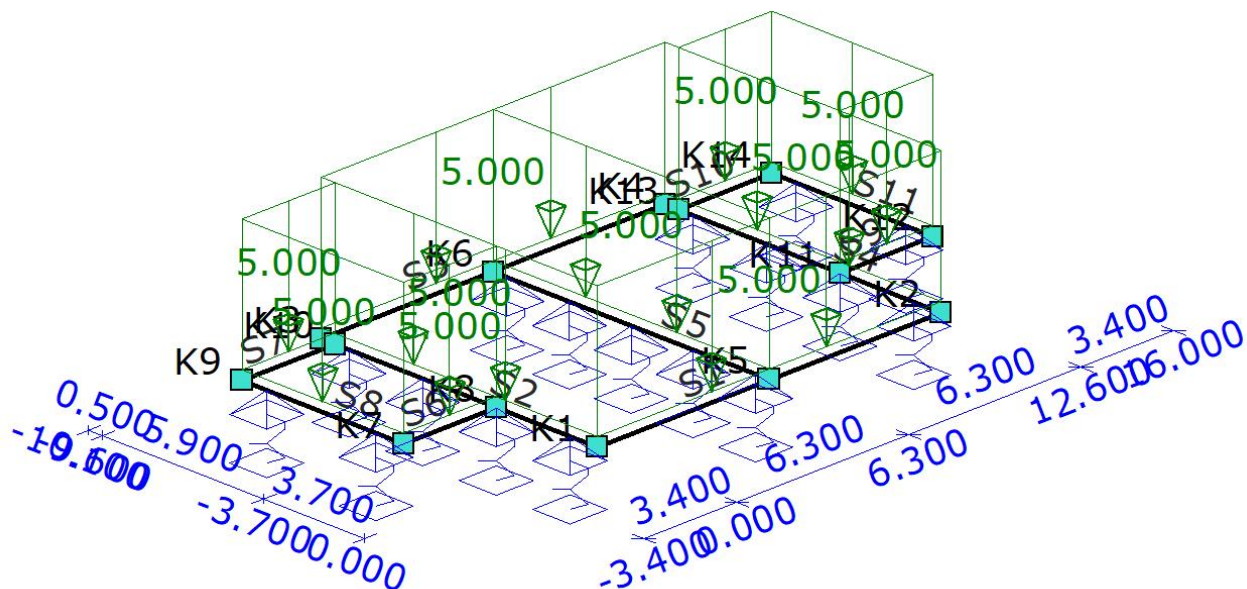


## STAVEN

| Staaf | Knoop-B | Knoop-E | X-B    | X-E    | Y-B     | Y-E     | Lengte | Profiel | Positie            |
|-------|---------|---------|--------|--------|---------|---------|--------|---------|--------------------|
| S1    | K1      | K2      | 0.000  | 12.600 | 0.000   | 0.000   | 12.600 | P1      | 0.000 - 12.600 (L) |
| S2    | K1      | K3      | 0.000  | 0.000  | 0.000   | -10.100 | 10.100 | P1      | 0.000 - 10.100 (L) |
| S3    | K3      | K4      | 0.000  | 12.600 | -10.100 | -10.100 | 12.600 | P1      | 0.000 - 12.600 (L) |
| S4    | K2      | K4      | 12.600 | 12.600 | 0.000   | -10.100 | 10.100 | P1      | 0.000 - 10.100 (L) |
| S5    | K5      | K6      | 6.300  | 6.300  | 0.000   | -10.100 | 10.100 | P1      | 0.000 - 10.100 (L) |
| S6    | K7      | K8      | -3.400 | 0.000  | -3.700  | -3.700  | 3.400  | P1      | 0.000 - 3.400 (L)  |
| S7    | K9      | K10     | -3.400 | 0.000  | -9.600  | -9.600  | 3.400  | P1      | 0.000 - 3.400 (L)  |
| S8    | K7      | K9      | -3.400 | -3.400 | -3.700  | -9.600  | 5.900  | P1      | 0.000 - 5.900 (L)  |
| S9    | K11     | K12     | 12.600 | 16.000 | -3.700  | -3.700  | 3.400  | P1      | 0.000 - 3.400 (L)  |
| S10   | K13     | K14     | 12.600 | 16.000 | -9.600  | -9.600  | 3.400  | P1      | 0.000 - 3.400 (L)  |
| S11   | K12     | K14     | 16.000 | 16.000 | -3.700  | -9.600  | 5.900  | P1      | 0.000 - 5.900 (L)  |
|       |         |         | m      | m      | m       | m       | m      |         | m                  |



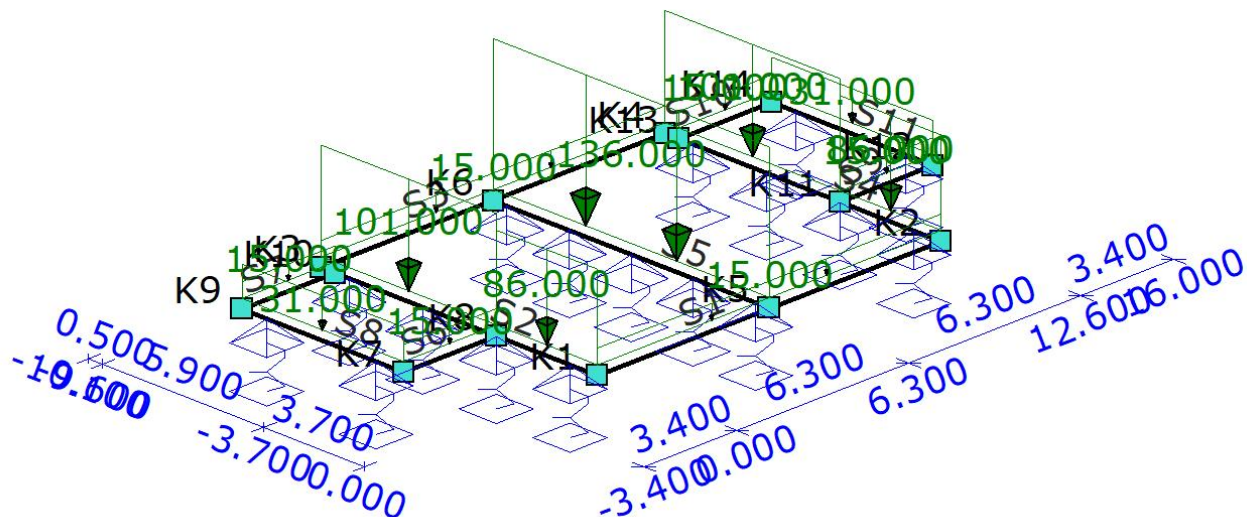
## B.G.1: Permanent



## B.G.1: PERMANENT

| Type       | Beginwaarde | Eindwaarde           | Beginafstand | Eindafstand | Richting | Staat of knoop | Omschrijving |
|------------|-------------|----------------------|--------------|-------------|----------|----------------|--------------|
| qG         | 1.000       | 1.000                | 0.000        | L           | Z        | S1-S11         |              |
| Som lasten |             | Z: 404.500 Xr: 0.000 |              |             |          |                |              |
|            |             |                      | m            | m           |          |                |              |

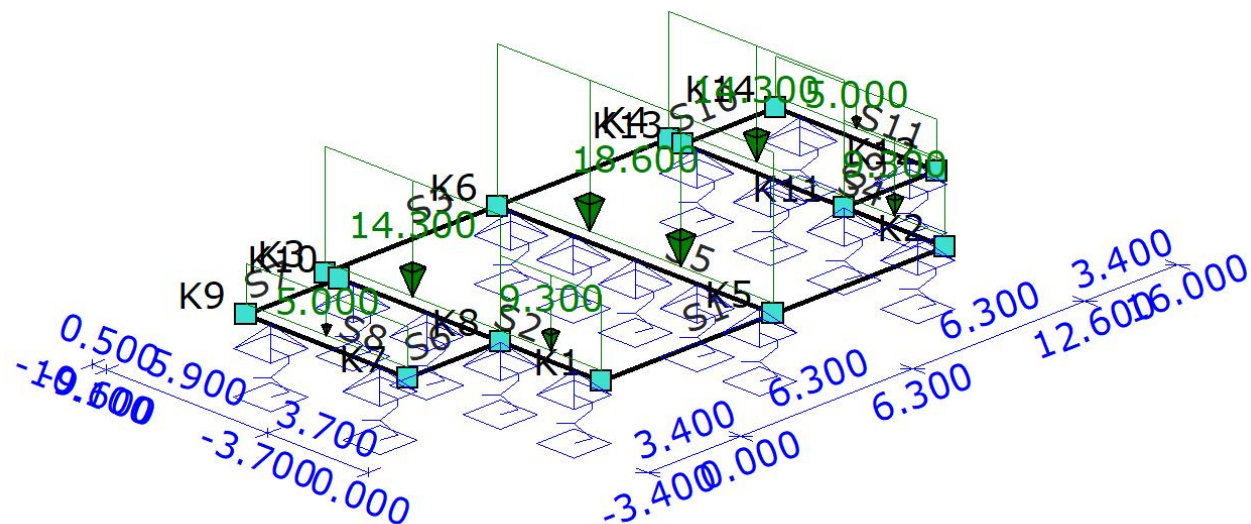
## B.G.2: Perm - Bovenbouw



## B.G.2: PERM - BOVENBOUW

| Type       | Beginwaarde | Eindwaarde            | Beginafstand | Eindafstand | Richting | Staat of knoop     | Omschrijving |
|------------|-------------|-----------------------|--------------|-------------|----------|--------------------|--------------|
| q          | 86.000      | 86.000                | 0.000        | 3.700       | Z        | S2,S4              |              |
| q          | 101.000     | 101.000               | 3.700        | L           | Z        | S2,S4              |              |
| q          | 136.000     | 136.000               | 0.000        | 10.100 (L)  | Z        | S5                 |              |
| q          | 31.000      | 31.000                | 0.000        | L           | Z        | S8,S11             |              |
| q          | 15.000      | 15.000                | 0.000        | L           | Z        | S1,S3,S6-S7,S9-S10 |              |
| Som lasten |             | Z: 4250.600 Xr: 0.000 |              |             |          |                    |              |
|            |             |                       | m            | m           |          |                    |              |

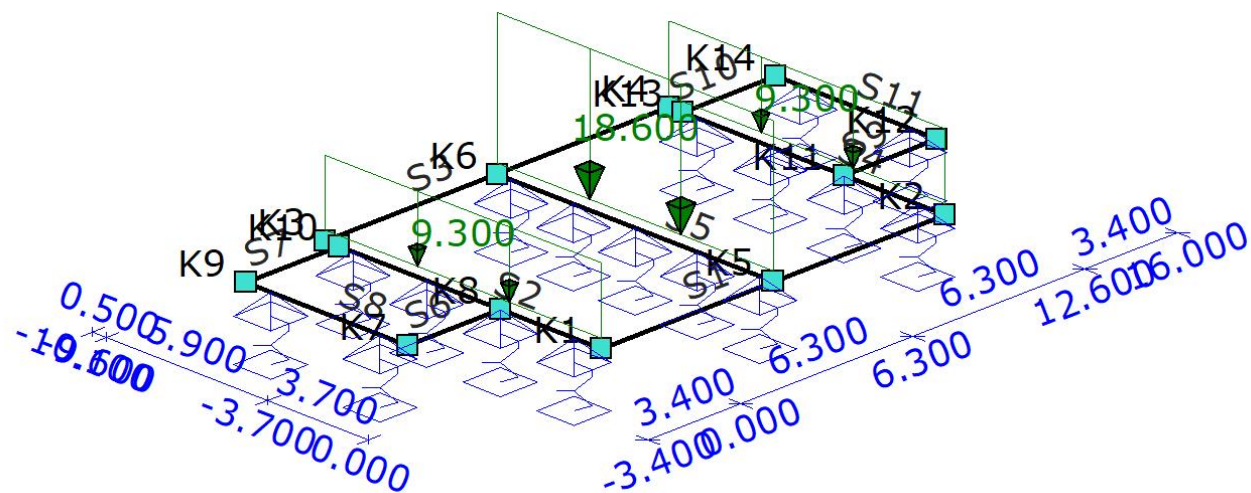
## B.G.3: Opgelegd - bg (Generatief)



## B.G.3: OPGELEGD - BG (GENERATIEF)

| Type | Beginwaarde | Eindwaarde | Beginafstand | Eindafstand | Richting | Staat of knoep | Omschrijving |
|------|-------------|------------|--------------|-------------|----------|----------------|--------------|
| q    | 9.300       | 9.300      | 0.000        | 3.700       |          | Z S2,S4        |              |
| q    | 14.300      | 14.300     | 3.700        | L           |          | Z S2,S4        |              |
| q    | 18.600      | 18.600     | 0.000        | 10.100 (L)  |          | Z S5           |              |
| q    | 5.000       | 5.000      | 0.000        | L           |          | Z S8,S11       |              |
|      |             |            | m            | m           |          |                |              |

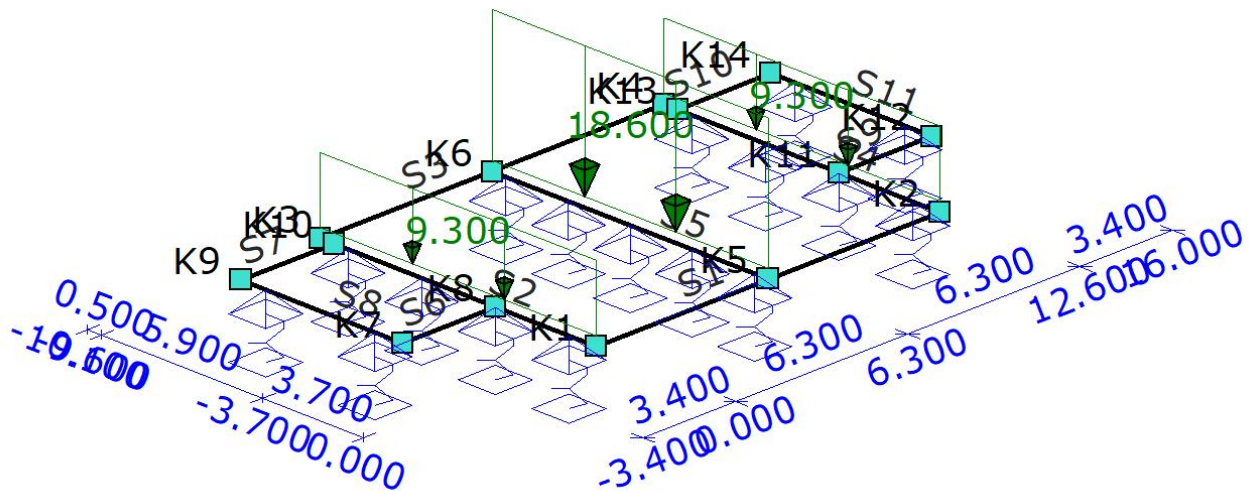
## B.G.4: Opgelegd - 1e verd (Generatief)



## B.G.4: OPGELEGD - 1E VERD (GENERATIEF)

| Type | Beginwaarde | Eindwaarde | Beginafstand | Eindafstand | Richting | Staat of knoep | Omschrijving |
|------|-------------|------------|--------------|-------------|----------|----------------|--------------|
| q    | 9.300       | 9.300      | 0.000        | L           |          | Z S2,S4        |              |
| q    | 18.600      | 18.600     | 0.000        | 10.100 (L)  |          | Z S5           |              |
|      |             |            | m            | m           |          |                |              |

B.G.5: Opgelegd - 2e verd (Generatief)



### B.G.5: OPGELEGD - 2E VERD (GENERATIEF)

| Type | Beginwaarde | Eindwaarde | Beginafstand | Eindafstand | Richting | Staf of knoop | Omschrijving |
|------|-------------|------------|--------------|-------------|----------|---------------|--------------|
| q    | 9.300       | 9.300      | 0.000        | L           | Z        | S2,S4         |              |
| q    | 18.600      | 18.600     | 0.000        | 10.100 (L)  | Z        | S5            |              |
|      |             |            | m            | m           |          |               |              |

## BELASTINGSCOMBINATIES

| Fundamenteel |                        |         |         |         |         |         |         |         |         |         |         |
|--------------|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| B.G.         | Omschrijving           | Fu.C.1  | Fu.C.2  | Fu.C.3  | Fu.C.4  | Fu.C.5  | Fu.C.6  | Fu.C.7  | Fu.C.8  | Fu.C.9  | Fu.C.10 |
| B.G.1        | Permanent              | 1.20    | 1.20    | 1.20    | 1.35    | 1.35    | 1.35    | 1.35    | 1.35    | 1.35    | 1.35    |
| B.G.2        | Perm - Bovenbouw       | 1.20    | 1.20    | 1.20    | 1.35    | 1.35    | 1.35    | 1.35    | 1.35    | 1.35    | 1.35    |
| B.G.3.1      | Opgelegd - bg (1)      | 1.50    | 1.50    | 0.60    | 0.60    | 0.60    |         | 0.60    | 0.60    | 0.60    | 0.60    |
| B.G.3.2      | Opgelegd - bg (2)      | 1.50    | 1.50    | 0.60    | 0.60    |         | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |
| B.G.3.3      | Opgelegd - bg (3)      | 1.50    | 1.50    | 0.60    | 0.60    | 0.60    |         | 0.60    | 0.60    | 0.60    | 0.60    |
| B.G.3.4      | Opgelegd - bg (4)      | 1.50    | 1.50    | 0.60    | 0.60    |         | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |
| B.G.3.5      | Opgelegd - bg (5)      | 1.50    | 1.50    | 0.60    | 0.60    | 0.60    |         | 0.60    | 0.60    | 0.60    | 0.60    |
| B.G.3.6      | Opgelegd - bg (6)      | 1.50    | 1.50    | 0.60    | 0.60    |         | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |
| B.G.4.1      | Opgelegd - 1e verd (1) | 1.50    | 0.60    | 1.50    | 0.60    | 0.60    | 0.60    | 0.60    |         | 0.60    | 0.60    |
| B.G.4.2      | Opgelegd - 1e verd (2) | 1.50    | 0.60    | 1.50    | 0.60    | 0.60    | 0.60    |         | 0.60    | 0.60    | 0.60    |
| B.G.4.3      | Opgelegd - 1e verd (3) | 1.50    | 0.60    | 1.50    | 0.60    | 0.60    | 0.60    | 0.60    |         | 0.60    | 0.60    |
| B.G.4.4      | Opgelegd - 1e verd (4) | 1.50    | 0.60    | 1.50    | 0.60    | 0.60    | 0.60    |         | 0.60    | 0.60    | 0.60    |
| B.G.4.5      | Opgelegd - 1e verd (5) | 1.50    | 0.60    | 1.50    | 0.60    | 0.60    | 0.60    | 0.60    |         | 0.60    | 0.60    |
| B.G.4.6      | Opgelegd - 1e verd (6) | 1.50    | 0.60    | 1.50    | 0.60    | 0.60    | 0.60    |         | 0.60    | 0.60    | 0.60    |
| B.G.5.1      | Opgelegd - 2e verd (1) | 0.60    | 1.50    | 1.50    | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |         |
| B.G.5.2      | Opgelegd - 2e verd (2) | 0.60    | 1.50    | 1.50    | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |         | 0.60    |
| B.G.5.3      | Opgelegd - 2e verd (3) | 0.60    | 1.50    | 1.50    | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |         |
| B.G.5.4      | Opgelegd - 2e verd (4) | 0.60    | 1.50    | 1.50    | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |         | 0.60    |
| B.G.5.5      | Opgelegd - 2e verd (5) | 0.60    | 1.50    | 1.50    | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |         |
| B.G.5.6      | Opgelegd - 2e verd (6) | 0.60    | 1.50    | 1.50    | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |         | 0.60    |
| B.G.         | Omschrijving           | Fu.C.11 | Fu.C.12 | Fu.C.13 | Fu.C.14 | Fu.C.15 | Fu.C.16 | Fu.C.17 | Fu.C.18 | Fu.C.19 | Fu.C.20 |
| B.G.1        | Permanent              | 1.35    | 1.35    | 1.35    | 1.35    | 1.35    | 1.35    | 1.35    | 1.35    | 1.35    | 1.35    |
| B.G.2        | Perm - Bovenbouw       | 1.35    | 1.35    | 1.35    | 1.35    | 1.35    | 1.35    | 1.35    | 1.35    | 1.35    | 1.35    |
| B.G.3.1      | Opgelegd - bg (1)      | 0.60    |         | 0.60    |         | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |
| B.G.3.2      | Opgelegd - bg (2)      | 0.60    | 0.60    |         | 0.60    |         | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |
| B.G.3.3      | Opgelegd - bg (3)      |         | 0.60    | 0.60    |         | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |
| B.G.3.4      | Opgelegd - bg (4)      | 0.60    |         | 0.60    | 0.60    |         | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |
| B.G.3.5      | Opgelegd - bg (5)      |         | 0.60    |         | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |
| B.G.3.6      | Opgelegd - bg (6)      | 0.60    |         | 0.60    |         | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |
| B.G.4.1      | Opgelegd - 1e verd (1) | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |         | 0.60    |         | 0.60    |
| B.G.4.2      | Opgelegd - 1e verd (2) | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |         | 0.60    |         |
| B.G.4.3      | Opgelegd - 1e verd (3) | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |         | 0.60    | 0.60    |         | 0.60    |
| B.G.4.4      | Opgelegd - 1e verd (4) | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    | 0.60    |         | 0.60    | 0.60    |         |

|             |                        |                |                |                |                |                |                |                |                |                |                |
|-------------|------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| B.G.4.5     | Opgelegd - 1e verd (5) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                | 0.60           |                | 0.60           | 0.60           |
| B.G.4.6     | Opgelegd - 1e verd (6) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                | 0.60           |                | 0.60           |
| B.G.5.1     | Opgelegd - 2e verd (1) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |
| B.G.5.2     | Opgelegd - 2e verd (2) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |
| B.G.5.3     | Opgelegd - 2e verd (3) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |
| B.G.5.4     | Opgelegd - 2e verd (4) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |
| B.G.5.5     | Opgelegd - 2e verd (5) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |
| B.G.5.6     | Opgelegd - 2e verd (6) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |
| <b>B.G.</b> | <b>Omschrijving</b>    | <b>Fu.C.21</b> | <b>Fu.C.22</b> | <b>Fu.C.23</b> | <b>Fu.C.24</b> | <b>Fu.C.25</b> | <b>Fu.C.26</b> | <b>Fu.C.27</b> | <b>Fu.C.28</b> | <b>Fu.C.29</b> | <b>Fu.C.30</b> |
| B.G.1       | Permanent              | 1.35           | 1.35           | 1.35           | 1.35           | 1.35           | 1.20           | 1.20           | 1.20           | 1.20           | 1.20           |
| B.G.2       | Perm - Bovenbouw       | 1.35           | 1.35           | 1.35           | 1.35           | 1.35           | 1.20           | 1.20           | 1.20           | 1.20           | 1.20           |
| B.G.3.1     | Opgelegd - bg (1)      | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 1.50           |                | 0.60           | 0.60           | 0.60           |
| B.G.3.2     | Opgelegd - bg (2)      | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                | 1.50           | 0.60           | 0.60           | 0.60           |
| B.G.3.3     | Opgelegd - bg (3)      | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 1.50           |                | 0.60           | 0.60           | 0.60           |
| B.G.3.4     | Opgelegd - bg (4)      | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                | 1.50           | 0.60           | 0.60           | 0.60           |
| B.G.3.5     | Opgelegd - bg (5)      | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 1.50           |                | 0.60           | 0.60           | 0.60           |
| B.G.3.6     | Opgelegd - bg (6)      | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                | 1.50           | 0.60           | 0.60           | 0.60           |
| B.G.4.1     | Opgelegd - 1e verd (1) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 1.50           |                | 0.60           |
| B.G.4.2     | Opgelegd - 1e verd (2) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                | 1.50           | 0.60           |
| B.G.4.3     | Opgelegd - 1e verd (3) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 1.50           |                | 0.60           |
| B.G.4.4     | Opgelegd - 1e verd (4) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                | 1.50           | 0.60           |
| B.G.4.5     | Opgelegd - 1e verd (5) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 1.50           |                | 0.60           |
| B.G.4.6     | Opgelegd - 1e verd (6) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                | 1.50           | 0.60           |
| B.G.5.1     | Opgelegd - 2e verd (1) | 0.60           |                | 0.60           |                | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 1.50           |
| B.G.5.2     | Opgelegd - 2e verd (2) | 0.60           | 0.60           |                | 0.60           |                | 0.60           | 0.60           | 0.60           | 0.60           |                |
| B.G.5.3     | Opgelegd - 2e verd (3) |                | 0.60           | 0.60           |                | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 1.50           |
| B.G.5.4     | Opgelegd - 2e verd (4) | 0.60           |                | 0.60           | 0.60           |                | 0.60           | 0.60           | 0.60           | 0.60           |                |
| B.G.5.5     | Opgelegd - 2e verd (5) |                | 0.60           |                | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 1.50           |
| B.G.5.6     | Opgelegd - 2e verd (6) | 0.60           |                | 0.60           |                | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                |
| <b>B.G.</b> | <b>Omschrijving</b>    | <b>Fu.C.31</b> | <b>Fu.C.32</b> | <b>Fu.C.33</b> | <b>Fu.C.34</b> | <b>Fu.C.35</b> | <b>Fu.C.36</b> | <b>Fu.C.37</b> | <b>Fu.C.38</b> | <b>Fu.C.39</b> | <b>Fu.C.40</b> |
| B.G.1       | Permanent              | 1.20           | 1.20           | 1.20           | 1.20           | 1.20           | 1.20           | 1.20           | 1.20           | 1.20           | 1.20           |
| B.G.2       | Perm - Bovenbouw       | 1.20           | 1.20           | 1.20           | 1.20           | 1.20           | 1.20           | 1.20           | 1.20           | 1.20           | 1.20           |
| B.G.3.1     | Opgelegd - bg (1)      | 0.60           | 1.50           |                | 1.50           |                | 1.50           | 0.60           | 0.60           | 0.60           | 0.60           |
| B.G.3.2     | Opgelegd - bg (2)      | 0.60           | 1.50           |                |                | 1.50           |                | 0.60           | 0.60           | 0.60           | 0.60           |
| B.G.3.3     | Opgelegd - bg (3)      | 0.60           |                | 1.50           | 1.50           |                | 1.50           | 0.60           | 0.60           | 0.60           | 0.60           |
| B.G.3.4     | Opgelegd - bg (4)      | 0.60           | 1.50           |                | 1.50           | 1.50           |                | 0.60           | 0.60           | 0.60           | 0.60           |
| B.G.3.5     | Opgelegd - bg (5)      | 0.60           |                | 1.50           |                | 1.50           | 1.50           | 0.60           | 0.60           | 0.60           | 0.60           |
| B.G.3.6     | Opgelegd - bg (6)      | 0.60           | 1.50           |                | 1.50           |                | 1.50           | 0.60           | 0.60           | 0.60           | 0.60           |
| B.G.4.1     | Opgelegd - 1e verd (1) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 1.50           |                | 1.50           |                |
| B.G.4.2     | Opgelegd - 1e verd (2) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 1.50           | 1.50           |                | 1.50           |
| B.G.4.3     | Opgelegd - 1e verd (3) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                | 1.50           | 1.50           |                |
| B.G.4.4     | Opgelegd - 1e verd (4) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 1.50           |                | 1.50           | 1.50           |
| B.G.4.5     | Opgelegd - 1e verd (5) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                | 1.50           |                | 1.50           |
| B.G.4.6     | Opgelegd - 1e verd (6) | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 1.50           |                | 1.50           |                |
| B.G.5.1     | Opgelegd - 2e verd (1) |                | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |
| B.G.5.2     | Opgelegd - 2e verd (2) | 1.50           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |
| B.G.5.3     | Opgelegd - 2e verd (3) |                | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |
| B.G.5.4     | Opgelegd - 2e verd (4) | 1.50           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |
| B.G.5.5     | Opgelegd - 2e verd (5) |                | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |
| B.G.5.6     | Opgelegd - 2e verd (6) | 1.50           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |
| <b>B.G.</b> | <b>Omschrijving</b>    | <b>Fu.C.41</b> | <b>Fu.C.42</b> | <b>Fu.C.43</b> | <b>Fu.C.44</b> | <b>Fu.C.45</b> | <b>Fu.C.46</b> |                |                |                |                |
| B.G.1       | Permanent              | 1.20           | 1.20           | 1.20           | 1.20           | 1.20           | 1.20           |                |                |                |                |
| B.G.2       | Perm - Bovenbouw       | 1.20           | 1.20           | 1.20           | 1.20           | 1.20           | 1.20           |                |                |                |                |
| B.G.3.1     | Opgelegd - bg (1)      | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                |                |                |                |
| B.G.3.2     | Opgelegd - bg (2)      | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                |                |                |                |
| B.G.3.3     | Opgelegd - bg (3)      | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                |                |                |                |
| B.G.3.4     | Opgelegd - bg (4)      | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                |                |                |                |
| B.G.3.5     | Opgelegd - bg (5)      | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                |                |                |                |
| B.G.3.6     | Opgelegd - bg (6)      | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                |                |                |                |
| B.G.4.1     | Opgelegd - 1e verd (1) | 1.50           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                |                |                |                |
| B.G.4.2     | Opgelegd - 1e verd (2) |                | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                |                |                |                |
| B.G.4.3     | Opgelegd - 1e verd (3) | 1.50           | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                |                |                |                |
| B.G.4.4     | Opgelegd - 1e verd (4) |                | 0.60           | 0.60           | 0.60           | 0.60           | 0.60           |                |                |                |                |

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| Bouwkundig Adviesburo Baas bv | Moltzerhof 20 | 3052VA Rotterdam |
|-------------------------------|---------------|------------------|

|         |                        |      |      |      |      |      |      |
|---------|------------------------|------|------|------|------|------|------|
| B.G.4.5 | Opgelegd - 1e verd (5) | 1.50 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| B.G.4.6 | Opgelegd - 1e verd (6) | 1.50 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| B.G.5.1 | Opgelegd - 2e verd (1) | 0.60 | 1.50 |      | 1.50 |      | 1.50 |
| B.G.5.2 | Opgelegd - 2e verd (2) | 0.60 | 1.50 | 1.50 |      | 1.50 |      |
| B.G.5.3 | Opgelegd - 2e verd (3) | 0.60 |      | 1.50 | 1.50 |      | 1.50 |
| B.G.5.4 | Opgelegd - 2e verd (4) | 0.60 | 1.50 |      | 1.50 | 1.50 |      |
| B.G.5.5 | Opgelegd - 2e verd (5) | 0.60 |      | 1.50 |      | 1.50 | 1.50 |
| B.G.5.6 | Opgelegd - 2e verd (6) | 0.60 | 1.50 |      | 1.50 |      | 1.50 |

#### Karakteristiek

| B.G.    | Omschrijving           | Ka.C.(w1) | Ka.C.1  | Ka.C.2  | Ka.C.3  | Ka.C.4  | Ka.C.5  | Ka.C.6  | Ka.C.7  | Ka.C.8  | Ka.C.9  |
|---------|------------------------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| B.G.1   | Permanent              | 1.00      | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    |
| B.G.2   | Perm - Bovenbouw       | 1.00      | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    |
| B.G.3.1 | Opgelegd - bg (1)      |           | 0.40    |         | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |         | 0.40    |
| B.G.3.2 | Opgelegd - bg (2)      |           |         | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |         |
| B.G.3.3 | Opgelegd - bg (3)      |           | 0.40    |         | 0.40    | 0.40    | 0.40    | 0.40    |         | 0.40    | 0.40    |
| B.G.3.4 | Opgelegd - bg (4)      |           |         | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |         | 0.40    |
| B.G.3.5 | Opgelegd - bg (5)      |           | 0.40    |         | 0.40    | 0.40    | 0.40    | 0.40    |         | 0.40    |         |
| B.G.3.6 | Opgelegd - bg (6)      |           |         | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |         | 0.40    |
| B.G.4.1 | Opgelegd - 1e verd (1) |           | 0.40    | 0.40    | 0.40    |         | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.4.2 | Opgelegd - 1e verd (2) |           | 0.40    | 0.40    |         | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.4.3 | Opgelegd - 1e verd (3) |           | 0.40    | 0.40    | 0.40    |         | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.4.4 | Opgelegd - 1e verd (4) |           | 0.40    | 0.40    |         | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.4.5 | Opgelegd - 1e verd (5) |           | 0.40    | 0.40    | 0.40    |         | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.4.6 | Opgelegd - 1e verd (6) |           | 0.40    | 0.40    |         | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.5.1 | Opgelegd - 2e verd (1) |           | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |         | 0.40    | 0.40    | 0.40    |
| B.G.5.2 | Opgelegd - 2e verd (2) |           | 0.40    | 0.40    | 0.40    | 0.40    |         | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.5.3 | Opgelegd - 2e verd (3) |           | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |         | 0.40    | 0.40    | 0.40    |
| B.G.5.4 | Opgelegd - 2e verd (4) |           | 0.40    | 0.40    | 0.40    | 0.40    |         | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.5.5 | Opgelegd - 2e verd (5) |           | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |         | 0.40    | 0.40    | 0.40    |
| B.G.5.6 | Opgelegd - 2e verd (6) |           | 0.40    | 0.40    | 0.40    | 0.40    |         | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.    | Omschrijving           | Ka.C.10   | Ka.C.11 | Ka.C.12 | Ka.C.13 | Ka.C.14 | Ka.C.15 | Ka.C.16 | Ka.C.17 | Ka.C.18 | Ka.C.19 |
| B.G.1   | Permanent              | 1.00      | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    |
| B.G.2   | Perm - Bovenbouw       | 1.00      | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    |
| B.G.3.1 | Opgelegd - bg (1)      |           | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.3.2 | Opgelegd - bg (2)      | 0.40      |         | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.3.3 | Opgelegd - bg (3)      |           | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.3.4 | Opgelegd - bg (4)      | 0.40      |         | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.3.5 | Opgelegd - bg (5)      | 0.40      | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.3.6 | Opgelegd - bg (6)      |           | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.4.1 | Opgelegd - 1e verd (1) | 0.40      | 0.40    | 0.40    |         | 0.40    |         | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.4.2 | Opgelegd - 1e verd (2) | 0.40      | 0.40    | 0.40    | 0.40    |         | 0.40    |         | 0.40    | 0.40    | 0.40    |
| B.G.4.3 | Opgelegd - 1e verd (3) | 0.40      | 0.40    |         | 0.40    | 0.40    |         | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.4.4 | Opgelegd - 1e verd (4) | 0.40      | 0.40    | 0.40    |         | 0.40    | 0.40    |         | 0.40    | 0.40    | 0.40    |
| B.G.4.5 | Opgelegd - 1e verd (5) | 0.40      | 0.40    |         | 0.40    |         | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.4.6 | Opgelegd - 1e verd (6) | 0.40      | 0.40    | 0.40    |         | 0.40    |         | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.5.1 | Opgelegd - 2e verd (1) | 0.40      | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |         |         | 0.40    |
| B.G.5.2 | Opgelegd - 2e verd (2) | 0.40      | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |         | 0.40    |         |
| B.G.5.3 | Opgelegd - 2e verd (3) | 0.40      | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |         | 0.40    | 0.40    |
| B.G.5.4 | Opgelegd - 2e verd (4) | 0.40      | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |         | 0.40    |
| B.G.5.5 | Opgelegd - 2e verd (5) | 0.40      | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |         | 0.40    |         |
| B.G.5.6 | Opgelegd - 2e verd (6) | 0.40      | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    | 0.40    |         | 0.40    |
| B.G.    | Omschrijving           | Ka.C.20   | Ka.C.21 | Ka.C.22 | Ka.C.23 | Ka.C.24 | Ka.C.25 | Ka.C.26 | Ka.C.27 | Ka.C.28 | Ka.C.29 |
| B.G.1   | Permanent              | 1.00      | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    |
| B.G.2   | Perm - Bovenbouw       | 1.00      | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    | 1.00    |
| B.G.3.1 | Opgelegd - bg (1)      | 0.40      | 0.40    | 1.00    |         | 0.40    | 0.40    | 0.40    | 0.40    | 1.00    |         |
| B.G.3.2 | Opgelegd - bg (2)      | 0.40      | 0.40    |         | 1.00    | 0.40    | 0.40    | 0.40    | 0.40    | 1.00    | 1.00    |
| B.G.3.3 | Opgelegd - bg (3)      | 0.40      | 0.40    | 1.00    |         | 0.40    | 0.40    | 0.40    | 0.40    |         | 1.00    |
| B.G.3.4 | Opgelegd - bg (4)      | 0.40      | 0.40    |         | 1.00    | 0.40    | 0.40    | 0.40    | 0.40    | 1.00    |         |
| B.G.3.5 | Opgelegd - bg (5)      | 0.40      | 0.40    | 1.00    |         | 0.40    | 0.40    | 0.40    | 0.40    |         | 1.00    |
| B.G.3.6 | Opgelegd - bg (6)      | 0.40      | 0.40    |         | 1.00    | 0.40    | 0.40    | 0.40    | 0.40    | 1.00    |         |
| B.G.4.1 | Opgelegd - 1e verd (1) | 0.40      | 0.40    | 0.40    | 0.40    | 1.00    |         | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.4.2 | Opgelegd - 1e verd (2) | 0.40      | 0.40    | 0.40    | 0.40    |         | 1.00    | 0.40    | 0.40    | 0.40    | 0.40    |
| B.G.4.3 | Opgelegd - 1e verd (3) | 0.40      | 0.40    | 0.40    | 0.40    | 1.00    |         | 0.40    | 0.40    | 0.40    | 0.40    |

|                               |               |                  |
|-------------------------------|---------------|------------------|
| Bouwkundig Adviesburo Baas bv | Moltzerhof 20 | 3052VA Rotterdam |
|-------------------------------|---------------|------------------|

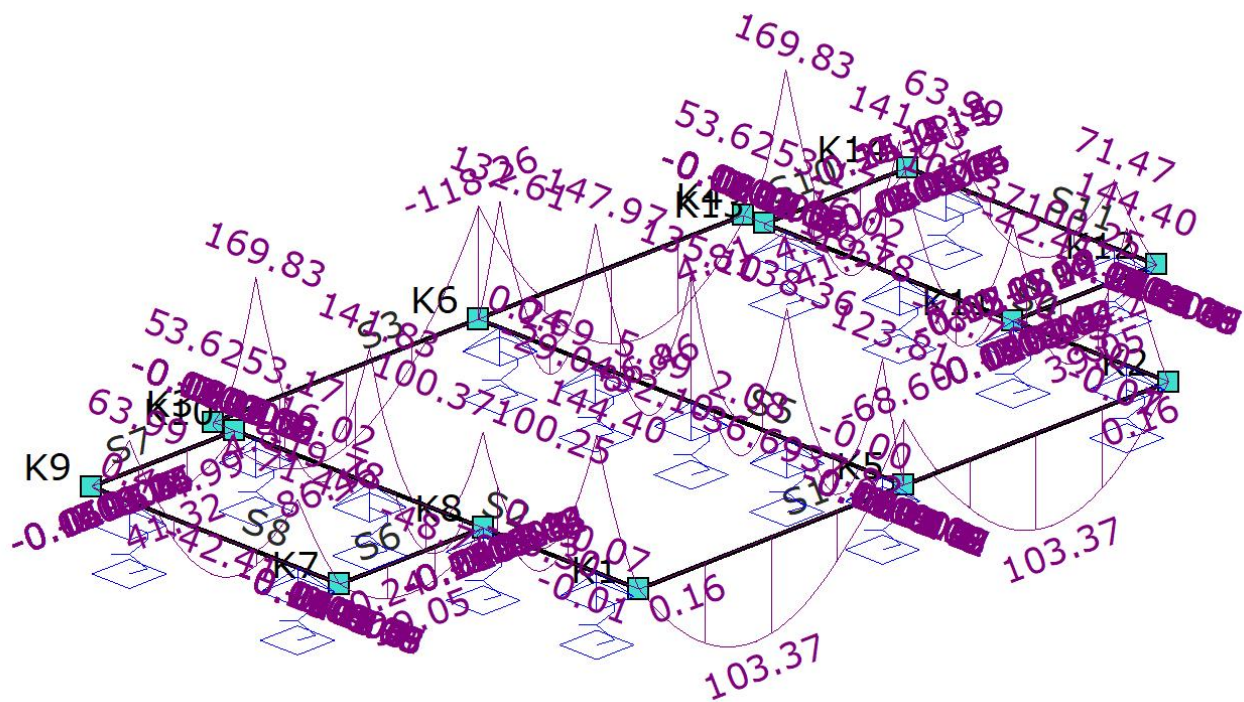
|                        |                        |                |                |                |                |                |                |                |                |                |                |
|------------------------|------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| B.G.4.4                | Opgelegd - 1e verd (4) | 0.40           | 0.40           | 0.40           | 0.40           |                | 1.00           | 0.40           | 0.40           | 0.40           | 0.40           |
| B.G.4.5                | Opgelegd - 1e verd (5) | 0.40           | 0.40           | 0.40           | 0.40           | 1.00           |                | 0.40           | 0.40           | 0.40           | 0.40           |
| B.G.4.6                | Opgelegd - 1e verd (6) | 0.40           | 0.40           | 0.40           | 0.40           |                | 1.00           | 0.40           | 0.40           | 0.40           | 0.40           |
| B.G.5.1                | Opgelegd - 2e verd (1) |                | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 1.00           |                | 0.40           | 0.40           |
| B.G.5.2                | Opgelegd - 2e verd (2) | 0.40           |                | 0.40           | 0.40           | 0.40           | 0.40           |                | 1.00           | 0.40           | 0.40           |
| B.G.5.3                | Opgelegd - 2e verd (3) |                | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 1.00           |                | 0.40           | 0.40           |
| B.G.5.4                | Opgelegd - 2e verd (4) | 0.40           |                | 0.40           | 0.40           | 0.40           | 0.40           |                | 1.00           | 0.40           | 0.40           |
| B.G.5.5                | Opgelegd - 2e verd (5) | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 1.00           |                | 0.40           | 0.40           |
| B.G.5.6                | Opgelegd - 2e verd (6) |                | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           |                | 1.00           | 0.40           | 0.40           |
| <b>B.G.</b>            | <b>Omschrijving</b>    | <b>Ka.C.30</b> | <b>Ka.C.31</b> | <b>Ka.C.32</b> | <b>Ka.C.33</b> | <b>Ka.C.34</b> | <b>Ka.C.35</b> | <b>Ka.C.36</b> | <b>Ka.C.37</b> | <b>Ka.C.38</b> | <b>Ka.C.39</b> |
| B.G.1                  | Permanent              | 1.00           | 1.00           | 1.00           | 1.00           | 1.00           | 1.00           | 1.00           | 1.00           | 1.00           | 1.00           |
| B.G.2                  | Perm - Bovenbouw       | 1.00           | 1.00           | 1.00           | 1.00           | 1.00           | 1.00           | 1.00           | 1.00           | 1.00           | 1.00           |
| B.G.3.1                | Opgelegd - bg (1)      | 1.00           |                | 1.00           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           |
| B.G.3.2                | Opgelegd - bg (2)      |                | 1.00           |                | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           |
| B.G.3.3                | Opgelegd - bg (3)      | 1.00           |                | 1.00           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           |
| B.G.3.4                | Opgelegd - bg (4)      | 1.00           | 1.00           |                | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           |
| B.G.3.5                | Opgelegd - bg (5)      |                | 1.00           | 1.00           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           |
| B.G.3.6                | Opgelegd - bg (6)      | 1.00           |                | 1.00           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           |
| B.G.4.1                | Opgelegd - 1e verd (1) | 0.40           | 0.40           | 0.40           | 1.00           |                | 1.00           |                | 1.00           | 0.40           | 0.40           |
| B.G.4.2                | Opgelegd - 1e verd (2) | 0.40           | 0.40           | 0.40           | 1.00           | 1.00           |                | 1.00           |                | 0.40           | 0.40           |
| B.G.4.3                | Opgelegd - 1e verd (3) | 0.40           | 0.40           | 0.40           |                | 1.00           | 1.00           |                | 1.00           | 0.40           | 0.40           |
| B.G.4.4                | Opgelegd - 1e verd (4) | 0.40           | 0.40           | 0.40           | 1.00           |                | 1.00           | 1.00           |                | 0.40           | 0.40           |
| B.G.4.5                | Opgelegd - 1e verd (5) | 0.40           | 0.40           | 0.40           |                | 1.00           |                | 1.00           | 1.00           | 0.40           | 0.40           |
| B.G.4.6                | Opgelegd - 1e verd (6) | 0.40           | 0.40           | 0.40           | 1.00           |                | 1.00           |                | 1.00           | 0.40           | 0.40           |
| B.G.5.1                | Opgelegd - 2e verd (1) | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 1.00           |                |
| B.G.5.2                | Opgelegd - 2e verd (2) | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           |                | 1.00           |
| B.G.5.3                | Opgelegd - 2e verd (3) | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           |                | 1.00           |
| B.G.5.4                | Opgelegd - 2e verd (4) | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 1.00           |                |
| B.G.5.5                | Opgelegd - 2e verd (5) | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           |                | 1.00           |
| B.G.5.6                | Opgelegd - 2e verd (6) | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 0.40           | 1.00           |                |
| <b>B.G.</b>            | <b>Omschrijving</b>    | <b>Ka.C.40</b> | <b>Ka.C.41</b> | <b>Ka.C.42</b> |                |                |                |                |                |                |                |
| B.G.1                  | Permanent              | 1.00           | 1.00           | 1.00           |                |                |                |                |                |                |                |
| B.G.2                  | Perm - Bovenbouw       | 1.00           | 1.00           | 1.00           |                |                |                |                |                |                |                |
| B.G.3.1                | Opgelegd - bg (1)      | 0.40           | 0.40           | 0.40           |                |                |                |                |                |                |                |
| B.G.3.2                | Opgelegd - bg (2)      | 0.40           | 0.40           | 0.40           |                |                |                |                |                |                |                |
| B.G.3.3                | Opgelegd - bg (3)      | 0.40           | 0.40           | 0.40           |                |                |                |                |                |                |                |
| B.G.3.4                | Opgelegd - bg (4)      | 0.40           | 0.40           | 0.40           |                |                |                |                |                |                |                |
| B.G.3.5                | Opgelegd - bg (5)      | 0.40           | 0.40           | 0.40           |                |                |                |                |                |                |                |
| B.G.3.6                | Opgelegd - bg (6)      | 0.40           | 0.40           | 0.40           |                |                |                |                |                |                |                |
| B.G.4.1                | Opgelegd - 1e verd (1) | 0.40           | 0.40           | 0.40           |                |                |                |                |                |                |                |
| B.G.4.2                | Opgelegd - 1e verd (2) | 0.40           | 0.40           | 0.40           |                |                |                |                |                |                |                |
| B.G.4.3                | Opgelegd - 1e verd (3) | 0.40           | 0.40           | 0.40           |                |                |                |                |                |                |                |
| B.G.4.4                | Opgelegd - 1e verd (4) | 0.40           | 0.40           | 0.40           |                |                |                |                |                |                |                |
| B.G.4.5                | Opgelegd - 1e verd (5) | 0.40           | 0.40           | 0.40           |                |                |                |                |                |                |                |
| B.G.4.6                | Opgelegd - 1e verd (6) | 0.40           | 0.40           | 0.40           |                |                |                |                |                |                |                |
| B.G.5.1                | Opgelegd - 2e verd (1) | 1.00           |                | 1.00           |                |                |                |                |                |                |                |
| B.G.5.2                | Opgelegd - 2e verd (2) |                | 1.00           |                |                |                |                |                |                |                |                |
| B.G.5.3                | Opgelegd - 2e verd (3) | 1.00           |                | 1.00           |                |                |                |                |                |                |                |
| B.G.5.4                | Opgelegd - 2e verd (4) | 1.00           | 1.00           |                |                |                |                |                |                |                |                |
| B.G.5.5                | Opgelegd - 2e verd (5) |                | 1.00           | 1.00           |                |                |                |                |                |                |                |
| B.G.5.6                | Opgelegd - 2e verd (6) | 1.00           |                | 1.00           |                |                |                |                |                |                |                |
| <b>Quasi-permanent</b> |                        |                |                |                |                |                |                |                |                |                |                |
| <b>B.G.</b>            | <b>Omschrijving</b>    | <b>Qu.C.1</b>  |                |                |                |                |                |                |                |                |                |
| B.G.1                  | Permanent              | 1.00           |                |                |                |                |                |                |                |                |                |
| B.G.2                  | Perm - Bovenbouw       | 1.00           |                |                |                |                |                |                |                |                |                |
| B.G.3.1                | Opgelegd - bg (1)      | 0.30           |                |                |                |                |                |                |                |                |                |
| B.G.3.2                | Opgelegd - bg (2)      | 0.30           |                |                |                |                |                |                |                |                |                |
| B.G.3.3                | Opgelegd - bg (3)      | 0.30           |                |                |                |                |                |                |                |                |                |
| B.G.3.4                | Opgelegd - bg (4)      | 0.30           |                |                |                |                |                |                |                |                |                |
| B.G.3.5                | Opgelegd - bg (5)      | 0.30           |                |                |                |                |                |                |                |                |                |
| B.G.3.6                | Opgelegd - bg (6)      | 0.30           |                |                |                |                |                |                |                |                |                |
| B.G.4.1                | Opgelegd - 1e verd (1) | 0.30           |                |                |                |                |                |                |                |                |                |
| B.G.4.2                | Opgelegd - 1e verd (2) | 0.30           |                |                |                |                |                |                |                |                |                |

|         |                        |      |
|---------|------------------------|------|
| B.G.4.3 | Opgelegd - 1e verd (3) | 0.30 |
| B.G.4.4 | Opgelegd - 1e verd (4) | 0.30 |
| B.G.4.5 | Opgelegd - 1e verd (5) | 0.30 |
| B.G.4.6 | Opgelegd - 1e verd (6) | 0.30 |
| B.G.5.1 | Opgelegd - 2e verd (1) | 0.30 |
| B.G.5.2 | Opgelegd - 2e verd (2) | 0.30 |
| B.G.5.3 | Opgelegd - 2e verd (3) | 0.30 |
| B.G.5.4 | Opgelegd - 2e verd (4) | 0.30 |
| B.G.5.5 | Opgelegd - 2e verd (5) | 0.30 |
| B.G.5.6 | Opgelegd - 2e verd (6) | 0.30 |

## UITGANGSPUNTEN VAN DE ANALYSE

Geavanceerde Analyse  
Torsie reduceren

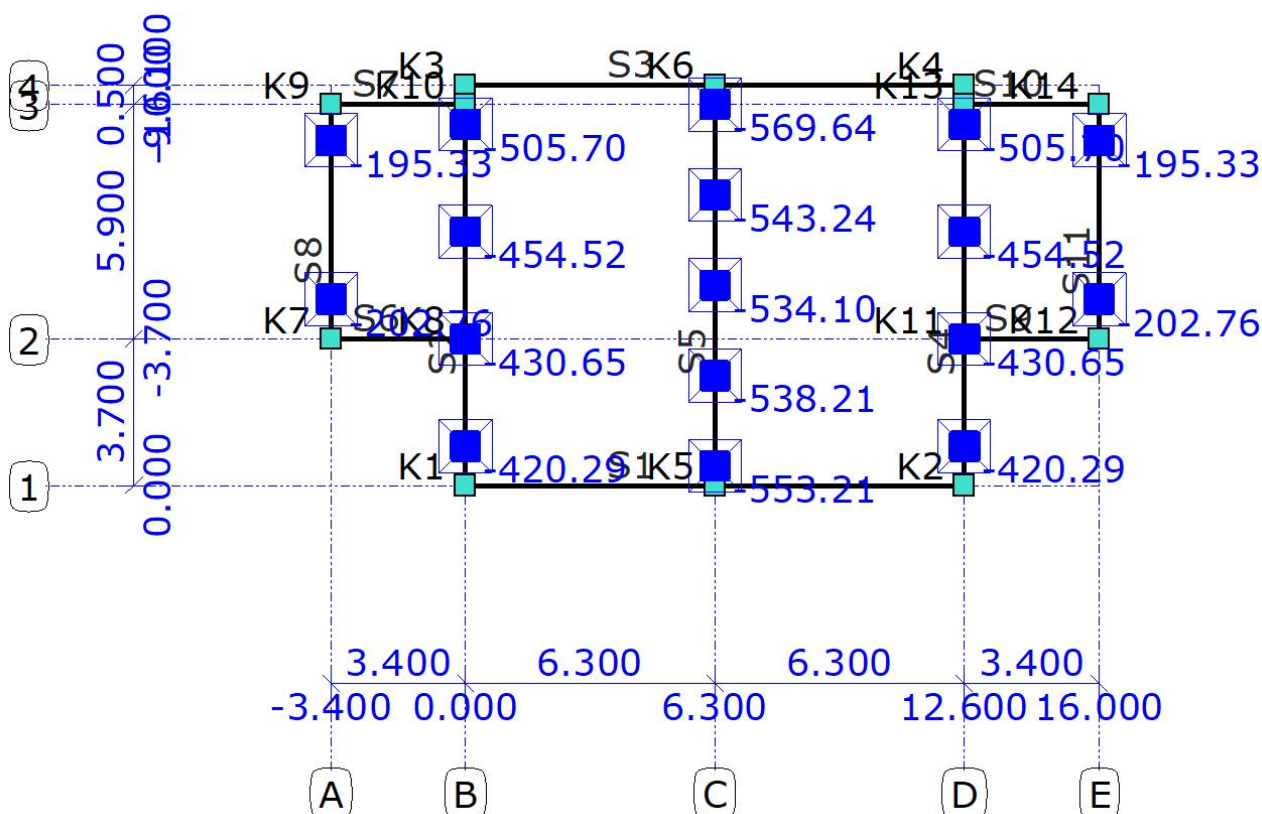
Fu.C. Omhullende Momenten (My)



| Staaft | Vz- | Vz+ | Mx- | Mx+ | My- | My+ |
|--------|-----|-----|-----|-----|-----|-----|
|        | kN  | kN  | kNm | kNm | kNm | kNm |

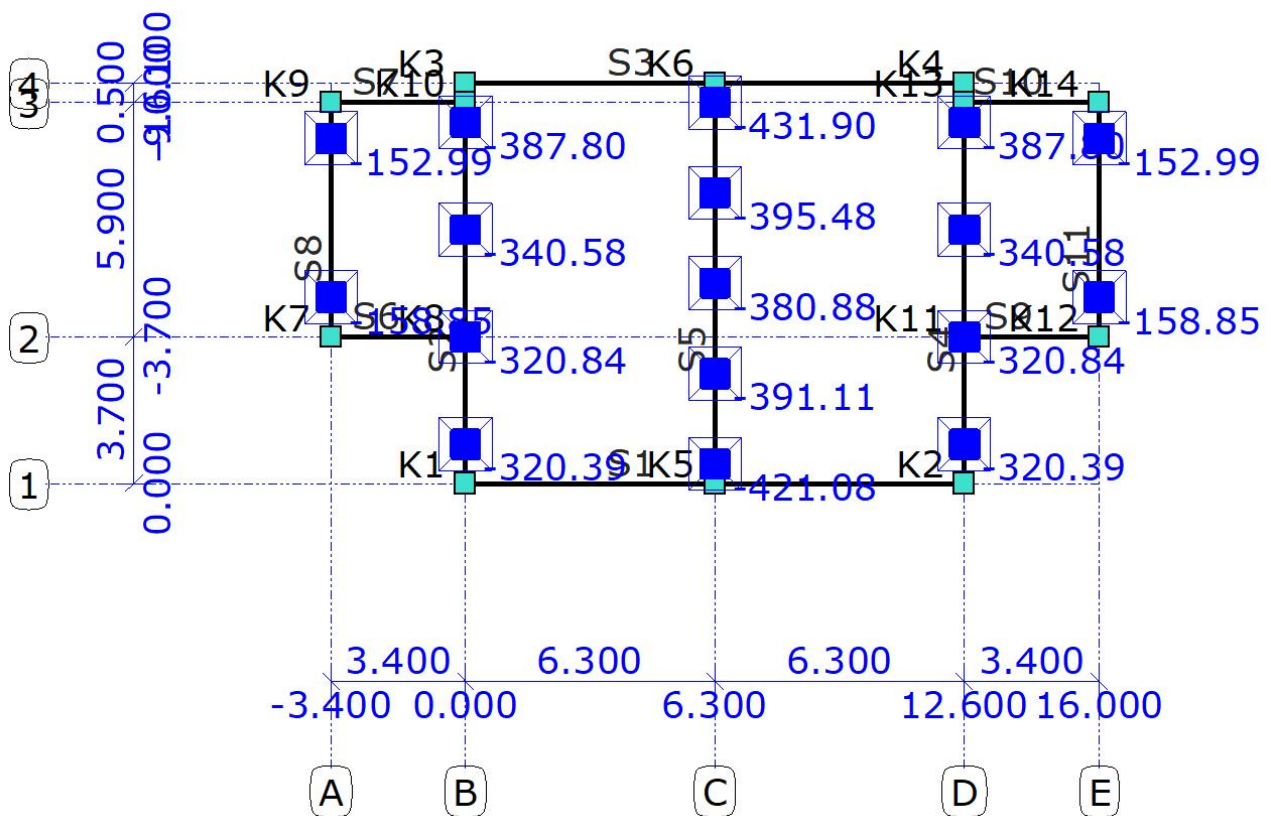
| Staaf | Vz-            | Vz+           | Mx-          | Mx+         | My-            | My+           |
|-------|----------------|---------------|--------------|-------------|----------------|---------------|
| S1    | -95.95         | 95.95         | -0.07        | 0.07        | -68.60         | 103.37        |
| S2    | -274.03        | 239.99        | <b>-4.81</b> | 0.23        | -48.78         | <b>169.83</b> |
| S3    | -104.52        | 104.52        | -0.12        | 0.12        | <b>-118.26</b> | 86.46         |
| S4    | -274.03        | 239.99        | -0.23        | <b>4.81</b> | -48.78         | 169.83        |
| S5    | <b>-320.95</b> | <b>303.81</b> | 0.00         | 0.00        | -37.82         | 147.97        |
| S6    | -46.03         | 45.80         | -0.21        | 0.00        | -0.20          | 39.05         |
| S7    | -44.58         | 47.37         | -0.49        | 0.00        | -0.24          | 41.32         |
| S8    | -105.39        | 101.66        | 0.00         | 0.24        | -42.41         | 71.47         |
| S9    | -45.80         | 46.03         | 0.00         | 0.21        | -0.20          | 39.05         |
| S10   | -47.37         | 44.58         | 0.00         | 0.49        | -0.24          | 41.32         |
| S11   | -105.39        | 101.66        | -0.24        | 0.00        | -42.41         | 71.47         |
|       | kN             | kN            | kNm          | kNm         | kNm            | kNm           |

Fu.C. Omhullende Oplegreacties

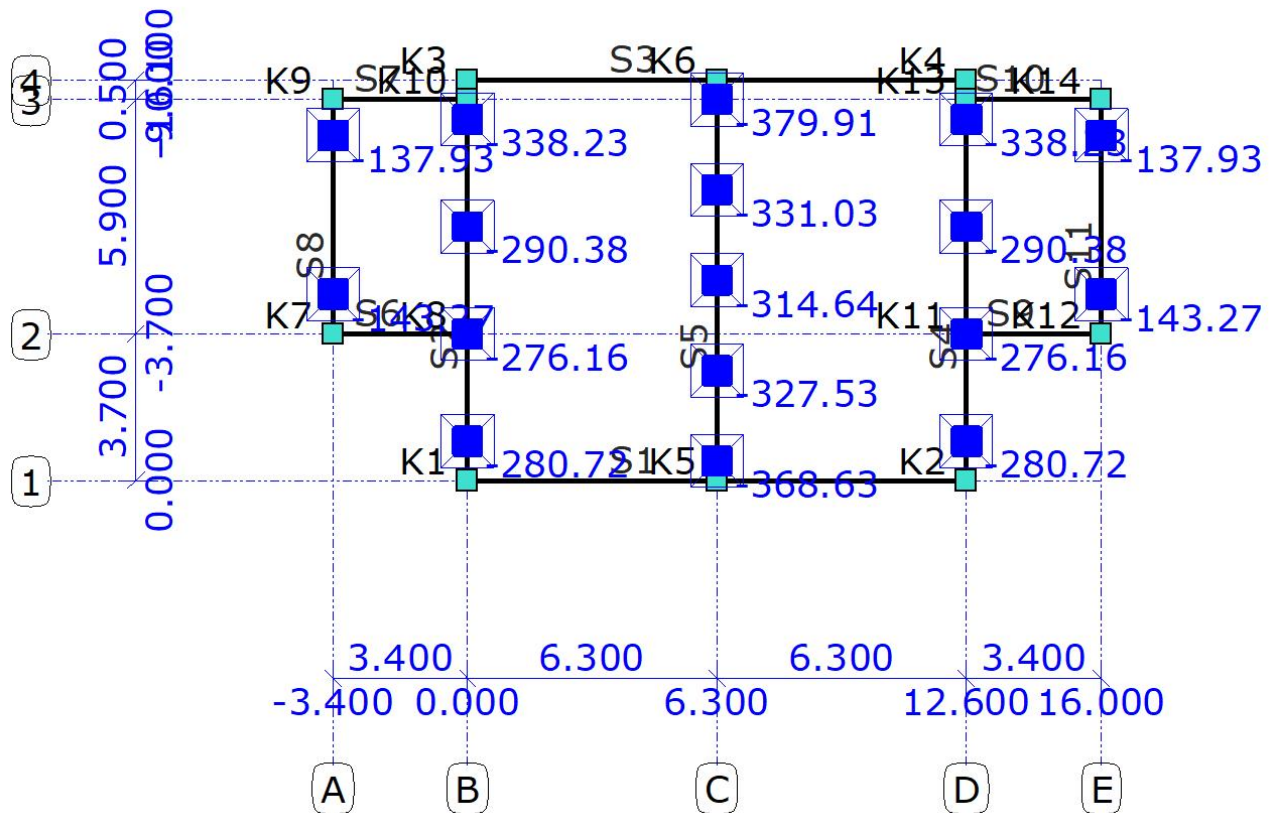


| Oplegging               | Positie  | B.C.   | Z <sub>max</sub> | X <sub>r</sub> | Y <sub>r</sub> | B.C. | Z | X <sub>rmax</sub> | Y <sub>r</sub> | B.C. | Z   | X <sub>r</sub> | Y <sub>rmax</sub> |     |
|-------------------------|----------|--------|------------------|----------------|----------------|------|---|-------------------|----------------|------|-----|----------------|-------------------|-----|
| O16                     | S5 9.600 | Fu.C.1 | -569.64          | 0.00           | 0.00           |      |   |                   |                |      |     |                |                   |     |
| O17                     | S2 6.400 | Fu.C.1 | -454.52          | 0.00           | 0.00           |      |   |                   |                |      |     |                |                   |     |
| O18                     | S4 6.400 | Fu.C.1 | -454.52          | 0.00           | 0.00           |      |   |                   |                |      |     |                |                   |     |
| Globale extreme waarden |          |        |                  |                |                |      |   |                   |                |      |     |                |                   |     |
| O16                     | S5 9.600 | Fu.C.1 | -569.64          | 0.00           | 0.00           |      |   |                   |                |      |     |                |                   |     |
|                         |          |        | kN               | kNm            | kNm            |      |   |                   | kN             | kNm  | kNm |                |                   |     |
|                         |          |        |                  |                |                |      |   |                   |                |      |     | kN             | kNm               | kNm |

Ka.C. Omhullende Oplegreacties

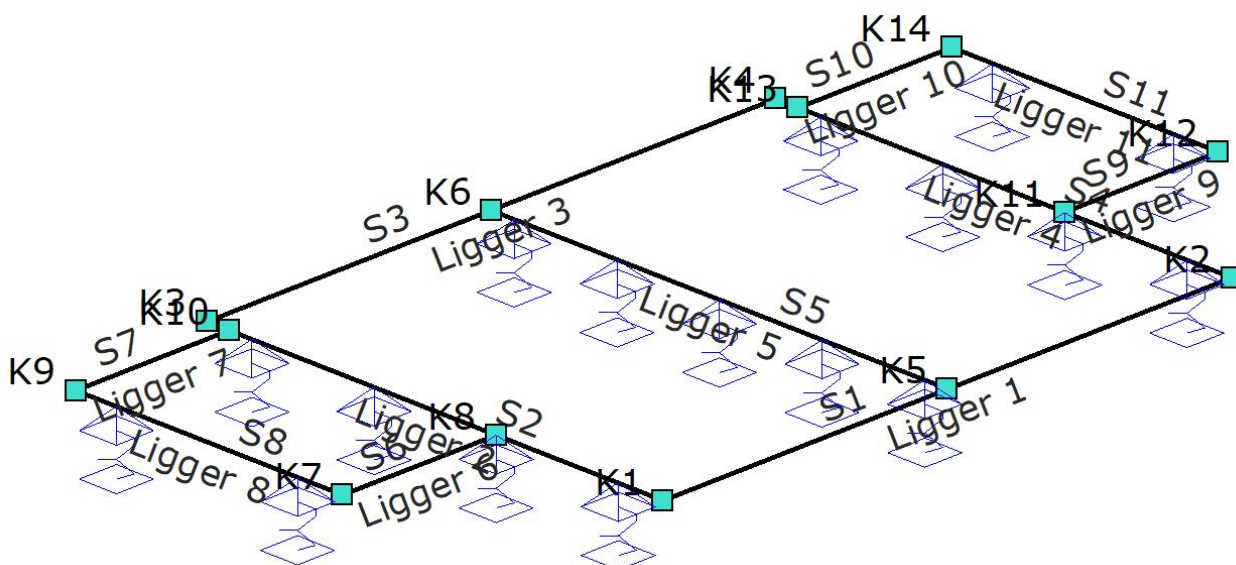


Ka.C.(w1) Oplegreacties

**EXTREME OPLEGREACTIES (KARAKTERISTIEK)**

| Oplegging                      | Positie   | B.C.    | Z <sub>max</sub> | X <sub>r</sub> | Y <sub>r</sub> | B.C. | Z | X <sub>r</sub> <sub>max</sub> | Y <sub>r</sub> | B.C. | Z   | X <sub>r</sub> | Y <sub>r</sub> <sub>max</sub> |
|--------------------------------|-----------|---------|------------------|----------------|----------------|------|---|-------------------------------|----------------|------|-----|----------------|-------------------------------|
| O1                             | S8 5.000  | Ka.C.29 | -152.99          | 0.00           | 0.00           |      |   |                               |                |      |     |                |                               |
| O2                             | S8 1.000  | Ka.C.28 | -158.85          | 0.00           | 0.00           |      |   |                               |                |      |     |                |                               |
| O3                             | S11 5.000 | Ka.C.29 | -152.99          | 0.00           | 0.00           |      |   |                               |                |      |     |                |                               |
| O4                             | S11 1.000 | Ka.C.28 | -158.85          | 0.00           | 0.00           |      |   |                               |                |      |     |                |                               |
| O5                             | S2 9.100  | Ka.C.31 | -387.80          | 0.00           | 0.00           |      |   |                               |                |      |     |                |                               |
| O6                             | S2 1.000  | Ka.C.33 | -320.39          | 0.00           | 0.00           |      |   |                               |                |      |     |                |                               |
| O7                             | S2 3.700  | Ka.C.29 | -320.84          | 0.00           | 0.00           |      |   |                               |                |      |     |                |                               |
| O9                             | S4 9.100  | Ka.C.31 | -387.80          | 0.00           | 0.00           |      |   |                               |                |      |     |                |                               |
| O10                            | S4 1.000  | Ka.C.33 | -320.39          | 0.00           | 0.00           |      |   |                               |                |      |     |                |                               |
| O11                            | S4 3.700  | Ka.C.29 | -320.84          | 0.00           | 0.00           |      |   |                               |                |      |     |                |                               |
| O12                            | S5 0.500  | Ka.C.33 | -421.08          | 0.00           | 0.00           |      |   |                               |                |      |     |                |                               |
| O13                            | S5 2.775  | Ka.C.34 | -391.11          | 0.00           | 0.00           |      |   |                               |                |      |     |                |                               |
| O14                            | S5 5.050  | Ka.C.30 | -380.88          | 0.00           | 0.00           |      |   |                               |                |      |     |                |                               |
| O15                            | S5 7.325  | Ka.C.31 | -395.48          | 0.00           | 0.00           |      |   |                               |                |      |     |                |                               |
| O16                            | S5 9.600  | Ka.C.32 | -431.90          | 0.00           | 0.00           |      |   |                               |                |      |     |                |                               |
| O17                            | S2 6.400  | Ka.C.30 | -340.58          | 0.00           | 0.00           |      |   |                               |                |      |     |                |                               |
| O18                            | S4 6.400  | Ka.C.30 | -340.58          | 0.00           | 0.00           |      |   |                               |                |      |     |                |                               |
| <b>Globale extreme waarden</b> |           |         |                  |                |                |      |   |                               |                |      |     |                |                               |
| O16                            | S5 9.600  | Ka.C.32 | -431.90          | 0.00           | 0.00           |      |   |                               |                |      |     |                |                               |
|                                |           |         | kN               | kNm            | kNm            |      |   |                               | kN             | kNm  | kNm |                |                               |

Betondefinitie



#### BETON EIGENSCHAPPEN(NEN-EN1992-1-1:2015\NB:2016)

| Naam               | Waarde | Eenheden | Naam   | Waarde                    | Eenheden |
|--------------------|--------|----------|--------|---------------------------|----------|
| Hoek drukdiagonaal | 21.80  | °        | Scheur | Afstand+diameter (#7.3.3) |          |

#### CONSTRUCTIEDELEN

| Staat | Profiel | Omschrijving | Materiaal | Constr.Dl. | Type   | Begin | Eind   | Extra begin | Extra eind | Groep |
|-------|---------|--------------|-----------|------------|--------|-------|--------|-------------|------------|-------|
| S1    | P1      | R400x500     | C30/37    | Ligger 1   | Ligger | 0.000 | 12.600 | 0.200       | 0.200      | G1    |
| S2    | P1      | R400x500     | C30/37    | Ligger 2   | Ligger | 0.000 | 10.100 | 0.200       | 0.200      | G1    |
| S3    | P1      | R400x500     | C30/37    | Ligger 3   | Ligger | 0.000 | 12.600 | 0.200       | 0.200      | G1    |
| S4    | P1      | R400x500     | C30/37    | Ligger 4   | Ligger | 0.000 | 10.100 | 0.200       | 0.200      | G1    |
| S5    | P1      | R400x500     | C30/37    | Ligger 5   | Ligger | 0.000 | 10.100 | 0.200       | 0.200      | G1    |
| S6    | P1      | R400x500     | C30/37    | Ligger 6   | Ligger | 0.000 | 3.400  | 0.200       | 0.200      | G1    |
| S7    | P1      | R400x500     | C30/37    | Ligger 7   | Ligger | 0.000 | 3.400  | 0.200       | 0.200      | G1    |
| S8    | P1      | R400x500     | C30/37    | Ligger 8   | Ligger | 0.000 | 5.900  | 0.200       | 0.200      | G1    |
| S9    | P1      | R400x500     | C30/37    | Ligger 9   | Ligger | 0.000 | 3.400  | 0.200       | 0.200      | G1    |
| S10   | P1      | R400x500     | C30/37    | Ligger 10  | Ligger | 0.000 | 3.400  | 0.200       | 0.200      | G1    |
| S11   | P1      | R400x500     | C30/37    | Ligger 11  | Ligger | 0.000 | 5.900  | 0.200       | 0.200      | G1    |
|       |         |              |           |            |        | m     | m      | m           | m          |       |

#### GROEPEN

| Groep | Type   | Fabric. | L1  | L2  | Staal | N.Kor. | Stortsl. | Scheur | Toetsing                               |
|-------|--------|---------|-----|-----|-------|--------|----------|--------|----------------------------------------|
| G1    | Ligger | I.h.w.  | N/B | N/B | B500B | 31.5   | 0.0      | Ja     | b,min 400 >= 100 NEN-EN1992-1-1#9.2(1) |
|       |        |         | m   | m   |       | mm     | mm       |        | mm                                     |

#### KRUIPCOEFF.

| Groep | Cement | Klasse | Rel.V.(%) | Ouderdom | Tijd T   | Kruipcoeff. Type | Kruipcoeff. |
|-------|--------|--------|-----------|----------|----------|------------------|-------------|
| G1    | S      | A      | 60        | 28 Dagen | 50 Jaren | Berekend         | 2.17        |

#### DEKKING BOVEN

| Groep | Mil. | Constr.klasse | Ruw | Meting  | Cmin. | Cnom. | Ctoe. |
|-------|------|---------------|-----|---------|-------|-------|-------|
| G1    | S4   | XC2           | Nee | Normaal | 25    | 30    | 30    |
|       |      |               |     |         | mm    | mm    | mm    |

|                               |               |                  |
|-------------------------------|---------------|------------------|
| Bouwkundig Adviesburo Baas bv | Moltzerhof 20 | 3052VA Rotterdam |
|-------------------------------|---------------|------------------|

## DEKKING ONDER

| Groep | Mil. | Constr.klasse | Ruw | Meting  | C <sub>min.</sub> | C <sub>nom.</sub> | C <sub>toe.</sub> |
|-------|------|---------------|-----|---------|-------------------|-------------------|-------------------|
| G1    | S4   | XC2           | Nee | Normaal | 25                | 30                | 30                |
|       |      |               |     |         | mm                | mm                | mm                |

## DEKKING ZIJDE

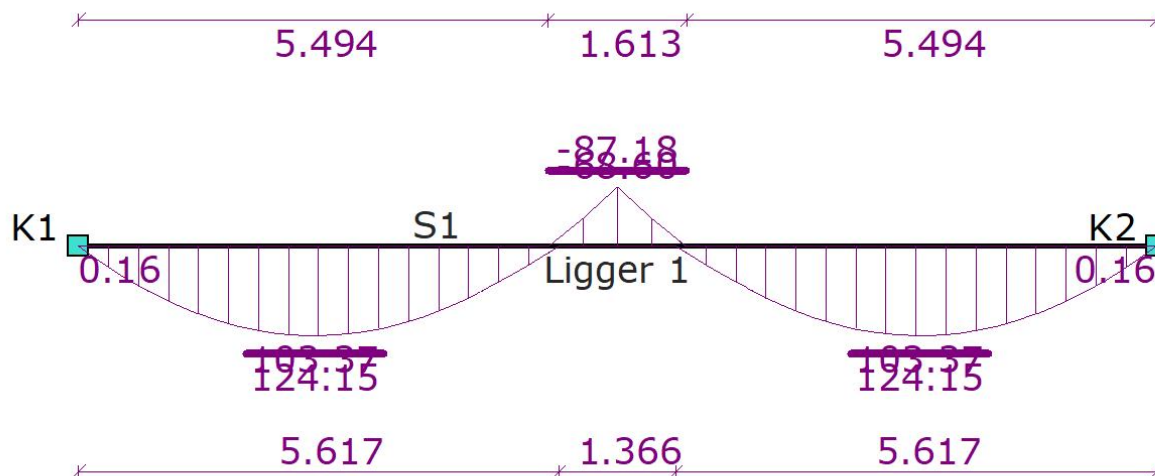
| Groep | Mil. | Constr.klasse | Ruw | Meting  | C <sub>min.</sub> | C <sub>nom.</sub> | C <sub>toe.</sub> |
|-------|------|---------------|-----|---------|-------------------|-------------------|-------------------|
| G1    | S4   | XC2           | Nee | Normaal | 25                | 30                | 30                |
|       |      |               |     |         | mm                | mm                | mm                |

## OPLEGGINGEN

| Positie | Constr.Dl. | Label | Type     | Afmeting | M <sub>pf</sub> | M <sub>pf</sub> boven | M <sub>pf</sub> ond. | Dwarskr.      | Moment        |
|---------|------------|-------|----------|----------|-----------------|-----------------------|----------------------|---------------|---------------|
| 0.000   | Ligger 1   | S2    | Monoliet | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 6.300   |            | S5    | n.v.t.   | 0.400    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 12.600  |            | S4    | Monoliet | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 0.000   | Ligger 2   | S1    | n.v.t.   | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 1.000   |            | O6    | n.v.t.   | 0.000    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 3.700   |            | O7    | n.v.t.   | 0.000    | N/B             |                       |                      | Afgetopt      | Niet afgetopt |
| 3.700   |            | S6    | n.v.t.   | 0.400    | N/B             |                       |                      | Afgetopt      | Niet afgetopt |
| 6.400   |            | O17   | n.v.t.   | 0.000    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 9.100   |            | O5    | n.v.t.   | 0.000    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 9.600   |            | S7    | n.v.t.   | 0.400    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 10.100  |            | S3    | n.v.t.   | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 0.000   | Ligger 3   | S2    | Monoliet | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 6.300   |            | S5    | n.v.t.   | 0.400    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 12.600  |            | S4    | Monoliet | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 0.000   | Ligger 4   | S1    | n.v.t.   | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 1.000   |            | O10   | n.v.t.   | 0.000    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 3.700   |            | O11   | n.v.t.   | 0.000    | N/B             |                       |                      | Afgetopt      | Niet afgetopt |
| 3.700   |            | S9    | n.v.t.   | 0.400    | N/B             |                       |                      | Afgetopt      | Niet afgetopt |
| 6.400   |            | O18   | n.v.t.   | 0.000    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 9.100   |            | O9    | n.v.t.   | 0.000    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 9.600   |            | S10   | n.v.t.   | 0.400    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 10.100  |            | S3    | n.v.t.   | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 0.000   | Ligger 5   | S1    | n.v.t.   | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 0.500   |            | O12   | n.v.t.   | 0.000    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 2.775   |            | O13   | n.v.t.   | 0.000    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 5.050   |            | O14   | n.v.t.   | 0.000    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 7.325   |            | O15   | n.v.t.   | 0.000    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 9.600   |            | O16   | n.v.t.   | 0.000    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 10.100  |            | S3    | n.v.t.   | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 0.000   | Ligger 6   | S8    | Monoliet | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 3.400   |            | S2    | n.v.t.   | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 0.000   | Ligger 7   | S8    | Monoliet | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 3.400   |            | S2    | n.v.t.   | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 0.000   | Ligger 8   | S6    | n.v.t.   | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 1.000   |            | O2    | n.v.t.   | 0.000    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 5.000   |            | O1    | n.v.t.   | 0.000    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 5.900   |            | S7    | n.v.t.   | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 0.000   | Ligger 9   | S4    | n.v.t.   | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 3.400   |            | S11   | Monoliet | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 0.000   | Ligger 10  | S4    | n.v.t.   | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 3.400   |            | S11   | Monoliet | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 0.000   | Ligger 11  | S9    | n.v.t.   | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| 1.000   |            | O4    | n.v.t.   | 0.000    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 5.000   |            | O3    | n.v.t.   | 0.000    | N/B             |                       |                      | Niet afgetopt | Niet afgetopt |
| 5.900   |            | S10   | n.v.t.   | 0.400    | Nee             |                       |                      | Niet afgetopt | Niet afgetopt |
| m       |            |       |          | m        |                 | kNm                   | kNm                  |               |               |

Langswap. (Capaciteit)

Ligger 1



#### DOORSNEDE BOVENWAPENING

Ligger 1

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Verdeel Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 6.300   | 68.60           | 4R12        |        | 354                | 452                      |               |        |                    |                          | 16.1                    | 178              |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

#### DOORSNEDE ONDERWAPENING

Ligger 1

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Verdeel Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 2.767   | 103.37          | 4R12        | 1R16   | 541                | 653                      |               |        |                    |                          | 14.9                    | 166              |          |
| 9.833   | 103.37          | 4R12        | 1R16   | 541                | 653                      |               |        |                    |                          | 14.9                    | 166              |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

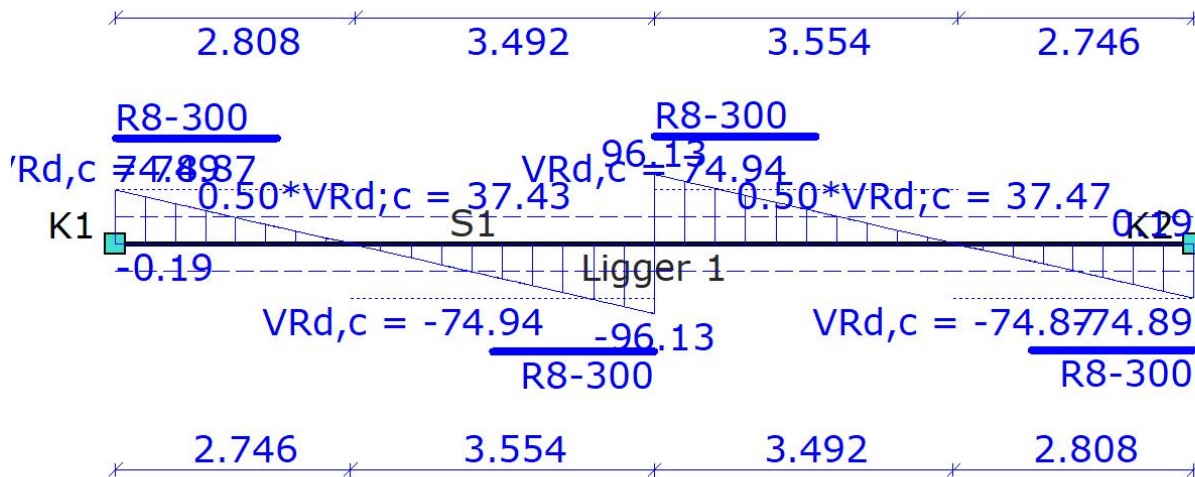
#### DOORSNEDE FLANKWAPENING

Ligger 1

| Positie | M <sub>x</sub> | Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> |
|---------|----------------|-------|--------|--------------------|--------------------------|
| 6.300   | 0.07           | 1R8   |        | 1                  | 50                       |
| m       | kNm            |       |        | mm <sup>2</sup>    | mm <sup>2</sup>          |

Dwarskrachtwap. (Capaciteit)

Ligger 1



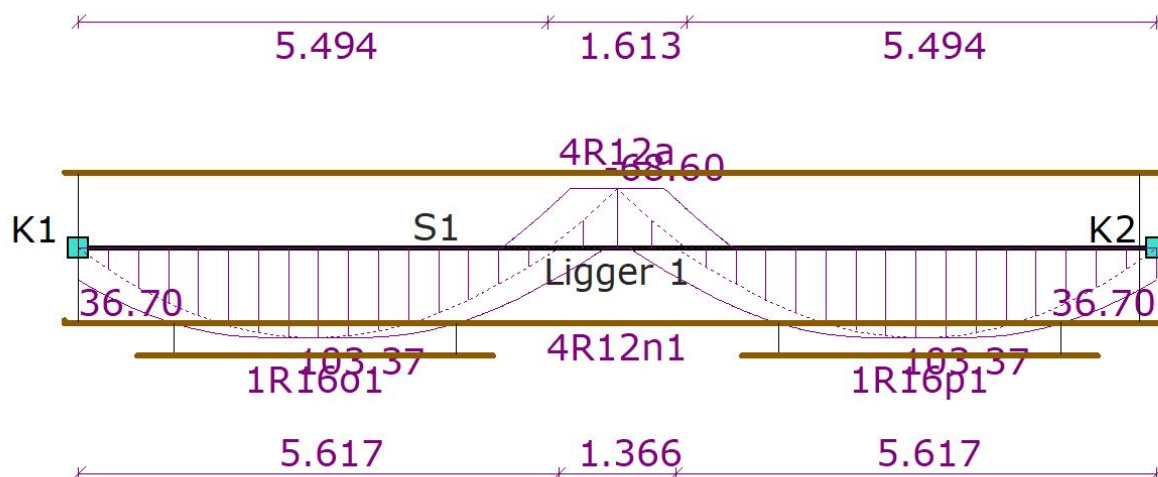
## DOORSNEDE BEUGELWAPENING

Ligger 1

| Positie | Zijde  | $V_{Ed}$ | Basis  | Totaal | $A_{s,benV}$    | $A_{s,benT}$    | $A_{s,toegepast}$ | $V_{Rd,c}$ | $V_{Rd}$ | $V_{Rdi}$ | $V_{Edi}$ |
|---------|--------|----------|--------|--------|-----------------|-----------------|-------------------|------------|----------|-----------|-----------|
| 0.000   | Rechts | 74.70    | R8-300 | R8-300 | 171             | 0               | 335               | 74.87      | 146.44   |           |           |
| 6.300   | Links  | 95.95    | R8-300 | R8-300 | 216             | 0               | 335               | 74.94      | 148.55   |           |           |
| 6.300   | Rechts | 95.95    | R8-300 | R8-300 | 216             | 0               | 335               | 74.94      | 148.55   |           |           |
| 12.600  | Links  | 74.70    | R8-300 | R8-300 | 171             | 0               | 335               | 74.87      | 146.44   |           |           |
| m       |        | kN       |        |        | mm <sup>2</sup> | mm <sup>2</sup> | mm <sup>2</sup>   | kN         | kN       | kN        | kN        |

Langswap. (Afbouw)

Ligger 1



## AFBOUWEN BOVENWAPENING

Ligger 1

| Wap.         | $X_b$  | $Y_{1b}$ | Straal | Verank. | $\alpha_1$ | $\alpha_4$ | $M_{0b}$ | $M_{0e}$ | Verank. | $\alpha_1$ | $\alpha_4$ | $X_e$  | $Y_{1e}$ | Straal | Lengte |
|--------------|--------|----------|--------|---------|------------|------------|----------|----------|---------|------------|------------|--------|----------|--------|--------|
| 4R12a(basis) | -0.170 | 0.000    | -      | 0.120   | 1.0        | 1.0        | 0.000    | 12.400   | 0.120   | 1.0        | 1.0        | 12.770 | 0.000    | -      | 12.940 |
|              | m      | m        |        | m       |            |            | m        | m        | m       |            |            | m      | m        |        | m      |

### AFBOUWEN ONDERWAPENING

Ligger 1

| Wap.           | X <sub>b</sub> | Y1 <sub>b</sub> | Straal | Verank. | α <sub>1</sub> | α <sub>4</sub> | M0 <sub>b</sub> | M0 <sub>e</sub> | Verank. | α <sub>1</sub> | α <sub>4</sub> | X <sub>e</sub> | Y1 <sub>e</sub> | Straal | Lengte |
|----------------|----------------|-----------------|--------|---------|----------------|----------------|-----------------|-----------------|---------|----------------|----------------|----------------|-----------------|--------|--------|
| 4R12n1(basis)  | -0.170         | 0.040           | 4.0D   | 0.204   | 1.0            | 1.0            | 0.000           | 12.400          | 0.204   | 1.0            | 1.0            | 12.770         | 0.000           | -      | 12.980 |
| 1R16o1(bijleg) | 0.687          | 0.000           | -      | 0.428   | 1.0            | 1.0            | 1.115           | 4.415           | 0.428   | 1.0            | 1.0            | 4.843          | 0.000           | -      | 4.155  |
| 1R16p1(bijleg) | 7.757          | 0.000           | -      | 0.428   | 1.0            | 1.0            | 8.185           | 11.485          | 0.428   | 1.0            | 1.0            | 11.913         | 0.000           | -      | 4.155  |
|                | m              | m               |        | m       |                |                | m               | m               | m       |                |                | m              | m               |        | m      |

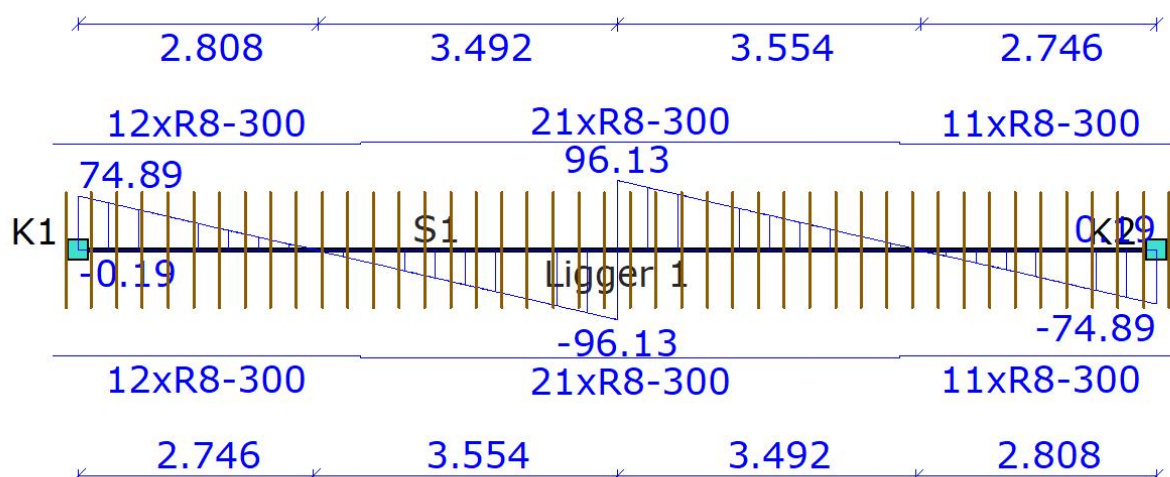
### AFBOUWEN FLANKWAPENING

Ligger 1

| Wap.  | X <sub>b</sub> | Verank. | M0 <sub>b</sub> | M0 <sub>e</sub> | Verank. | X <sub>e</sub> | Lengte |
|-------|----------------|---------|-----------------|-----------------|---------|----------------|--------|
| 1R8y1 | -0.170         | 0.200   | 0.000           | 12.600          | 0.200   | 12.770         | 12.940 |
|       | m              | m       | m               | m               | m       | m              | m      |

Dwarskrachtwap. (Afbouw)

Ligger 1



### AFBOUWEN BEUGELWAPENING

Ligger 1

| Wap.      | Oplegging | Zijde  | X <sub>b</sub> | X <sub>e</sub> | Lengte | V <sub>Ed</sub> | V <sub>Rd</sub> |
|-----------|-----------|--------|----------------|----------------|--------|-----------------|-----------------|
| 12xR8-300 | S2        | Rechts | -0.300         | 3.300          | 3.600  | 74.89           | 146.44          |
| 21xR8-300 | S5        | Links  | 3.300          | 9.600          | 6.300  | 96.13           | 148.55          |
| 11xR8-300 | S4        | Links  | 9.600          | 12.900         | 3.300  | 74.89           | 146.44          |
|           |           |        | m              | m              | m      | kN              | kN              |

### AFBOUWEN HAARSPELDWAPENING

Ligger 1

| Wap.  | Positie | Haarspeldlengte | Straal | Totale lengte |
|-------|---------|-----------------|--------|---------------|
| 1R8e2 | Begin   | 0.200           | 4.0D   | 0.713         |
| 1R8f2 | Einde   | 0.200           | 4.0D   | 0.713         |
|       |         | m               |        | m             |

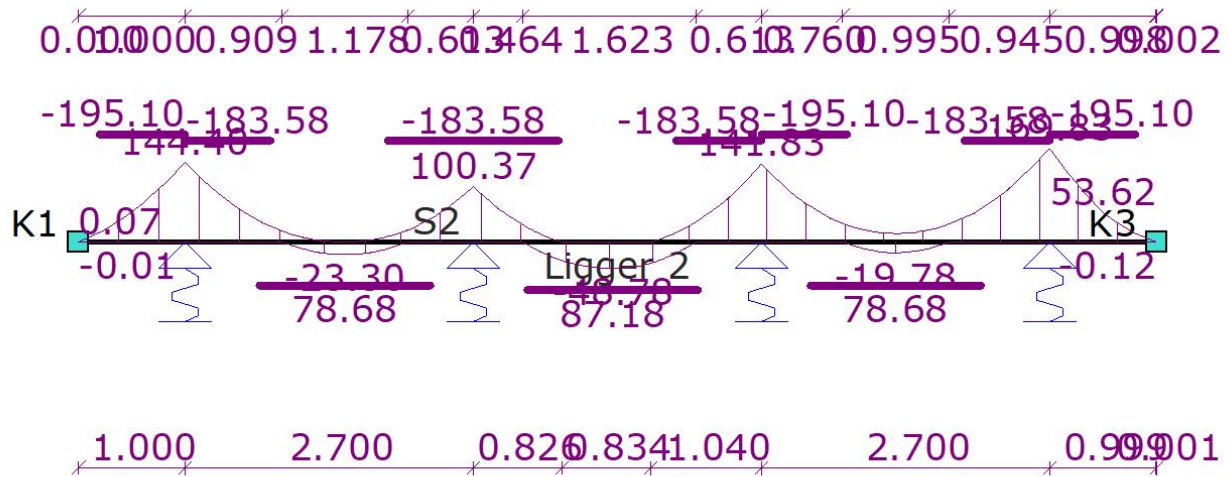
### DOORBUIGINGSBEREKENING (VERKORT)

Ligger 1

| Veld | Begin | Einde  | Limiet w <sub>max</sub> | Limiet w <sub>2+w3</sub> | Abs. limiet | Zeeg | w <sub>1</sub> | w <sub>max</sub> | w <sub>2+w3</sub> | UC(w <sub>max</sub> ) | UC(w <sub>2+w3</sub> ) | Toetsing |
|------|-------|--------|-------------------------|--------------------------|-------------|------|----------------|------------------|-------------------|-----------------------|------------------------|----------|
| V1   | 0.000 | 6.300  | L/250                   | L/250                    | 0.0         | 0.0  | 4.8            | 9.1              | 4.4               | 0.36                  | 0.17                   | Ok       |
| V2   | 6.300 | 12.600 | L/250                   | L/250                    | 0.0         | 0.0  | 4.8            | 9.1              | 4.4               | 0.36                  | 0.17                   | Ok       |
|      | m     | m      |                         |                          | mm          | mm   | mm             | mm               | mm                |                       |                        |          |

Langswap. (Capaciteit)

Ligger 2



#### DOORSNEDE BOVENWAPENING

Ligger 2

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s;ben</sub> | A <sub>s;toegepast</sub> | Verdeel Basis | bijleg | A <sub>s;ben</sub> | A <sub>s;toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 1.000   | 144.40          | 4R12        | 3R16   | 804                | 1056                     |               |        |                    |                          | 18.8                    | 206              |          |
| 1.000   | 144.40          | 4R12        | 3R16   | 867                | 1056                     |               |        |                    |                          | 16.6                    | 187              |          |
| 3.700   | 100.37          | 4R12        | 3R16   | 614                | 1056                     |               |        |                    |                          | 32.5                    | 282              |          |
| 6.400   | 141.83          | 4R12        | 3R16   | 853                | 1056                     |               |        |                    |                          | 16.9                    | 191              |          |
| 6.400   | 141.83          | 4R12        | 3R16   | 789                | 1056                     |               |        |                    |                          | 19.5                    | 209              |          |
| 9.100   | 169.83          | 4R12        | 3R16   | 1014               | 1056                     |               |        |                    |                          | 12.4                    | 131              |          |
| 9.100   | 169.83          | 4R12        | 3R16   | 947                | 1056                     |               |        |                    |                          | 13.5                    | 152              |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

#### DOORSNEDE ONDERWAPENING

Ligger 2

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s;ben</sub> | A <sub>s;toegepast</sub> | Verdeel Basis | bijleg | A <sub>s;ben</sub> | A <sub>s;toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 2.498   | 23.30           | 4R12        |        | 171                | 452                      |               |        |                    |                          | 36.3                    | 300              |          |
| 5.006   | 48.78           | 4R12        |        | 287                | 452                      |               |        |                    |                          | 36.3                    | 300              |          |
| 7.657   | 19.78           | 4R12        |        | 151                | 452                      |               |        |                    |                          | 36.3                    | 300              |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

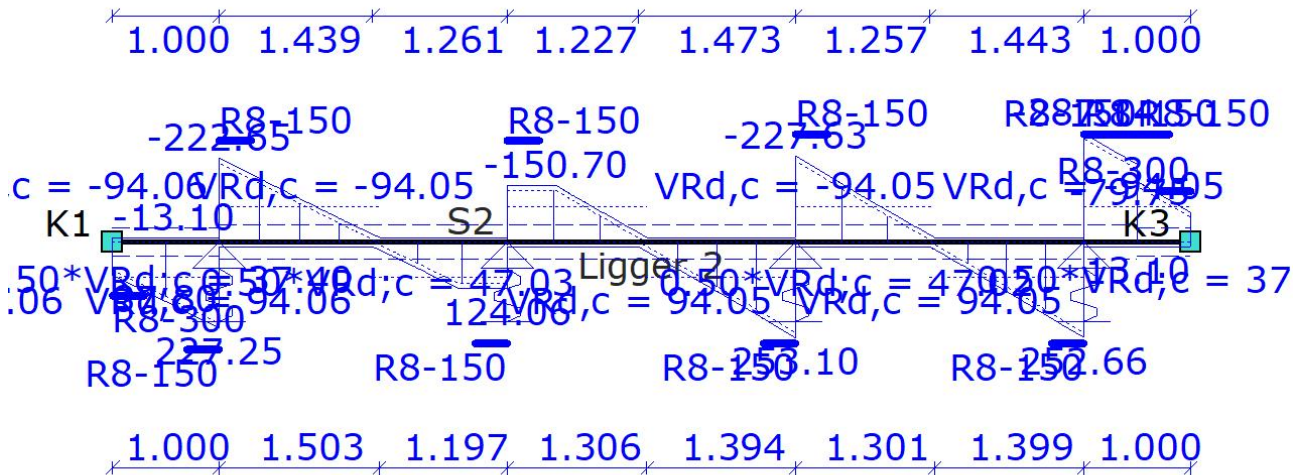
#### DOORSNEDE FLANKWAPENING

Ligger 2

| Positie | M <sub>x</sub> | Basis | bijleg | A <sub>s;ben</sub> | A <sub>s;toegepast</sub> |
|---------|----------------|-------|--------|--------------------|--------------------------|
| 9.600   | 4.81           | 1R8   |        | 46                 | 50                       |
| m       | kNm            |       |        | mm <sup>2</sup>    | mm <sup>2</sup>          |

Dwarskrachtwap. (Capaciteit)

Ligger 2



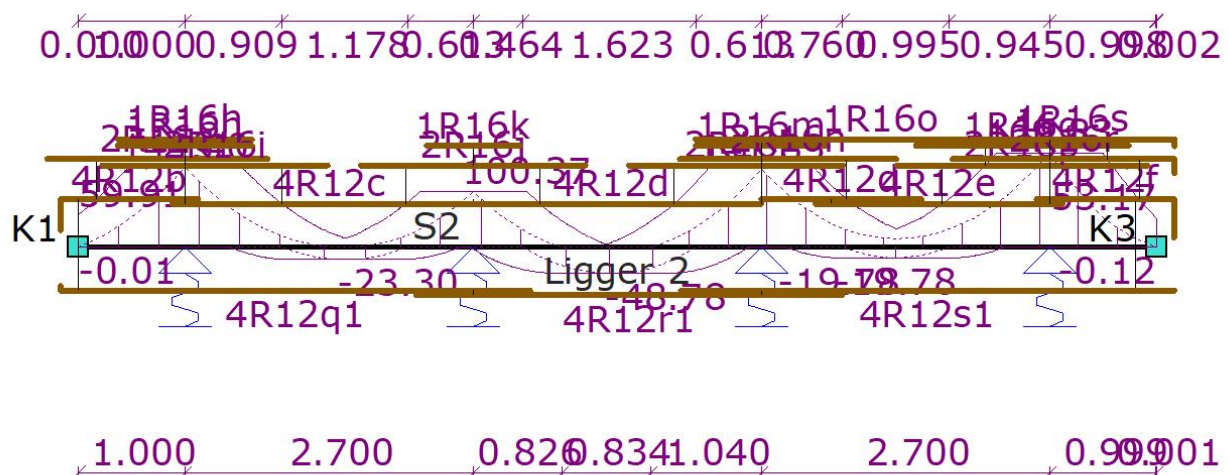
## DOORSNEDE BEUGELWAPENING

Ligger 2

| Positie | Zijde  | V <sub>Ed</sub> | Basis  | Totaal | A <sub>s,benV</sub> | A <sub>s,benT</sub> | A <sub>s,toegepast</sub> | V <sub>Rd,c</sub> | V <sub>Rd</sub> | V <sub>Rdi</sub> | V <sub>Edi</sub> |
|---------|--------|-----------------|--------|--------|---------------------|---------------------|--------------------------|-------------------|-----------------|------------------|------------------|
| 0.000   | Rechts | 74.70           | R8-300 | R8-300 | 176                 | 1                   | 335                      | 74.81             | 142.47          |                  |                  |
| 1.000   | Links  | 214.15          | R8-300 | R8-150 | 504                 | 1                   | 670                      | 94.06             | 284.93          |                  |                  |
| 1.000   | Rechts | 209.55          | R8-300 | R8-150 | 524                 | 1                   | 670                      | 94.06             | 268.10          |                  |                  |
| 3.245   | Links  | 110.96          | R8-300 | R8-150 | 277                 | 1                   | 670                      | 94.06             | 268.10          |                  |                  |
| 4.155   | Rechts | 137.59          | R8-300 | R8-150 | 344                 | 2                   | 670                      | 94.05             | 268.10          |                  |                  |
| 6.400   | Links  | 239.99          | R8-300 | R8-150 | 600                 | 2                   | 670                      | 94.05             | 268.10          |                  |                  |
| 6.400   | Rechts | 214.53          | R8-300 | R8-150 | 505                 | 2                   | 670                      | 94.05             | 284.93          |                  |                  |
| 9.100   | Links  | 239.56          | R8-300 | R8-150 | 599                 | 2                   | 670                      | 94.05             | 268.10          |                  |                  |
| 9.100   | Rechts | 274.03          | R8-300 | R8-150 | 645                 | 2                   | 670                      | 94.05             | 284.93          |                  |                  |
| 9.600   | Links  | 192.61          | R8-300 | R8-150 | 453                 | 2                   | 670                      | 74.81             | 284.93          |                  |                  |
| 9.600   | Rechts | 148.07          | R8-300 | R8-150 | 348                 | 31                  | 670                      | 74.81             | 284.93          |                  |                  |
| 10.100  | Links  | 66.65           | R8-300 | R8-300 | 167                 | 31                  | 335                      | 74.94             | 134.05          |                  |                  |
| m       |        | kN              |        |        | mm <sup>2</sup>     | mm <sup>2</sup>     | mm <sup>2</sup>          | kN                | kN              | kN               | kN               |

Langswap. (Afbouw)

Ligger 2



### AFBOUWEN BOVENWAPENING

Ligger 2

| Wap.          | X <sub>b</sub> | Y <sub>1b</sub> | Straal | Verank. | α <sub>1</sub> | α <sub>4</sub> | M <sub>0b</sub> | M <sub>0e</sub> | Verank. | α <sub>1</sub> | α <sub>4</sub> | X <sub>e</sub> | Y <sub>1e</sub> | Straal | Lengte |
|---------------|----------------|-----------------|--------|---------|----------------|----------------|-----------------|-----------------|---------|----------------|----------------|----------------|-----------------|--------|--------|
| 4R12b(basis)  | -0.170         | 0.291           | 4.0D   | 0.455   | 1.0            | 1.0            | 0.000           | 1.000           | 0.120   | 1.0            | 1.0            | 1.120          | 0.000           | -      | 1.581  |
| 4R12c(basis)  | 0.880          | 0.000           | -      | 0.120   | 1.0            | 1.0            | 1.000           | 3.700           | 0.120   | 1.0            | 1.0            | 3.820          | 0.000           | -      | 2.940  |
| 4R12d(basis)  | 3.580          | 0.000           | -      | 0.120   | 1.0            | 1.0            | 3.700           | 7.053           | 0.847   | 1.0            | 1.0            | 7.900          | 0.000           | -      | 4.320  |
| 4R12e(basis)  | 6.907          | 0.000           | -      | 0.147   | 1.0            | 1.0            | 7.053           | 9.100           | 0.120   | 1.0            | 1.0            | 9.220          | 0.000           | -      | 2.313  |
| 4R12f(basis)  | 8.980          | 0.000           | -      | 0.120   | 1.0            | 1.0            | 9.100           | 9.900           | 0.724   | 1.0            | 1.0            | 10.264         | 0.360           | 4.0D   | 1.644  |
| 2R16g(bijleg) | -0.300         | 0.000           | -      | 0.467   | 1.0            | 1.0            | 0.167           | 1.000           | 0.777   | 1.0            | 1.0            | 1.777          | 0.000           | -      | 2.077  |
| 1R16h(bijleg) | 0.371          | 0.000           | -      | 0.629   | 1.0            | 1.0            | 1.000           | 1.000           | 0.629   | 1.0            | 1.0            | 1.629          | 0.000           | -      | 1.258  |
| 2R16i(bijleg) | 0.223          | 0.000           | -      | 0.777   | 1.0            | 1.0            | 1.000           | 1.909           | 0.423   | 1.0            | 1.0            | 2.332          | 0.000           | -      | 2.109  |
| 1R16h(bijleg) | 0.371          | 0.000           | -      | 0.629   | 1.0            | 1.0            | 1.000           | 1.000           | 0.629   | 1.0            | 1.0            | 1.629          | 0.000           | -      | 1.258  |
| 2R16j(bijleg) | 2.644          | 0.000           | -      | 0.423   | 1.0            | 1.0            | 3.067           | 4.328           | 0.423   | 1.0            | 1.0            | 4.751          | 0.000           | -      | 2.107  |
| 1R16k(bijleg) | 3.263          | 0.000           | -      | 0.437   | 1.0            | 1.0            | 3.700           | 3.700           | 0.437   | 1.0            | 1.0            | 4.137          | 0.000           | -      | 0.874  |
| 2R16l(bijleg) | 5.161          | 0.000           | -      | 0.423   | 1.0            | 1.0            | 5.584           | 6.400           | 0.763   | 1.0            | 1.0            | 7.163          | 0.000           | -      | 2.003  |
| 1R16m(bijleg) | 5.782          | 0.000           | -      | 0.618   | 1.0            | 1.0            | 6.400           | 6.400           | 0.618   | 1.0            | 1.0            | 7.018          | 0.000           | -      | 1.236  |
| 2R16n(bijleg) | 5.637          | 0.000           | -      | 0.763   | 1.0            | 1.0            | 6.400           | 7.198           | 0.467   | 1.0            | 1.0            | 7.666          | 0.000           | -      | 2.029  |
| 1R16o(bijleg) | 5.782          | 0.000           | -      | 0.618   | 1.0            | 1.0            | 6.400           | 8.551           | 0.696   | 1.0            | 1.0            | 9.247          | 0.000           | -      | 3.465  |
| 2R16p(bijleg) | 7.671          | 0.000           | -      | 0.423   | 1.0            | 1.0            | 8.095           | 9.100           | 0.914   | 1.0            | 1.0            | 10.014         | 0.000           | -      | 2.343  |
| 1R16q(bijleg) | 7.850          | 0.000           | -      | 0.647   | 1.0            | 1.0            | 8.497           | 9.100           | 0.740   | 1.0            | 1.0            | 9.840          | 0.000           | -      | 1.990  |
| 2R16r(bijleg) | 8.186          | 0.000           | -      | 0.914   | 1.0            | 1.0            | 9.100           | 9.937           | 0.467   | 1.0            | 1.0            | 10.270         | 0.134           | 4.0D   | 2.218  |
| 1R16s(bijleg) | 8.360          | 0.000           | -      | 0.740   | 1.0            | 1.0            | 9.100           | 9.639           | 0.696   | 1.0            | 1.0            | 10.270         | 0.065           | 4.0D   | 1.975  |
|               | m              | m               |        | m       |                |                | m               | m               | m       |                |                | m              | m               |        | m      |

### AFBOUWEN ONDERWAPENING

Ligger 2

| Wap.          | X <sub>b</sub> | Y <sub>1b</sub> | Straal | Verank. | α <sub>1</sub> | α <sub>4</sub> | M <sub>0b</sub> | M <sub>0e</sub> | Verank. | α <sub>1</sub> | α <sub>4</sub> | X <sub>e</sub> | Y <sub>1e</sub> | Straal | Lengte |
|---------------|----------------|-----------------|--------|---------|----------------|----------------|-----------------|-----------------|---------|----------------|----------------|----------------|-----------------|--------|--------|
| 4R12q1(basis) | -0.170         | 0.040           | 4.0D   | 0.204   | 1.0            | 1.0            | 0.000           | 3.700           | 0.533   | 1.0            | 1.0            | 4.233          | 0.000           | -      | 4.442  |
| 4R12r1(basis) | 3.167          | 0.000           | -      | 0.533   | 1.0            | 1.0            | 3.700           | 6.400           | 0.754   | 1.0            | 1.0            | 7.154          | 0.000           | -      | 3.986  |
| 4R12s1(basis) | 5.646          | 0.000           | -      | 0.754   | 1.0            | 1.0            | 6.400           | 9.900           | 0.182   | 1.0            | 1.0            | 10.270         | 0.000           | -      | 4.624  |
|               | m              | m               |        | m       |                |                | m               | m               | m       |                |                | m              | m               |        | m      |

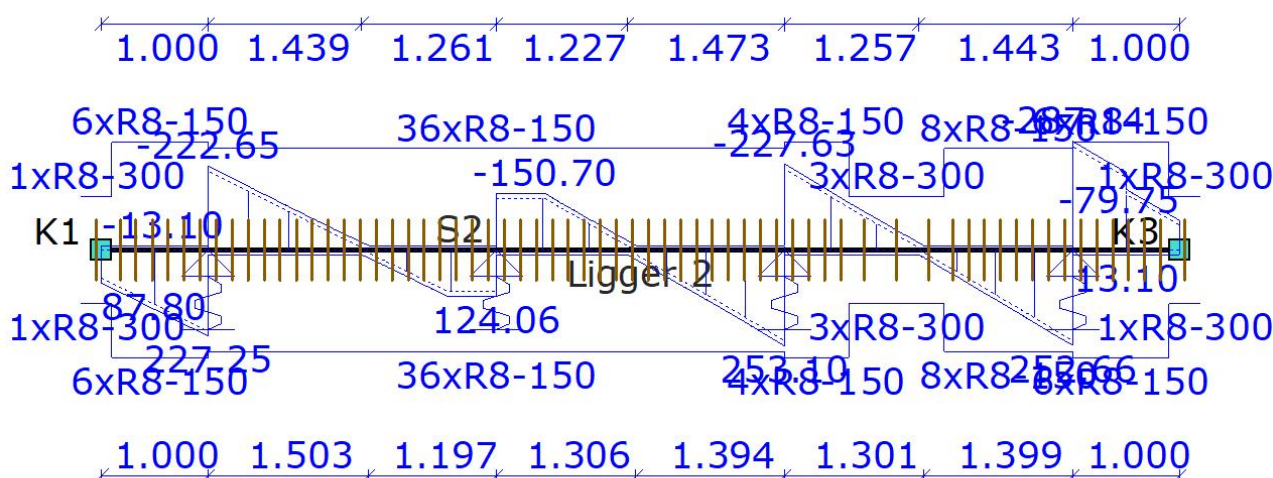
### AFBOUWEN FLANKWAPENING

Ligger 2

| Wap.  | X <sub>b</sub> | Verank. | M <sub>0b</sub> | M <sub>0e</sub> | Verank. | X <sub>e</sub> | Lengte |
|-------|----------------|---------|-----------------|-----------------|---------|----------------|--------|
| 1R8a2 | -0.170         | 0.200   | 0.000           | 10.100          | 0.200   | 10.270         | 10.440 |
|       | m              | m       | m               | m               | m       | m              | m      |

Dwarskrachtwap. (Afbouw)

Ligger 2



### AFBOUWEN BEUGELWAPENING

Ligger 2

| Wap.      | Oplegging | Zijde  | $X_b$  | $X_e$  | Lengte | $V_{Ed}$ | $V_{Rd}$ |
|-----------|-----------|--------|--------|--------|--------|----------|----------|
| 1xR8-300  | S1        | Links  | -0.200 | 0.100  | 0.300  | 129.54   | 142.47   |
| 6xR8-150  | O6        | Links  | 0.100  | 1.000  | 0.900  | 227.25   | 284.93   |
| 36xR8-150 | O6        | Rechts | 1.000  | 6.400  | 5.400  | 253.10   | 268.10   |
| 4xR8-150  | O17       | Rechts | 6.400  | 7.000  | 0.600  | 253.10   | 284.93   |
| 3xR8-300  | O17       | Rechts | 7.000  | 7.900  | 0.900  | 126.72   | 142.47   |
| 8xR8-150  | O5        | Links  | 7.900  | 9.100  | 1.200  | 287.14   | 268.10   |
| 6xR8-150  | O5        | Rechts | 9.100  | 10.000 | 0.900  | 287.14   | 284.93   |
| 1xR8-300  | S3        | Rechts | 10.000 | 10.300 | 0.300  | 96.04    | 142.47   |
|           |           |        | m      | m      | m      | kN       | kN       |

### AFBOUWEN HAARSPELDWAPENING

Ligger 2

| Wap.  | Positie | Haarspeldlengte | Straal | Totale lengte |
|-------|---------|-----------------|--------|---------------|
| 1R8e2 | Begin   | 0.200           | 4.0D   | 0.713         |
| 1R8f2 | Einde   | 0.200           | 4.0D   | 0.713         |
|       |         | m               |        | m             |

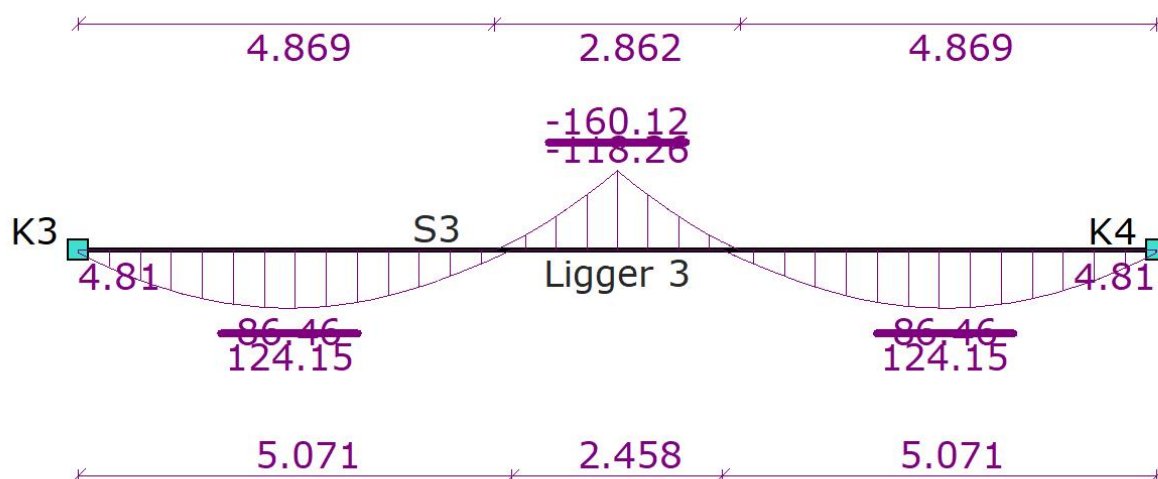
### DOORBUIGINGSBEREKENING (VERKORT)

Ligger 2

| Veld | Begin | Einde  | Limiet $w_{max}$ | Limiet $w_2+w_3$ | Abs. limiet | Zeeg | $w_1$ | $w_{max}$  | $w_2+w_3$  | UC( $w_{max}$ ) | UC( $w_2+w_3$ ) | Toetsing |
|------|-------|--------|------------------|------------------|-------------|------|-------|------------|------------|-----------------|-----------------|----------|
| V1   | 0.000 | 1.000  | L/250            | L/250            | 0.0         | 0.0  | -0.0  | -0.1<=4.0  | -0.1<=4.0  | 0.03            | 0.02            | Ok       |
| V2   | 1.000 | 3.700  | L/250            | L/250            | 0.0         | 0.0  | -0.1  | -0.2<=10.8 | -0.1<=10.8 | 0.02            | 0.01            | Ok       |
| V3   | 3.700 | 6.400  | L/250            | L/250            | 0.0         | 0.0  | -0.0  | -0.1<=10.8 | 0.1<=10.8  | 0.01            | 0.01            | Ok       |
| V4   | 6.400 | 9.100  | L/250            | L/250            | 0.0         | 0.0  | -0.2  | -0.4<=10.8 | -0.3<=10.8 | 0.04            | 0.02            | Ok       |
| V5   | 9.100 | 9.600  | L/250            | L/250            | 0.0         | 0.0  | -0.0  | -0.1<=2.0  | -0.0<=2.0  | 0.03            | 0.01            | Ok       |
| V6   | 9.600 | 10.100 | L/250            | L/250            | 0.0         | 0.0  | -0.0  | -0.0<=2.0  | -0.0<=2.0  | 0.02            | 0.00            | Ok       |
|      | m     | m      |                  |                  | mm          | mm   | mm    | mm         | mm         |                 |                 |          |

Langswap. (Capaciteit)

Ligger 3



### DOORSNEDE BOVENWAPENING

Ligger 3

| Positie | $M_{Ed}$ | Hoofd Basis | bijleg | $A_{s,ben}$     | $A_{s,toegepast}$ | Verdeel Basis | bijleg | $A_{s,ben}$     | $A_{s,toegepast}$ | Scheur $D_{max}$ | $S_{max}$ | Toetsing |
|---------|----------|-------------|--------|-----------------|-------------------|---------------|--------|-----------------|-------------------|------------------|-----------|----------|
| 6.300   | 118.26   | 4R12        | 2R16   | 623             | 855               |               |        |                 |                   | 17.8             | 200       |          |
| m       | kNm      |             |        | mm <sup>2</sup> | mm <sup>2</sup>   |               |        | mm <sup>2</sup> | mm <sup>2</sup>   | mm               | mm        |          |

### DOORSNEDE ONDERWAPENING

Ligger 3

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Verdeel Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 2.469   | 86.46           | 4R12        | 1R16   | 450                | 653                      |               |        |                    |                          | 22.1                    | 221              |          |
| 10.131  | 86.46           | 4R12        | 1R16   | 450                | 653                      |               |        |                    |                          | 22.1                    | 221              |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

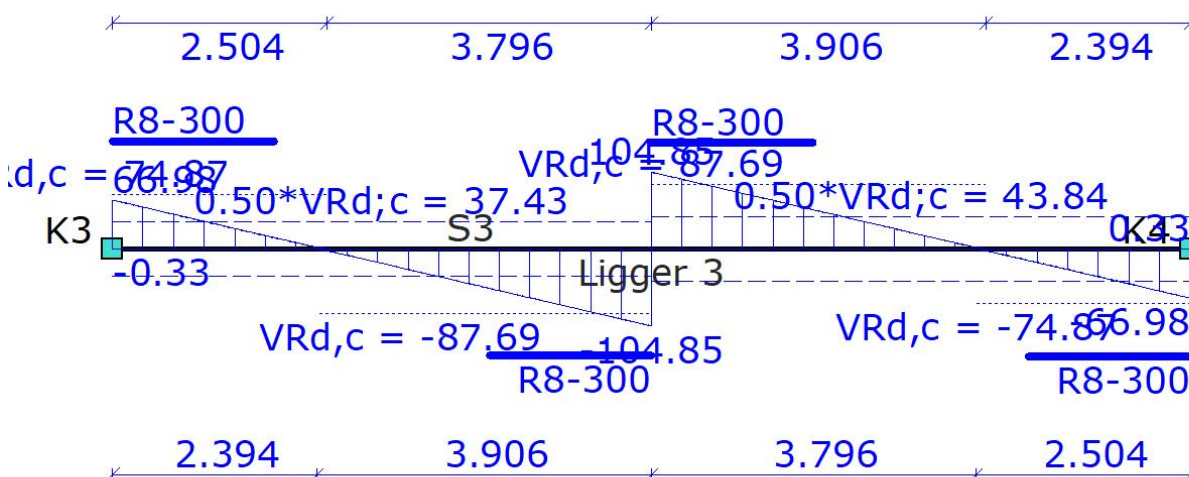
### DOORSNEDE FLANKWAPENING

Ligger 3

| Positie | M <sub>x</sub> Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> |
|---------|----------------------|--------|--------------------|--------------------------|
| 6.300   | 0.12 1R8             |        | 1                  | 50                       |
| m       | kNm                  |        | mm <sup>2</sup>    | mm <sup>2</sup>          |

Dwarskrachtwap. (Capaciteit)

Ligger 3



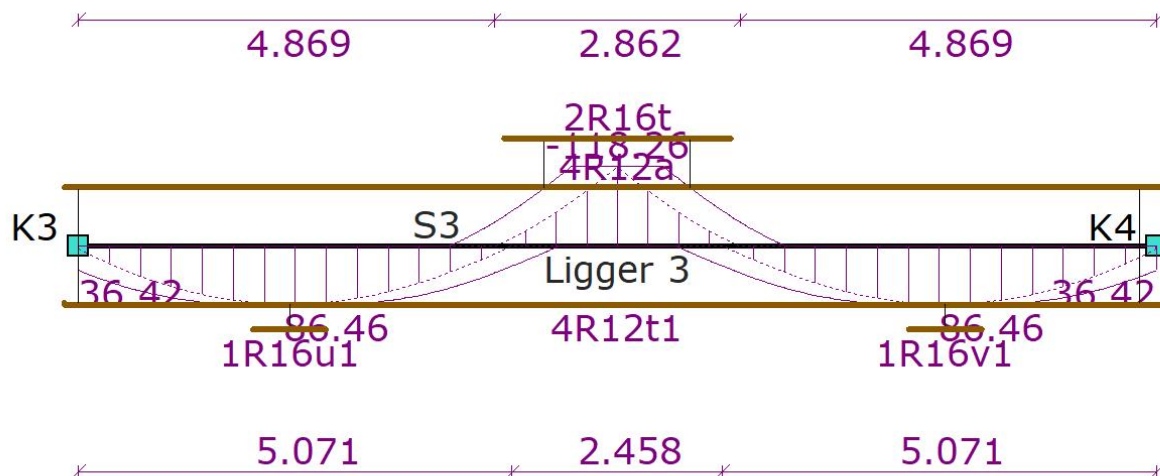
### DOORSNEDE BEUGELWAPENING

Ligger 3

| Positie | Zijde  | V <sub>Ed</sub> | Basis  | Totaal | A <sub>s,benV</sub> | A <sub>s,benT</sub> | A <sub>s,toegepast</sub> | V <sub>Rd,c</sub> | V <sub>Rd</sub> | V <sub>Rdi</sub> | V <sub>Edi</sub> |
|---------|--------|-----------------|--------|--------|---------------------|---------------------|--------------------------|-------------------|-----------------|------------------|------------------|
| 0.000   | Rechts | 66.65           | R8-300 | R8-300 | 153                 | 0                   | 335                      | 74.87             | 146.44          |                  |                  |
| 6.300   | Links  | 104.52          | R8-300 | R8-300 | 242                 | 1                   | 335                      | 87.69             | 144.43          |                  |                  |
| 6.300   | Rechts | 104.52          | R8-300 | R8-300 | 242                 | 1                   | 335                      | 87.69             | 144.43          |                  |                  |
| 12.600  | Links  | 66.65           | R8-300 | R8-300 | 153                 | 0                   | 335                      | 74.87             | 146.44          |                  |                  |
| m       |        | kN              |        |        | mm <sup>2</sup>     | mm <sup>2</sup>     | mm <sup>2</sup>          | kN                | kN              | kN               | kN               |

Langswap. (Afbouw)

Ligger 3



#### AFBOUWEN BOVENWAPENING

Ligger 3

| Wap.          | X <sub>b</sub> | Y <sub>1b</sub> | Straal | Verank. | α <sub>1</sub> | α <sub>4</sub> | M0 <sub>b</sub> | M0 <sub>e</sub> | Verank. | α <sub>1</sub> | α <sub>4</sub> | X <sub>e</sub> | Y <sub>1e</sub> | Straal | Lengte |
|---------------|----------------|-----------------|--------|---------|----------------|----------------|-----------------|-----------------|---------|----------------|----------------|----------------|-----------------|--------|--------|
| 4R12a(basis)  | -0.170         | 0.000           | -      | 0.120   | 1.0            | 1.0            | 0.000           | 12.400          | 0.120   | 1.0            | 1.0            | 12.770         | 0.000           | -      | 12.940 |
| 2R16t(bijleg) | 4.979          | 0.000           | -      | 0.467   | 1.0            | 1.0            | 5.446           | 7.154           | 0.467   | 1.0            | 1.0            | 7.621          | 0.000           | -      | 2.641  |
|               | m              | m               |        | m       |                |                | m               | m               | m       |                |                | m              | m               |        | m      |

#### AFBOUWEN ONDERWAPENING

Ligger 3

| Wap.           | X <sub>b</sub> | Y <sub>1b</sub> | Straal | Verank. | α <sub>1</sub> | α <sub>4</sub> | M0 <sub>b</sub> | M0 <sub>e</sub> | Verank. | α <sub>1</sub> | α <sub>4</sub> | X <sub>e</sub> | Y <sub>1e</sub> | Straal | Lengte |
|----------------|----------------|-----------------|--------|---------|----------------|----------------|-----------------|-----------------|---------|----------------|----------------|----------------|-----------------|--------|--------|
| 4R12t1(basis)  | -0.170         | 0.018           | 4.0D   | 0.182   | 1.0            | 1.0            | 0.000           | 12.400          | 0.182   | 1.0            | 1.0            | 12.770         | 0.000           | -      | 12.958 |
| 1R16u1(bijleg) | 2.043          | 0.000           | -      | 0.426   | 1.0            | 1.0            | 2.469           | 2.469           | 0.426   | 1.0            | 1.0            | 2.894          | 0.000           | -      | 0.852  |
| 1R16v1(bijleg) | 9.706          | 0.000           | -      | 0.426   | 1.0            | 1.0            | 10.131          | 10.131          | 0.426   | 1.0            | 1.0            | 10.557         | 0.000           | -      | 0.852  |
|                | m              | m               |        | m       |                |                | m               | m               | m       |                |                | m              | m               |        | m      |

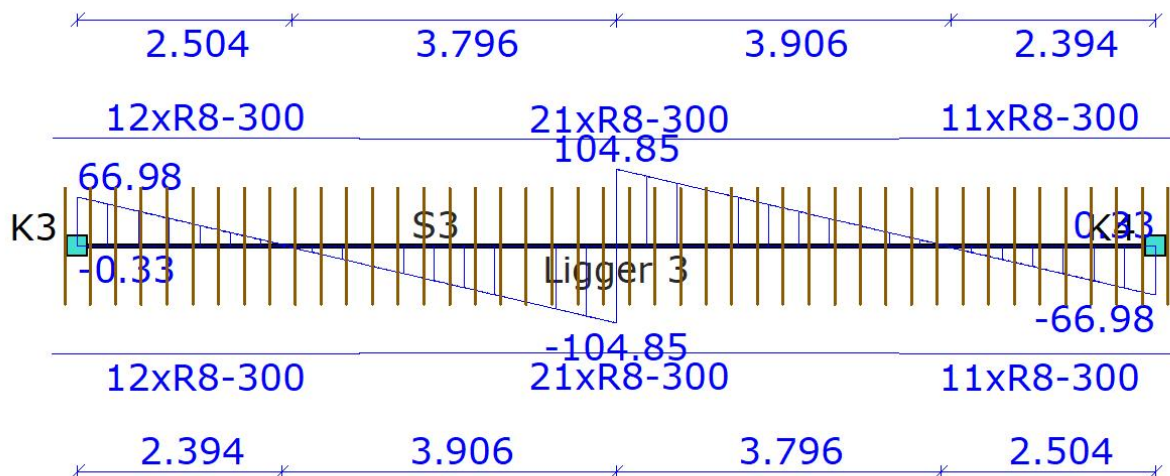
#### AFBOUWEN FLANKWAPENING

Ligger 3

| Wap.  | X <sub>b</sub> | Verank. | M0 <sub>b</sub> | M0 <sub>e</sub> | Verank. | X <sub>e</sub> | Lengte |
|-------|----------------|---------|-----------------|-----------------|---------|----------------|--------|
| 1R8y1 | -0.170         | 0.200   | 0.000           | 12.600          | 0.200   | 12.770         | 12.940 |
|       | m              | m       | m               | m               | m       | m              | m      |

Dwarskrachtwap. (Afbouw)

Ligger 3



#### AFBOUWEN BEUGELWAPENING

Ligger 3

| Wap.      | Oplegging | Zijde  | $X_b$  | $X_e$  | Lengte | $V_{Ed}$ | $V_{Rd}$ |
|-----------|-----------|--------|--------|--------|--------|----------|----------|
| 12xR8-300 | S2        | Rechts | -0.300 | 3.300  | 3.600  | 66.98    | 146.44   |
| 21xR8-300 | S5        | Links  | 3.300  | 9.600  | 6.300  | 104.85   | 144.43   |
| 11xR8-300 | S4        | Links  | 9.600  | 12.900 | 3.300  | 66.98    | 146.44   |
|           |           |        | m      | m      | m      | kN       | kN       |

#### AFBOUWEN HAARSPELDWPENING

Ligger 3

| Wap.  | Positie | Haarspeldlengte | Straal | Totale lengte |
|-------|---------|-----------------|--------|---------------|
| 1R8e2 | Begin   | 0.200           | 4.0D   | 0.713         |
| 1R8f2 | Einde   | 0.200           | 4.0D   | 0.713         |
|       |         | m               |        | m             |

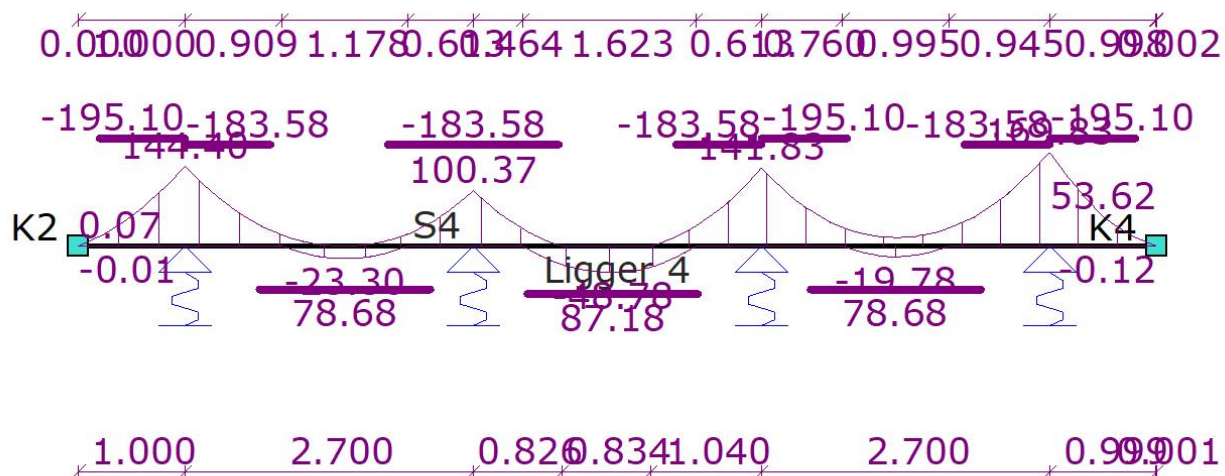
#### DOORBUIGINGSBEREKENING (VERKORT)

Ligger 3

| Veld | Begin | Einde  | Limiet $w_{max}$ | Limiet $w_2+w_3$ | Abs. limiet | Zeeg | $w_1$ | $w_{max}$ | $w_2+w_3$ | UC( $w_{max}$ ) | UC( $w_2+w_3$ ) | Toetsing |
|------|-------|--------|------------------|------------------|-------------|------|-------|-----------|-----------|-----------------|-----------------|----------|
| V1   | 0.000 | 6.300  | L/250            | L/250            | 0.0         | 0.0  | 2.1   | 5.0<=25.2 | 3.1<=25.2 | 0.20            | 0.12            | Ok       |
| V2   | 6.300 | 12.600 | L/250            | L/250            | 0.0         | 0.0  | 2.2   | 5.0<=25.2 | 3.1<=25.2 | 0.20            | 0.12            | Ok       |
|      |       | m      | m                |                  | mm          | mm   | mm    | mm        | mm        |                 |                 |          |

Langswap. (Capaciteit)

Ligger 4



#### DOORSNEDE BOVENWAPENING

Ligger 4

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Verdeel Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 1.000   | 144.40          | 4R12        | 3R16   | 804                | 1056                     |               |        |                    |                          | 18.8                    | 206              |          |
| 1.000   | 144.40          | 4R12        | 3R16   | 867                | 1056                     |               |        |                    |                          | 16.6                    | 187              |          |
| 3.700   | 100.37          | 4R12        | 3R16   | 614                | 1056                     |               |        |                    |                          | 32.5                    | 282              |          |
| 6.400   | 141.83          | 4R12        | 3R16   | 853                | 1056                     |               |        |                    |                          | 16.9                    | 191              |          |
| 6.400   | 141.83          | 4R12        | 3R16   | 789                | 1056                     |               |        |                    |                          | 19.5                    | 209              |          |
| 9.100   | 169.83          | 4R12        | 3R16   | 1014               | 1056                     |               |        |                    |                          | 12.4                    | 131              |          |
| 9.100   | 169.83          | 4R12        | 3R16   | 947                | 1056                     |               |        |                    |                          | 13.5                    | 152              |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

#### DOORSNEDE ONDERWAPENING

Ligger 4

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Verdeel Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 2.498   | 23.30           | 4R12        |        | 171                | 452                      |               |        |                    |                          | 36.3                    | 300              |          |
| 5.006   | 48.78           | 4R12        |        | 287                | 452                      |               |        |                    |                          | 36.3                    | 300              |          |
| 7.657   | 19.78           | 4R12        |        | 151                | 452                      |               |        |                    |                          | 36.3                    | 300              |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

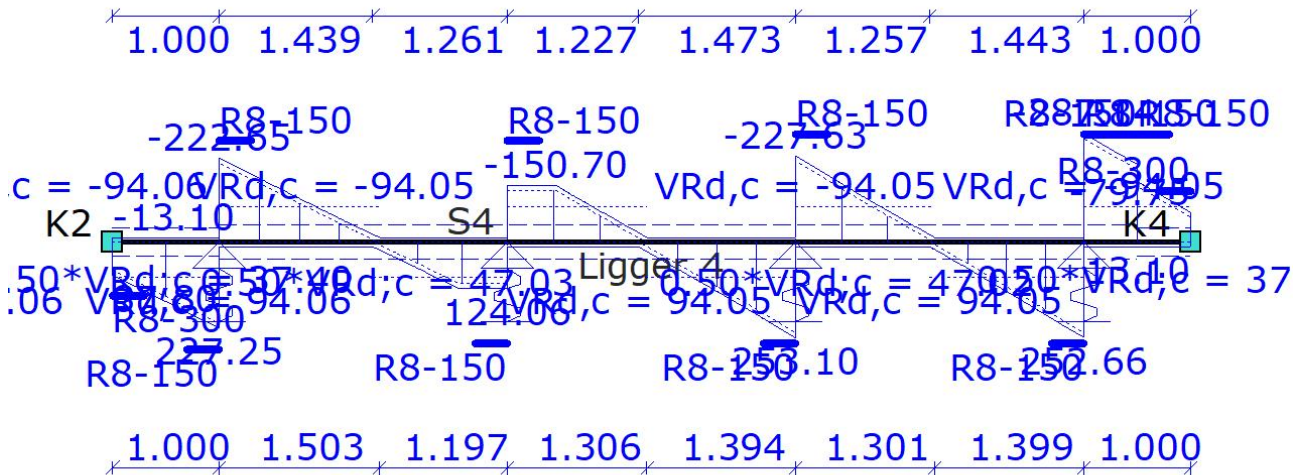
#### DOORSNEDE FLANKWAPENING

Ligger 4

| Positie | M <sub>x</sub> | Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> |
|---------|----------------|-------|--------|--------------------|--------------------------|
| 9.600   | 4.81           | 1R8   |        | 46                 | 50                       |
| m       | kNm            |       |        | mm <sup>2</sup>    | mm <sup>2</sup>          |

Dwarskrachtwap. (Capaciteit)

Ligger 4



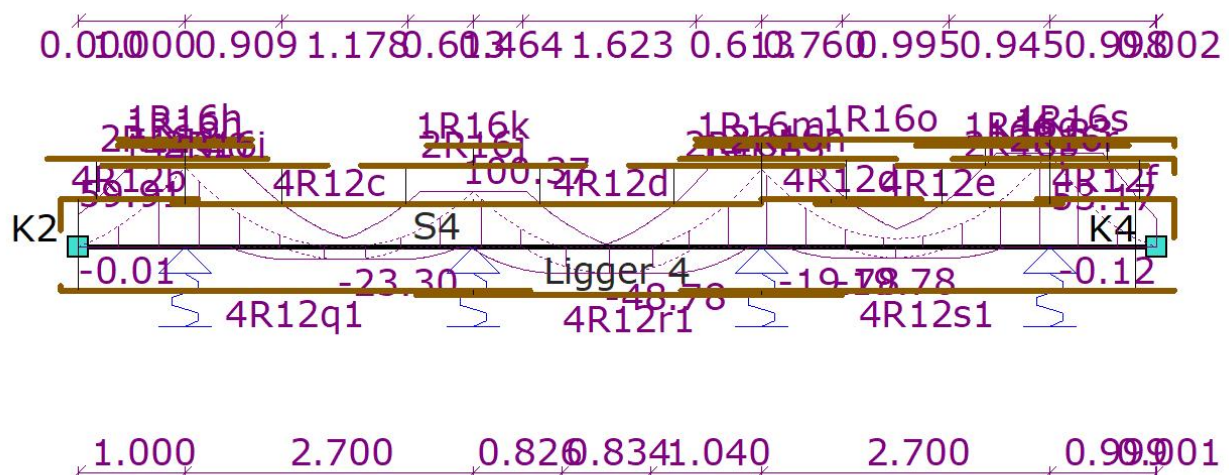
## DOORSNEDE BEUGELWAPENING

Ligger 4

| Positie | Zijde  | V <sub>Ed</sub> | Basis  | Totaal | A <sub>s,benV</sub> | A <sub>s,benT</sub> | A <sub>s,toegepast</sub> | V <sub>Rd,c</sub> | V <sub>Rd</sub> | V <sub>Rdi</sub> | V <sub>Edi</sub> |
|---------|--------|-----------------|--------|--------|---------------------|---------------------|--------------------------|-------------------|-----------------|------------------|------------------|
| 0.000   | Rechts | 74.70           | R8-300 | R8-300 | 176                 | 1                   | 335                      | 74.81             | 142.47          |                  |                  |
| 1.000   | Links  | 214.15          | R8-300 | R8-150 | 504                 | 1                   | 670                      | 94.06             | 284.93          |                  |                  |
| 1.000   | Rechts | 209.55          | R8-300 | R8-150 | 524                 | 1                   | 670                      | 94.06             | 268.10          |                  |                  |
| 3.245   | Links  | 110.96          | R8-300 | R8-150 | 277                 | 1                   | 670                      | 94.06             | 268.10          |                  |                  |
| 4.155   | Rechts | 137.59          | R8-300 | R8-150 | 344                 | 2                   | 670                      | 94.05             | 268.10          |                  |                  |
| 6.400   | Links  | 239.99          | R8-300 | R8-150 | 600                 | 2                   | 670                      | 94.05             | 268.10          |                  |                  |
| 6.400   | Rechts | 214.53          | R8-300 | R8-150 | 505                 | 2                   | 670                      | 94.05             | 284.93          |                  |                  |
| 9.100   | Links  | 239.56          | R8-300 | R8-150 | 599                 | 2                   | 670                      | 94.05             | 268.10          |                  |                  |
| 9.100   | Rechts | 274.03          | R8-300 | R8-150 | 645                 | 2                   | 670                      | 94.05             | 284.93          |                  |                  |
| 9.600   | Links  | 192.61          | R8-300 | R8-150 | 453                 | 2                   | 670                      | 74.81             | 284.93          |                  |                  |
| 9.600   | Rechts | 148.07          | R8-300 | R8-150 | 348                 | 31                  | 670                      | 74.81             | 284.93          |                  |                  |
| 10.100  | Links  | 66.65           | R8-300 | R8-300 | 167                 | 31                  | 335                      | 74.94             | 134.05          |                  |                  |
| m       |        | kN              |        |        | mm <sup>2</sup>     | mm <sup>2</sup>     | mm <sup>2</sup>          | kN                | kN              | kN               | kN               |

Langswap. (Afbouw)

Ligger 4



### AFBOUWEN BOVENWAPENING

Ligger 4

| Wap.          | X <sub>b</sub> | Y <sub>1b</sub> | Straal | Verank. | α <sub>1</sub> | α <sub>4</sub> | M <sub>0b</sub> | M <sub>0e</sub> | Verank. | α <sub>1</sub> | α <sub>4</sub> | X <sub>e</sub> | Y <sub>1e</sub> | Straal | Lengte |
|---------------|----------------|-----------------|--------|---------|----------------|----------------|-----------------|-----------------|---------|----------------|----------------|----------------|-----------------|--------|--------|
| 4R12b(basis)  | -0.170         | 0.291           | 4.0D   | 0.455   | 1.0            | 1.0            | 0.000           | 1.000           | 0.120   | 1.0            | 1.0            | 1.120          | 0.000           | -      | 1.581  |
| 4R12c(basis)  | 0.880          | 0.000           | -      | 0.120   | 1.0            | 1.0            | 1.000           | 3.700           | 0.120   | 1.0            | 1.0            | 3.820          | 0.000           | -      | 2.940  |
| 4R12d(basis)  | 3.580          | 0.000           | -      | 0.120   | 1.0            | 1.0            | 3.700           | 7.053           | 0.847   | 1.0            | 1.0            | 7.900          | 0.000           | -      | 4.320  |
| 4R12e(basis)  | 6.907          | 0.000           | -      | 0.147   | 1.0            | 1.0            | 7.053           | 9.100           | 0.120   | 1.0            | 1.0            | 9.220          | 0.000           | -      | 2.313  |
| 4R12f(basis)  | 8.980          | 0.000           | -      | 0.120   | 1.0            | 1.0            | 9.100           | 9.900           | 0.724   | 1.0            | 1.0            | 10.264         | 0.360           | 4.0D   | 1.644  |
| 2R16g(bijleg) | -0.300         | 0.000           | -      | 0.467   | 1.0            | 1.0            | 0.167           | 1.000           | 0.777   | 1.0            | 1.0            | 1.777          | 0.000           | -      | 2.077  |
| 1R16h(bijleg) | 0.371          | 0.000           | -      | 0.629   | 1.0            | 1.0            | 1.000           | 1.000           | 0.629   | 1.0            | 1.0            | 1.629          | 0.000           | -      | 1.258  |
| 2R16i(bijleg) | 0.223          | 0.000           | -      | 0.777   | 1.0            | 1.0            | 1.000           | 1.909           | 0.423   | 1.0            | 1.0            | 2.332          | 0.000           | -      | 2.109  |
| 1R16h(bijleg) | 0.371          | 0.000           | -      | 0.629   | 1.0            | 1.0            | 1.000           | 1.000           | 0.629   | 1.0            | 1.0            | 1.629          | 0.000           | -      | 1.258  |
| 2R16j(bijleg) | 2.644          | 0.000           | -      | 0.423   | 1.0            | 1.0            | 3.067           | 4.328           | 0.423   | 1.0            | 1.0            | 4.751          | 0.000           | -      | 2.107  |
| 1R16k(bijleg) | 3.263          | 0.000           | -      | 0.437   | 1.0            | 1.0            | 3.700           | 3.700           | 0.437   | 1.0            | 1.0            | 4.137          | 0.000           | -      | 0.874  |
| 2R16l(bijleg) | 5.161          | 0.000           | -      | 0.423   | 1.0            | 1.0            | 5.584           | 6.400           | 0.763   | 1.0            | 1.0            | 7.163          | 0.000           | -      | 2.003  |
| 1R16m(bijleg) | 5.782          | 0.000           | -      | 0.618   | 1.0            | 1.0            | 6.400           | 6.400           | 0.618   | 1.0            | 1.0            | 7.018          | 0.000           | -      | 1.236  |
| 2R16n(bijleg) | 5.637          | 0.000           | -      | 0.763   | 1.0            | 1.0            | 6.400           | 7.198           | 0.467   | 1.0            | 1.0            | 7.666          | 0.000           | -      | 2.029  |
| 1R16o(bijleg) | 5.782          | 0.000           | -      | 0.618   | 1.0            | 1.0            | 6.400           | 8.551           | 0.696   | 1.0            | 1.0            | 9.247          | 0.000           | -      | 3.465  |
| 2R16p(bijleg) | 7.671          | 0.000           | -      | 0.423   | 1.0            | 1.0            | 8.095           | 9.100           | 0.914   | 1.0            | 1.0            | 10.014         | 0.000           | -      | 2.343  |
| 1R16q(bijleg) | 7.850          | 0.000           | -      | 0.647   | 1.0            | 1.0            | 8.497           | 9.100           | 0.740   | 1.0            | 1.0            | 9.840          | 0.000           | -      | 1.990  |
| 2R16r(bijleg) | 8.186          | 0.000           | -      | 0.914   | 1.0            | 1.0            | 9.100           | 9.937           | 0.467   | 1.0            | 1.0            | 10.270         | 0.134           | 4.0D   | 2.218  |
| 1R16s(bijleg) | 8.360          | 0.000           | -      | 0.740   | 1.0            | 1.0            | 9.100           | 9.639           | 0.696   | 1.0            | 1.0            | 10.270         | 0.065           | 4.0D   | 1.975  |
|               | m              | m               |        | m       |                |                | m               | m               | m       |                |                | m              | m               |        | m      |

### AFBOUWEN ONDERWAPENING

Ligger 4

| Wap.          | X <sub>b</sub> | Y <sub>1b</sub> | Straal | Verank. | α <sub>1</sub> | α <sub>4</sub> | M <sub>0b</sub> | M <sub>0e</sub> | Verank. | α <sub>1</sub> | α <sub>4</sub> | X <sub>e</sub> | Y <sub>1e</sub> | Straal | Lengte |
|---------------|----------------|-----------------|--------|---------|----------------|----------------|-----------------|-----------------|---------|----------------|----------------|----------------|-----------------|--------|--------|
| 4R12q1(basis) | -0.170         | 0.040           | 4.0D   | 0.204   | 1.0            | 1.0            | 0.000           | 3.700           | 0.533   | 1.0            | 1.0            | 4.233          | 0.000           | -      | 4.442  |
| 4R12r1(basis) | 3.167          | 0.000           | -      | 0.533   | 1.0            | 1.0            | 3.700           | 6.400           | 0.754   | 1.0            | 1.0            | 7.154          | 0.000           | -      | 3.986  |
| 4R12s1(basis) | 5.646          | 0.000           | -      | 0.754   | 1.0            | 1.0            | 6.400           | 9.900           | 0.182   | 1.0            | 1.0            | 10.270         | 0.000           | -      | 4.624  |
|               | m              | m               |        | m       |                |                | m               | m               | m       |                |                | m              | m               |        | m      |

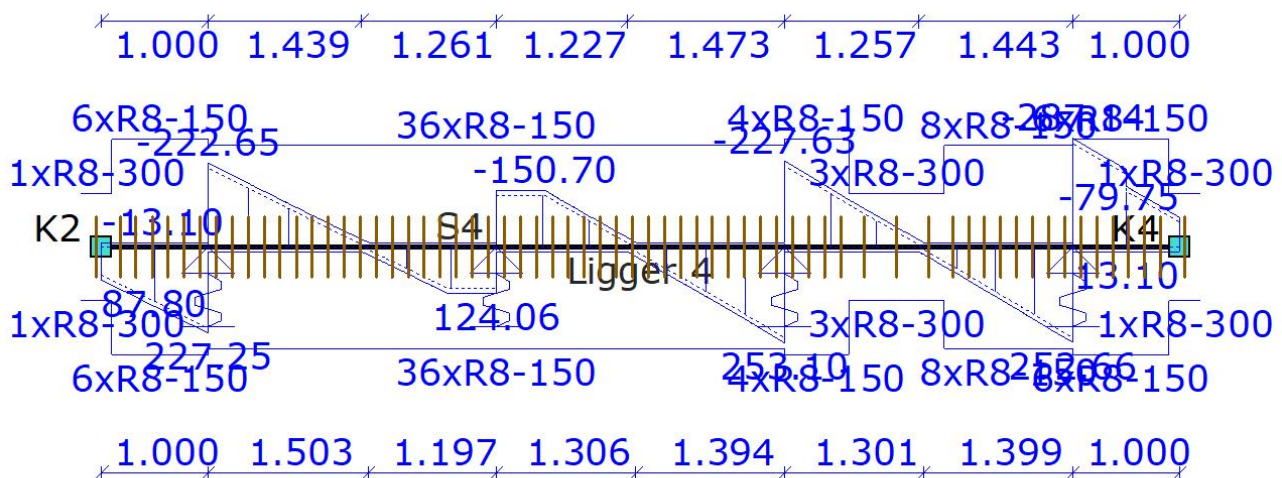
### AFBOUWEN FLANKWAPENING

Ligger 4

| Wap.  | X <sub>b</sub> | Verank. | M <sub>0b</sub> | M <sub>0e</sub> | Verank. | X <sub>e</sub> | Lengte |
|-------|----------------|---------|-----------------|-----------------|---------|----------------|--------|
| 1R8a2 | -0.170         | 0.200   | 0.000           | 10.100          | 0.200   | 10.270         | 10.440 |
|       | m              | m       | m               | m               | m       | m              | m      |

Dwarskrachtwap. (Afbouw)

Ligger 4



### AFBOUWEN BEUGELWAPENING

Ligger 4

| Wap.      | Oplegging | Zijde  | $X_b$  | $X_e$  | Lengte | $V_{Ed}$ | $V_{Rd}$ |
|-----------|-----------|--------|--------|--------|--------|----------|----------|
| 1xR8-300  | S1        | Links  | -0.200 | 0.100  | 0.300  | 129.54   | 142.47   |
| 6xR8-150  | O10       | Links  | 0.100  | 1.000  | 0.900  | 227.25   | 284.93   |
| 36xR8-150 | O10       | Rechts | 1.000  | 6.400  | 5.400  | 253.10   | 268.10   |
| 4xR8-150  | O18       | Rechts | 6.400  | 7.000  | 0.600  | 253.10   | 284.93   |
| 3xR8-300  | O18       | Rechts | 7.000  | 7.900  | 0.900  | 126.72   | 142.47   |
| 8xR8-150  | O9        | Links  | 7.900  | 9.100  | 1.200  | 287.14   | 268.10   |
| 6xR8-150  | O9        | Rechts | 9.100  | 10.000 | 0.900  | 287.14   | 284.93   |
| 1xR8-300  | S3        | Rechts | 10.000 | 10.300 | 0.300  | 96.04    | 142.47   |
|           |           |        | m      | m      | m      | kN       | kN       |

### AFBOUWEN HAARSPELDWAPENING

Ligger 4

| Wap.  | Positie | Haarspeldlengte | Straal | Totale lengte |
|-------|---------|-----------------|--------|---------------|
| 1R8e2 | Begin   | 0.200           | 4.0D   | 0.713         |
| 1R8f2 | Einde   | 0.200           | 4.0D   | 0.713         |
|       |         | m               |        | m             |

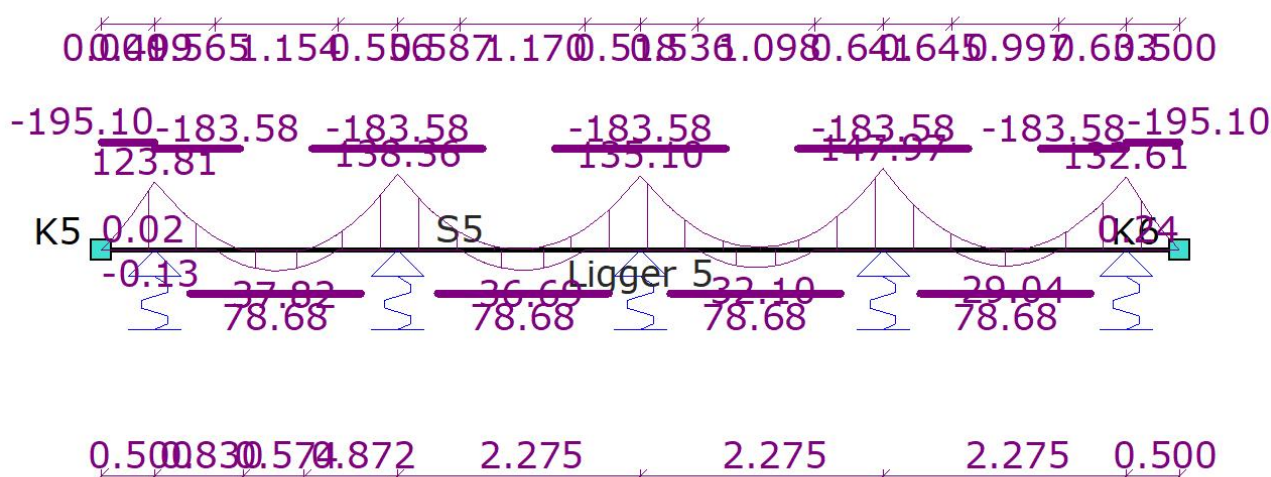
### DOORBUIGINGSBEREKENING (VERKORT)

Ligger 4

| Veld | Begin | Einde  | Limiet $w_{max}$ | Limiet $w_2+w_3$ | Abs. limiet | Zeeg | $w_1$ | $w_{max}$  | $w_2+w_3$  | UC( $w_{max}$ ) | UC( $w_2+w_3$ ) | Toetsing |
|------|-------|--------|------------------|------------------|-------------|------|-------|------------|------------|-----------------|-----------------|----------|
| V1   | 0.000 | 1.000  | L/250            | L/250            | 0.0         | 0.0  | -0.0  | -0.1<=4.0  | -0.1<=4.0  | 0.03            | 0.02            | Ok       |
| V2   | 1.000 | 3.700  | L/250            | L/250            | 0.0         | 0.0  | -0.1  | -0.2<=10.8 | -0.1<=10.8 | 0.02            | 0.01            | Ok       |
| V3   | 3.700 | 6.400  | L/250            | L/250            | 0.0         | 0.0  | -0.0  | -0.1<=10.8 | 0.1<=10.8  | 0.01            | 0.01            | Ok       |
| V4   | 6.400 | 9.100  | L/250            | L/250            | 0.0         | 0.0  | -0.2  | -0.4<=10.8 | -0.3<=10.8 | 0.04            | 0.02            | Ok       |
| V5   | 9.100 | 9.600  | L/250            | L/250            | 0.0         | 0.0  | -0.0  | -0.1<=2.0  | -0.0<=2.0  | 0.03            | 0.01            | Ok       |
| V6   | 9.600 | 10.100 | L/250            | L/250            | 0.0         | 0.0  | -0.0  | -0.0<=2.0  | -0.0<=2.0  | 0.02            | 0.00            | Ok       |
|      | m     | m      |                  |                  | mm          | mm   | mm    | mm         | mm         |                 |                 |          |

Langswap. (Capaciteit)

Ligger 5



### DOORSNEDE BOVENWAPENING

Ligger 5

| Positie | $M_{Ed}$ | Hoofd Basis | bijleg | $A_{s,ben}$     | $A_{s,toegepast}$ | Verdeel Basis | bijleg | $A_{s,ben}$     | $A_{s,toegepast}$ | Scheur $D_{max}$ | $S_{max}$ | Toetsing |
|---------|----------|-------------|--------|-----------------|-------------------|---------------|--------|-----------------|-------------------|------------------|-----------|----------|
| 0.500   | 123.81   | 4R12        | 3R16   | 652             | 1056              |               |        |                 |                   | 26.8             | 246       |          |
| 0.500   | 123.81   | 4R12        | 3R16   | 712             | 1056              |               |        |                 |                   | 23.6             | 230       |          |
| 2.775   | 138.36   | 4R12        | 3R16   | 796             | 1056              |               |        |                 |                   | 17.2             | 195       |          |
| 5.050   | 135.10   | 4R12        | 3R16   | 777             | 1056              |               |        |                 |                   | 18.3             | 203       |          |
| 7.325   | 147.97   | 4R12        | 3R16   | 851             | 1056              |               |        |                 |                   | 15.4             | 174       |          |
| m       | kNm      |             |        | mm <sup>2</sup> | mm <sup>2</sup>   |               |        | mm <sup>2</sup> | mm <sup>2</sup>   | mm               | mm        |          |

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Verdeel Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 9.600   | 132.61          | 4R12        | 3R16   | 762                | 1056                     |               |        |                    |                          | 19.9                    | 211              |          |
| 9.600   | 132.61          | 4R12        | 3R16   | 701                | 1056                     |               |        |                    |                          | 23.3                    | 228              |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

#### DOORSNEDE ONDERWAPENING

Ligger 5

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Verdeel Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 1.631   | 37.82           | 4R12        |        | 217                | 452                      |               |        |                    |                          | 36.3                    | 300              |          |
| 3.953   | 36.69           | 4R12        |        | 211                | 452                      |               |        |                    |                          | 36.3                    | 300              |          |
| 6.127   | 32.10           | 4R12        |        | 185                | 452                      |               |        |                    |                          | 36.3                    | 300              |          |
| 8.471   | 29.04           | 4R12        |        | 167                | 452                      |               |        |                    |                          | 36.3                    | 300              |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

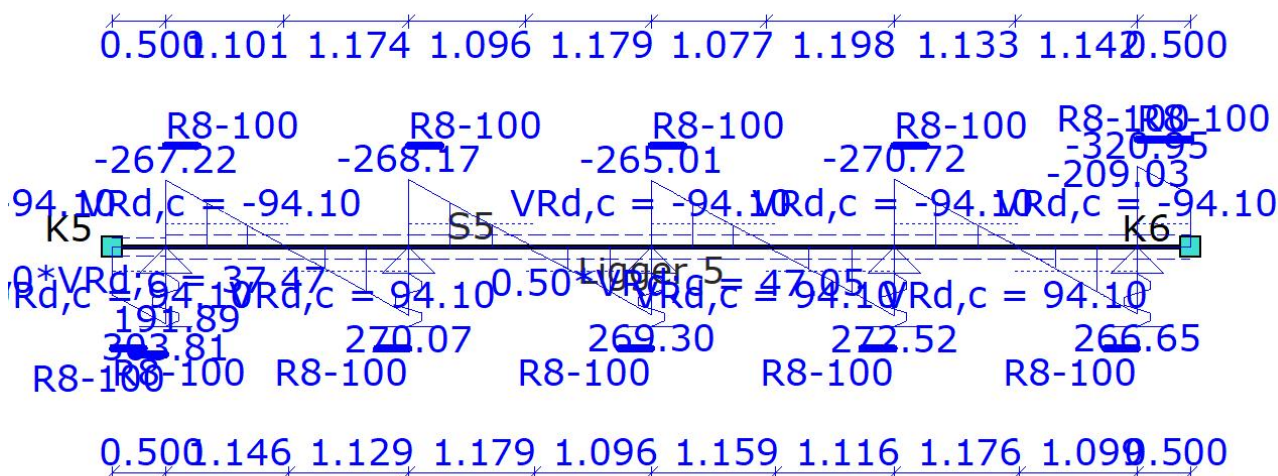
#### DOORSNEDE FLANKWAPENING

Ligger 5

| Positie | M <sub>x</sub> Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> |
|---------|----------------------|--------|--------------------|--------------------------|
| 0.000   | 0.00 1R8             |        | 0                  | 50                       |
| m       | kNm                  |        | mm <sup>2</sup>    | mm <sup>2</sup>          |

Dwarskrachtwap. (Capaciteit)

Ligger 5



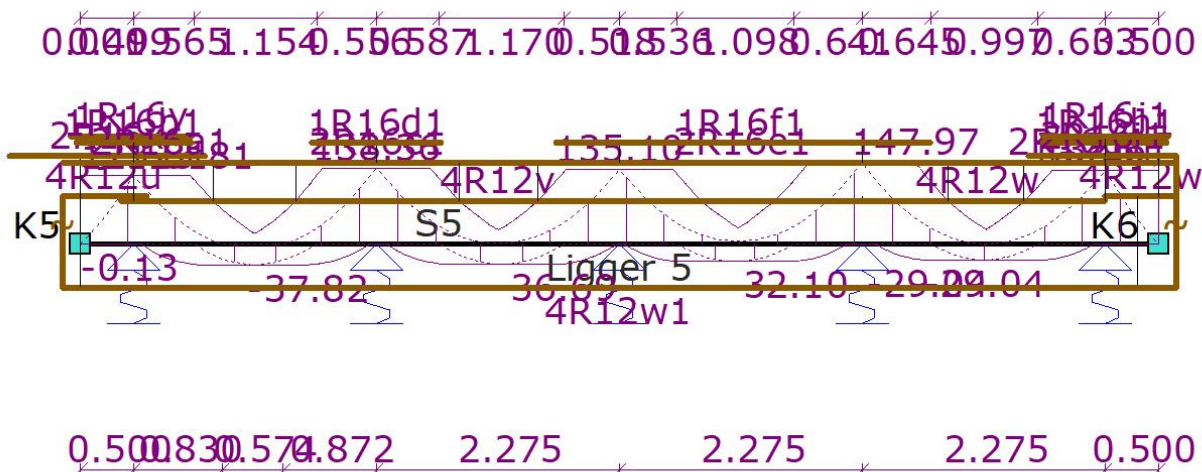
#### DOORSNEDE BEUGELWAPENING

Ligger 5

| Positie | Zijde  | V <sub>Ed</sub> | Basis  | Totaal | A <sub>s,benV</sub> | A <sub>s,benT</sub> | A <sub>s,toegepast</sub> | V <sub>Rd,c</sub> | V <sub>Rd</sub> | V <sub>Rdi</sub> | V <sub>Edi</sub> |
|---------|--------|-----------------|--------|--------|---------------------|---------------------|--------------------------|-------------------|-----------------|------------------|------------------|
| 0.000   | Rechts | 191.89          | R8-300 | R8-100 | 480                 | 0                   | 1005                     | 74.94             | 402.15          |                  |                  |
| 0.500   | Links  | 303.81          | R8-300 | R8-100 | 715                 | 0                   | 1005                     | 94.10             | 427.40          |                  |                  |
| 0.500   | Rechts | 267.22          | R8-300 | R8-100 | 668                 | 0                   | 1005                     | 94.10             | 402.15          |                  |                  |
| 2.775   | Links  | 270.07          | R8-300 | R8-100 | 675                 | 0                   | 1005                     | 94.10             | 402.15          |                  |                  |
| 2.775   | Rechts | 268.17          | R8-300 | R8-100 | 670                 | 0                   | 1005                     | 94.10             | 402.15          |                  |                  |
| 5.050   | Links  | 269.30          | R8-300 | R8-100 | 673                 | 0                   | 1005                     | 94.10             | 402.15          |                  |                  |
| 5.050   | Rechts | 265.01          | R8-300 | R8-100 | 662                 | 0                   | 1005                     | 94.10             | 402.15          |                  |                  |
| 7.325   | Links  | 272.52          | R8-300 | R8-100 | 681                 | 0                   | 1005                     | 94.10             | 402.15          |                  |                  |
| 7.325   | Rechts | 270.72          | R8-300 | R8-100 | 677                 | 0                   | 1005                     | 94.10             | 402.15          |                  |                  |
| 9.600   | Links  | 266.65          | R8-300 | R8-100 | 667                 | 0                   | 1005                     | 94.10             | 402.15          |                  |                  |
| 9.600   | Rechts | 320.95          | R8-300 | R8-100 | 755                 | 0                   | 1005                     | 94.10             | 427.40          |                  |                  |
| 10.100  | Links  | 209.03          | R8-300 | R8-100 | 492                 | 0                   | 1005                     | 74.81             | 427.40          |                  |                  |
| m       |        | kN              |        |        | mm <sup>2</sup>     | mm <sup>2</sup>     | mm <sup>2</sup>          | kN                | kN              | kN               | kN               |

Langswap. (Afbouw)

Ligger 5



#### AFBOUWEN BOVENWAPENING

Ligger 5

| Wap.           | X <sub>b</sub> | Y <sub>1b</sub> | Straal | Verank. | α <sub>1</sub> | α <sub>4</sub> | M <sub>0b</sub> | M <sub>0e</sub> | Verank. | α <sub>1</sub> | α <sub>4</sub> | X <sub>e</sub> | Y <sub>1e</sub> | Straal | Lengte |
|----------------|----------------|-----------------|--------|---------|----------------|----------------|-----------------|-----------------|---------|----------------|----------------|----------------|-----------------|--------|--------|
| 4R12u(basis)   | -0.170         | 0.776           | 4.0D   | 0.940   | 1.0            | 1.0            | 0.000           | 0.500           | 0.120   | 1.0            | 1.0            | 0.620          | 0.000           | -      | 1.566  |
| 4R12v(basis)   | 0.380          | 0.000           | -      | 0.120   | 1.0            | 1.0            | 0.500           | 7.325           | 0.120   | 1.0            | 1.0            | 7.445          | 0.000           | -      | 7.065  |
| 4R12w(basis)   | 7.205          | 0.000           | -      | 0.120   | 1.0            | 1.0            | 7.325           | 9.900           | 1.007   | 1.0            | 1.0            | 10.264         | 0.643           | 4.0D   | 3.702  |
| 2R16x(bijleg)  | -0.666         | 0.000           | -      | 0.666   | 1.0            | 1.0            | 0.000           | 0.500           | 0.666   | 1.0            | 1.0            | 1.166          | 0.000           | -      | 1.832  |
| 1R16y(bijleg)  | -0.090         | 0.000           | -      | 0.539   | 1.0            | 1.0            | 0.500           | 0.500           | 0.539   | 1.0            | 1.0            | 1.039          | 0.000           | -      | 1.129  |
| 2R16a1(bijleg) | -0.166         | 0.000           | -      | 0.666   | 1.0            | 1.0            | 0.500           | 1.244           | 0.423   | 1.0            | 1.0            | 1.667          | 0.000           | -      | 1.834  |
| 1R16b1(bijleg) | -0.039         | 0.000           | -      | 0.539   | 1.0            | 1.0            | 0.500           | 0.500           | 0.539   | 1.0            | 1.0            | 1.039          | 0.000           | -      | 1.079  |
| 2R16c1(bijleg) | 1.595          | 0.000           | -      | 0.423   | 1.0            | 1.0            | 2.018           | 3.553           | 0.423   | 1.0            | 1.0            | 3.977          | 0.000           | -      | 2.382  |
| 1R16d1(bijleg) | 2.172          | 0.000           | -      | 0.603   | 1.0            | 1.0            | 2.775           | 2.775           | 0.603   | 1.0            | 1.0            | 3.378          | 0.000           | -      | 1.205  |
| 2R16e1(bijleg) | 3.861          | 0.000           | -      | 0.423   | 1.0            | 1.0            | 4.285           | 8.130           | 0.423   | 1.0            | 1.0            | 8.554          | 0.000           | -      | 4.692  |
| 1R16f1(bijleg) | 4.461          | 0.000           | -      | 0.589   | 1.0            | 1.0            | 5.050           | 7.325           | 0.645   | 1.0            | 1.0            | 7.970          | 0.000           | -      | 3.508  |
| 2R16g1(bijleg) | 8.419          | 0.000           | -      | 0.423   | 1.0            | 1.0            | 8.843           | 9.600           | 0.714   | 1.0            | 1.0            | 10.270         | 0.044           | 4.0D   | 1.894  |
| 1R16h1(bijleg) | 9.022          | 0.000           | -      | 0.578   | 1.0            | 1.0            | 9.600           | 9.600           | 0.578   | 1.0            | 1.0            | 10.178         | 0.000           | -      | 1.155  |
| 2R16i1(bijleg) | 8.886          | 0.000           | -      | 0.714   | 1.0            | 1.0            | 9.600           | 10.100          | 0.714   | 1.0            | 1.0            | 10.270         | 0.544           | 4.0D   | 1.927  |
| 1R16j1(bijleg) | 9.022          | 0.000           | -      | 0.578   | 1.0            | 1.0            | 9.600           | 9.600           | 0.578   | 1.0            | 1.0            | 10.190         | 0.000           | -      | 1.168  |
|                | m              | m               |        | m       |                |                | m               | m               | m       |                |                | m              | m               |        | m      |

#### AFBOUWEN ONDERWAPENING

Ligger 5

| Wap.          | X <sub>b</sub> | Y <sub>1b</sub> | Straal | Verank. | α <sub>1</sub> | α <sub>4</sub> | M <sub>0b</sub> | M <sub>0e</sub> | Verank. | α <sub>1</sub> | α <sub>4</sub> | X <sub>e</sub> | Y <sub>1e</sub> | Straal | Lengte |
|---------------|----------------|-----------------|--------|---------|----------------|----------------|-----------------|-----------------|---------|----------------|----------------|----------------|-----------------|--------|--------|
| 4R12w1(basis) | -0.170         | 0.359           | 4.0D   | 0.523   | 1.0            | 1.0            | 0.000           | 9.900           | 0.570   | 1.0            | 1.0            | 10.264         | 0.206           | 4.0D   | 10.999 |
|               | m              | m               |        | m       |                |                | m               | m               | m       |                |                | m              | m               |        | m      |

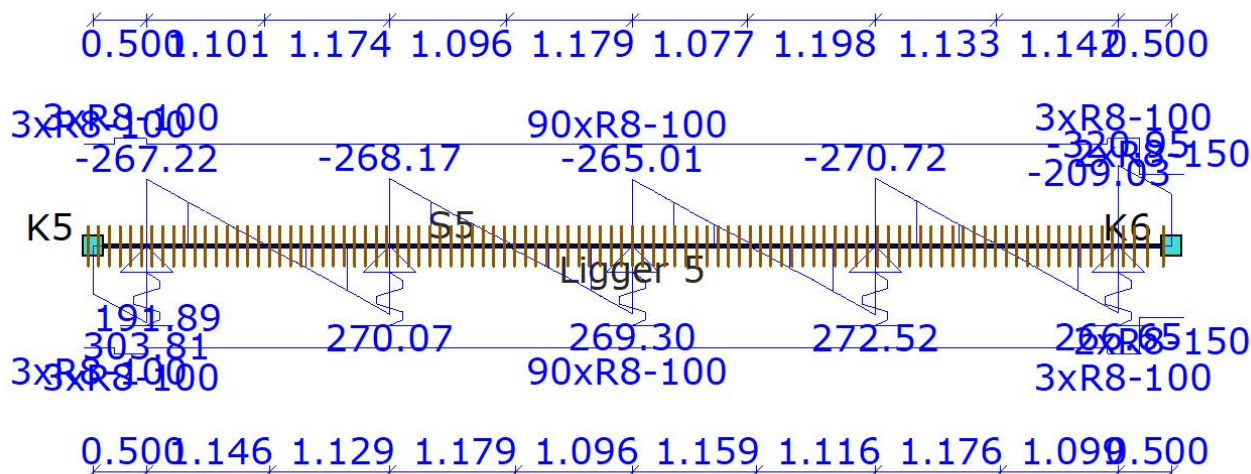
#### AFBOUWEN FLANKWAPENING

Ligger 5

| Wap.  | X <sub>b</sub> | Verank. | M <sub>0b</sub> | M <sub>0e</sub> | Verank. | X <sub>e</sub> | Lengte |
|-------|----------------|---------|-----------------|-----------------|---------|----------------|--------|
| 1R8a2 | -0.170         | 0.200   | 0.000           | 10.100          | 0.200   | 10.270         | 10.440 |
|       | m              | m       | m               | m               | m       | m              | m      |

Dwarskrachtwap. (Afbouw)

Ligger 5



#### AFBOUWEN BEUGELWAPENING

Ligger 5

| Wap.      | Oplegging | Zijde  | $X_b$  | $X_e$  | Lengte | $V_{Ed}$ | $V_{Rd}$ |
|-----------|-----------|--------|--------|--------|--------|----------|----------|
| 3xR8-100  | S1        | Rechts | -0.100 | 0.200  | 0.300  | 259.04   | 402.15   |
| 3xR8-100  | O12       | Links  | 0.200  | 0.500  | 0.300  | 303.81   | 427.40   |
| 90xR8-100 | O12       | Rechts | 0.500  | 9.500  | 9.000  | 303.81   | 402.15   |
| 3xR8-100  | O16       | Rechts | 9.500  | 9.800  | 0.300  | 320.95   | 427.40   |
| 2xR8-150  | S3        | Links  | 9.800  | 10.225 | 0.425  | 276.18   | 284.93   |
|           |           |        | m      | m      | m      | kN       | kN       |

#### AFBOUWEN HAARSPELDWAPENING

Ligger 5

| Wap.  | Positie | Haarspeldlengte | Straal | Totale lengte |
|-------|---------|-----------------|--------|---------------|
| 1R8f2 | Begin   | 0.200           | 4.0D   | 0.713         |
| 1R8f2 | Einde   | 0.200           | 4.0D   | 0.713         |
|       |         | m               |        | m             |

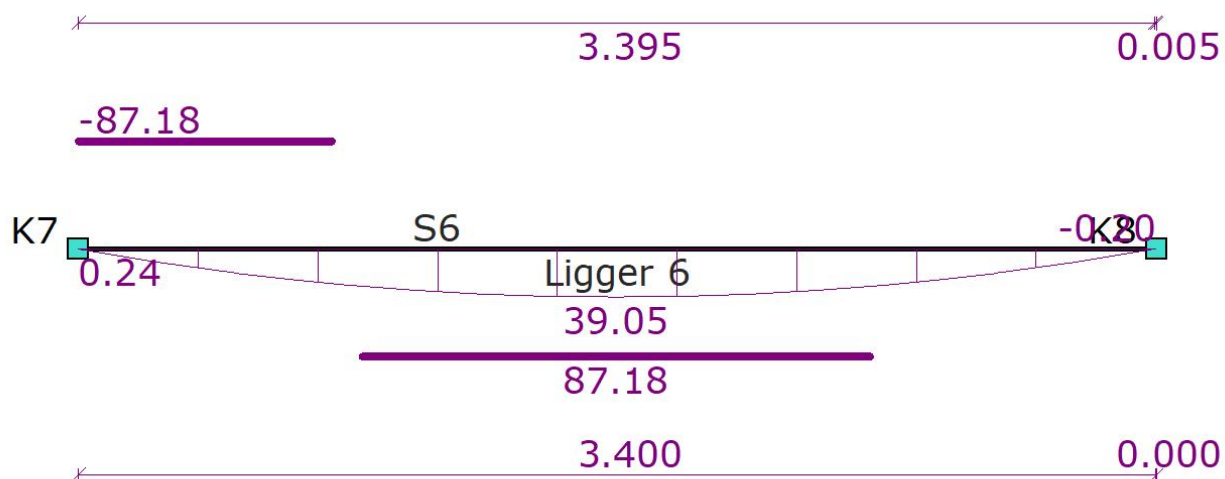
#### DOORBUIGINGSBEREKENING (VERKORT)

Ligger 5

| Veld | Begin | Einde  | Limiet $w_{max}$ | Limiet $w_2+w_3$ | Abs. limiet | Zeeg | $w_1$ | $w_{max}$ | $w_2+w_3$ | UC( $w_{max}$ ) | UC( $w_2+w_3$ ) | Toetsing |
|------|-------|--------|------------------|------------------|-------------|------|-------|-----------|-----------|-----------------|-----------------|----------|
| V1   | 0.000 | 0.500  | L/250            | L/250            | 0.0         | 0.0  | -0.0  | -0.0<=2.0 | -0.0<=2.0 | 0.01            | 0.01            | Ok       |
| V2   | 0.500 | 2.775  | L/250            | L/250            | 0.0         | 0.0  | -0.1  | -0.1<=9.1 | -0.1<=9.1 | 0.01            | 0.01            | Ok       |
| V3   | 2.775 | 5.050  | L/250            | L/250            | 0.0         | 0.0  | -0.1  | -0.2<=9.1 | -0.1<=9.1 | 0.02            | 0.01            | Ok       |
| V4   | 5.050 | 7.325  | L/250            | L/250            | 0.0         | 0.0  | -0.1  | -0.2<=9.1 | -0.1<=9.1 | 0.03            | 0.01            | Ok       |
| V5   | 7.325 | 9.600  | L/250            | L/250            | 0.0         | 0.0  | -0.1  | -0.2<=9.1 | -0.1<=9.1 | 0.02            | 0.01            | Ok       |
| V6   | 9.600 | 10.100 | L/250            | L/250            | 0.0         | 0.0  | -0.0  | -0.0<=2.0 | -0.0<=2.0 | 0.01            | 0.01            | Ok       |
|      | m     | m      |                  |                  | mm          | mm   | mm    | mm        | mm        |                 |                 |          |

Langswap. (Capaciteit)

Ligger 6



#### DOORSNEDE BOVENWAPENING

Ligger 6

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Verdeel Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 0.000   | 0.00            | 4R12        |        | 0                  | 452                      |               |        |                    |                          |                         |                  |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

#### DOORSNEDE ONDERWAPENING

Ligger 6

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Verdeel Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 1.696   | 39.05           | 4R12        |        | 199                | 452                      |               |        |                    |                          | 36.3                    | 300              |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

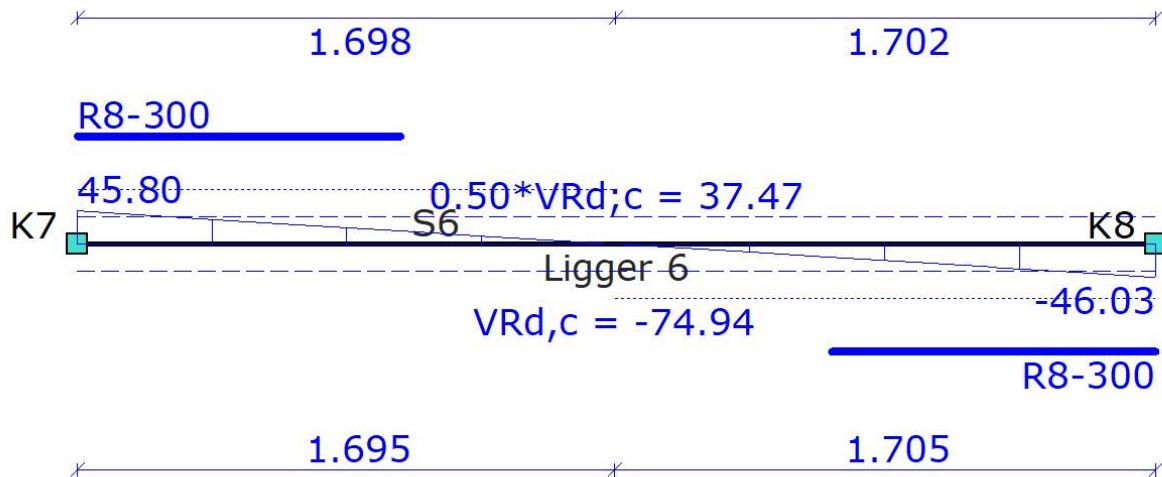
#### DOORSNEDE FLANKWAPENING

Ligger 6

| Positie | M <sub>x</sub> | Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> |
|---------|----------------|-------|--------|--------------------|--------------------------|
| 0.000   | 0.21           | 1R8   |        | 0                  | 50                       |
| m       | kNm            |       |        | mm <sup>2</sup>    | mm <sup>2</sup>          |

Dwarskrachtwap. (Capaciteit)

Ligger 6



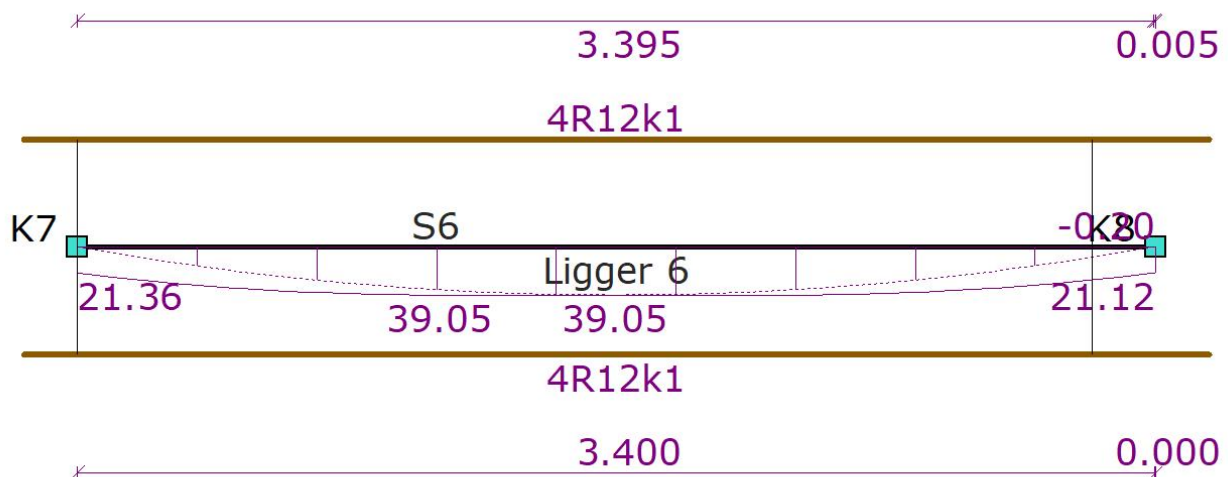
#### DOORSNEDE BEUGELWAPENING

Ligger 6

| Positie | Zijde  | $V_{Ed}$ | Basis  | Totaal | $A_{s,benV}$    | $A_{s,benT}$    | $A_{s,toegepast}$ | $V_{Rd,c}$ | $V_{Rd}$ | $V_{Rdi}$ | $V_{Edi}$ |
|---------|--------|----------|--------|--------|-----------------|-----------------|-------------------|------------|----------|-----------|-----------|
| 0.000   | Rechts | 45.80    | R8-300 | R8-300 | 103             | 0               | 335               | 74.94      | 148.55   |           |           |
| 3.400   | Links  | 46.03    | R8-300 | R8-300 | 104             | 0               | 335               | 74.94      | 148.55   |           |           |
| m       |        | kN       |        |        | mm <sup>2</sup> | mm <sup>2</sup> | mm <sup>2</sup>   | kN         | kN       | kN        | kN        |

Langswap. (Afbouw)

Ligger 6



#### AFBOUWEN BOVENWAPENING

Ligger 6

| Wap.          | $X_b$  | $Y1_b$ | Straal | Verank. | $\alpha_1$ | $\alpha_4$ | $M0_b$ | $M0_e$ | Verank. | $\alpha_1$ | $\alpha_4$ | $X_e$ | $Y1_e$ | Straal | Lengte |
|---------------|--------|--------|--------|---------|------------|------------|--------|--------|---------|------------|------------|-------|--------|--------|--------|
| 4R12k1(basis) | -0.170 | 0.000  | -      | 0.120   | 1.0        | 1.0        | 0.000  | 3.200  | 0.120   | 1.0        | 1.0        | 3.570 | 0.000  | -      | 3.740  |
|               | m      | m      |        | m       |            |            | m      | m      | m       |            |            | m     | m      |        | m      |

### AFBOUWEN ONDERWAPENING

Ligger 6

| Wap.          | X <sub>b</sub> | Y <sub>1b</sub> | Straal | Verank. | α <sub>1</sub> | α <sub>4</sub> | M <sub>0b</sub> | M <sub>0e</sub> | Verank. | α <sub>1</sub> | α <sub>4</sub> | X <sub>e</sub> | Y <sub>1e</sub> | Straal | Lengte |
|---------------|----------------|-----------------|--------|---------|----------------|----------------|-----------------|-----------------|---------|----------------|----------------|----------------|-----------------|--------|--------|
| 4R12k1(basis) | -0.170         | 0.000           | -      | 0.125   | 1.0            | 1.0            | 0.000           | 3.200           | 0.125   | 1.0            | 1.0            | 3.570          | 0.000           | -      | 3.740  |
|               | m              | m               |        | m       |                |                | m               | m               | m       |                |                | m              | m               |        | m      |

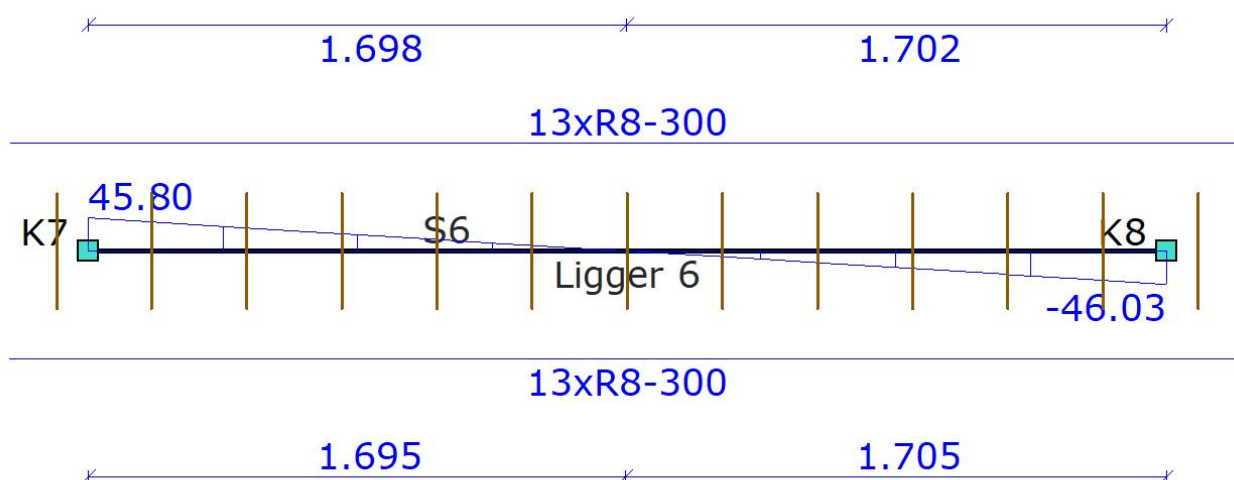
### AFBOUWEN FLANKWAPENING

Ligger 6

| Wap.  | X <sub>b</sub> | Verank. | M <sub>0b</sub> | M <sub>0e</sub> | Verank. | X <sub>e</sub> | Lengte |
|-------|----------------|---------|-----------------|-----------------|---------|----------------|--------|
| 1R8b2 | -0.170         | 0.200   | 0.000           | 3.400           | 0.200   | 3.570          | 3.740  |
|       | m              | m       | m               | m               | m       | m              | m      |

Dwarskrachtwap. (Afbouw)

Ligger 6



### AFBOUWEN BEUGELWAPENING

Ligger 6

| Wap.      | Oplegging | Zijde  | X <sub>b</sub> | X <sub>e</sub> | Lengte | V <sub>Ed</sub> | V <sub>Rd</sub> |
|-----------|-----------|--------|----------------|----------------|--------|-----------------|-----------------|
| 13xR8-300 | S8        | Rechts | -0.250         | 3.650          | 3.900  | 46.03           | 148.55          |
|           |           |        | m              | m              | m      | kN              | kN              |

### AFBOUWEN HAARSPELDWAPENING

Ligger 6

| Wap.  | Positie | Haarspeldlengte | Straal | Totale lengte |
|-------|---------|-----------------|--------|---------------|
| 1R8e2 | Begin   | 0.200           | 4.0D   | 0.713         |
| 1R8g2 | Einde   | 0.200           | 4.0D   | 0.713         |
|       |         | m               |        | m             |

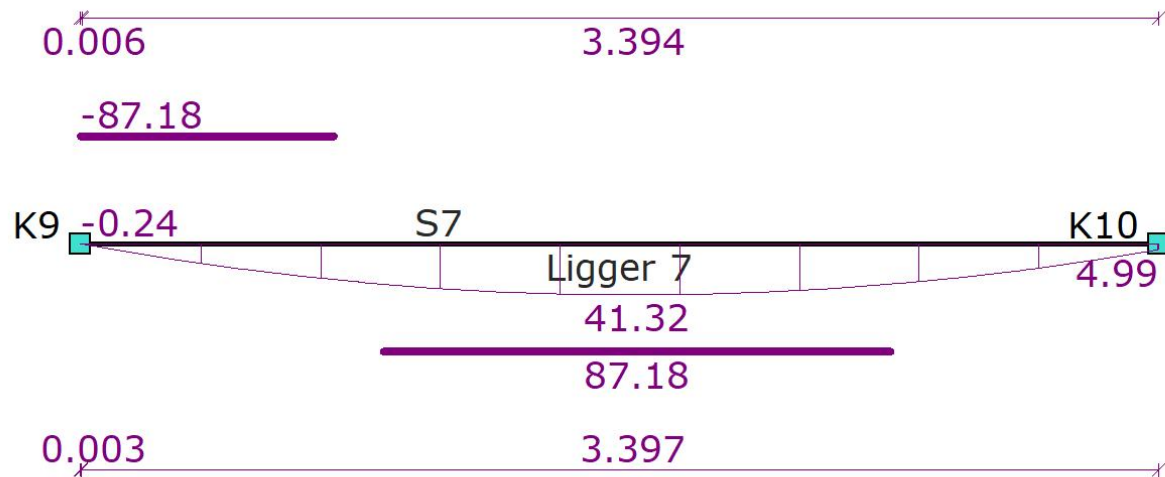
### DOORBUIGINGSBEREKENING (VERKORT)

Ligger 6

| Veld | Begin | Einde | Limiet w <sub>max</sub> | Limiet w <sub>2+w3</sub> | Abs. limiet | Zeeg | w <sub>1</sub> | w <sub>max</sub> | w <sub>2+w3</sub> | UC(w <sub>max</sub> ) | UC(w <sub>2+w3</sub> ) | Toetsing |
|------|-------|-------|-------------------------|--------------------------|-------------|------|----------------|------------------|-------------------|-----------------------|------------------------|----------|
| V1   | 0.000 | 3.400 | L/250                   | L/250                    | 0.0         | 0.0  | 0.2            | 0.7<=13.6        | 0.5<=13.6         | 0.05                  | 0.04                   | Ok       |
|      | m     | m     |                         |                          | mm          | mm   | mm             | mm               | mm                |                       |                        |          |

Langswap. (Capaciteit)

Ligger 7



#### DOORSNEDE BOVENWAPENING

Ligger 7

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Verdeel Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 0.000   | 0.00            | 4R12        |        | 0                  | 452                      |               |        |                    |                          |                         |                  |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

#### DOORSNEDE ONDERWAPENING

Ligger 7

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Verdeel Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 1.755   | 41.32           | 4R12        |        | 211                | 452                      |               |        |                    |                          | 36.3                    | 300              |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

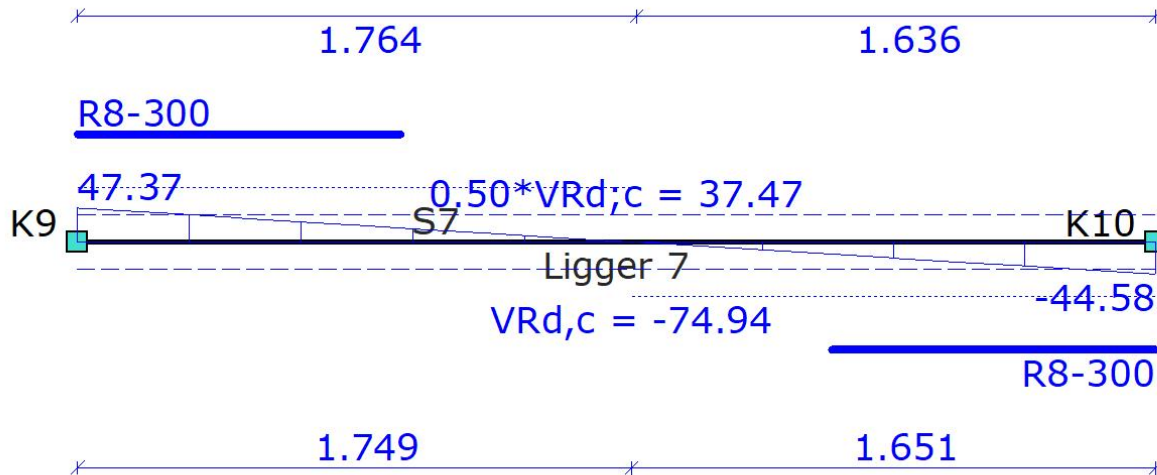
#### DOORSNEDE FLANKWAPENING

Ligger 7

| Positie | M <sub>x</sub> | Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> |
|---------|----------------|-------|--------|--------------------|--------------------------|
| 0.000   | 0.49           | 1R8   |        | 0                  | 50                       |
| m       | kNm            |       |        | mm <sup>2</sup>    | mm <sup>2</sup>          |

Dwarskrachtwap. (Capaciteit)

Ligger 7



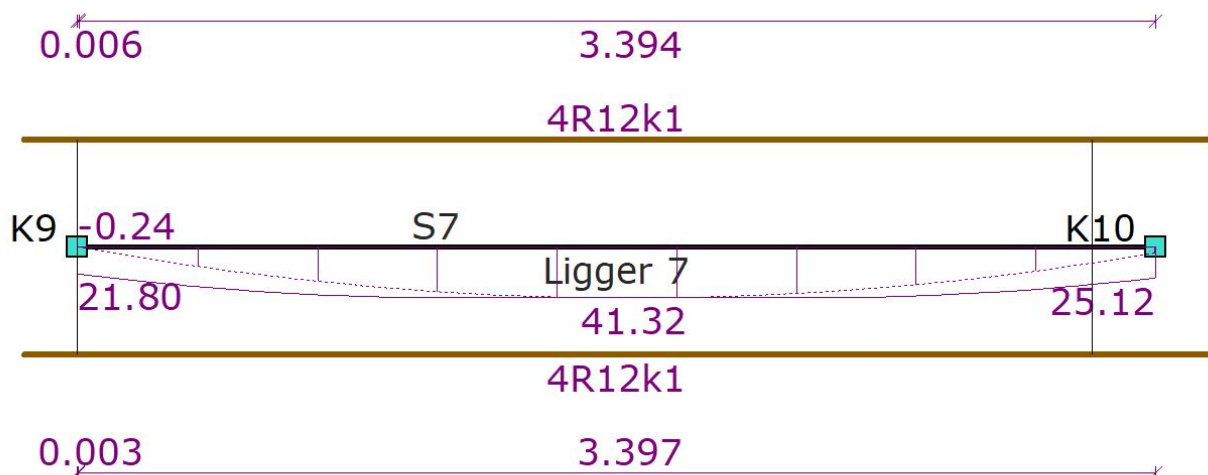
#### DOORSNEDE BEUGELWAPENING

Ligger 7

| Positie | Zijde  | V <sub>Ed</sub> | Basis  | Totaal | A <sub>s,benV</sub> | A <sub>s,benT</sub> | A <sub>s,toegepast</sub> | V <sub>Rd,c</sub> | V <sub>Rd</sub> | V <sub>Rdi</sub> | V <sub>Edi</sub> |
|---------|--------|-----------------|--------|--------|---------------------|---------------------|--------------------------|-------------------|-----------------|------------------|------------------|
| 0.000   | Rechts | 47.37           | R8-300 | R8-300 | 107                 | 0                   | 335                      | 74.94             | 148.55          |                  |                  |
| 3.400   | Links  | 44.58           | R8-300 | R8-300 | 101                 | 0                   | 335                      | 74.94             | 148.55          |                  |                  |
| m       |        | kN              |        |        | mm <sup>2</sup>     | mm <sup>2</sup>     | mm <sup>2</sup>          | kN                | kN              | kN               | kN               |

Langswap. (Afbouw)

Ligger 7



#### AFBOUWEN BOVENWAPENING

Ligger 7

| Wap.          | X <sub>b</sub> | Y <sub>1b</sub> | Straal | Verank. | α <sub>1</sub> | α <sub>4</sub> | M <sub>0b</sub> | M <sub>0e</sub> | Verank. | α <sub>1</sub> | α <sub>4</sub> | X <sub>e</sub> | Y <sub>1e</sub> | Straal | Lengte |
|---------------|----------------|-----------------|--------|---------|----------------|----------------|-----------------|-----------------|---------|----------------|----------------|----------------|-----------------|--------|--------|
| 4R12k1(basis) | -0.170         | 0.000           | -      | 0.120   | 1.0            | 1.0            | 0.000           | 3.200           | 0.120   | 1.0            | 1.0            | 3.570          | 0.000           | -      | 3.740  |
|               | m              | m               |        | m       |                |                | m               | m               | m       |                |                | m              | m               |        | m      |

### AFBOUWEN ONDERWAPENING

Ligger 7

| Wap.          | X <sub>b</sub> | Y <sub>1b</sub> | Straal | Verank. | α <sub>1</sub> | α <sub>4</sub> | M <sub>0b</sub> | M <sub>0e</sub> | Verank. | α <sub>1</sub> | α <sub>4</sub> | X <sub>e</sub> | Y <sub>1e</sub> | Straal | Lengte |
|---------------|----------------|-----------------|--------|---------|----------------|----------------|-----------------|-----------------|---------|----------------|----------------|----------------|-----------------|--------|--------|
| 4R12k1(basis) | -0.170         | 0.000           | -      | 0.129   | 1.0            | 1.0            | 0.000           | 3.200           | 0.122   | 1.0            | 1.0            | 3.570          | 0.000           | -      | 3.740  |
|               | m              | m               |        | m       |                |                | m               | m               | m       |                |                | m              | m               |        | m      |

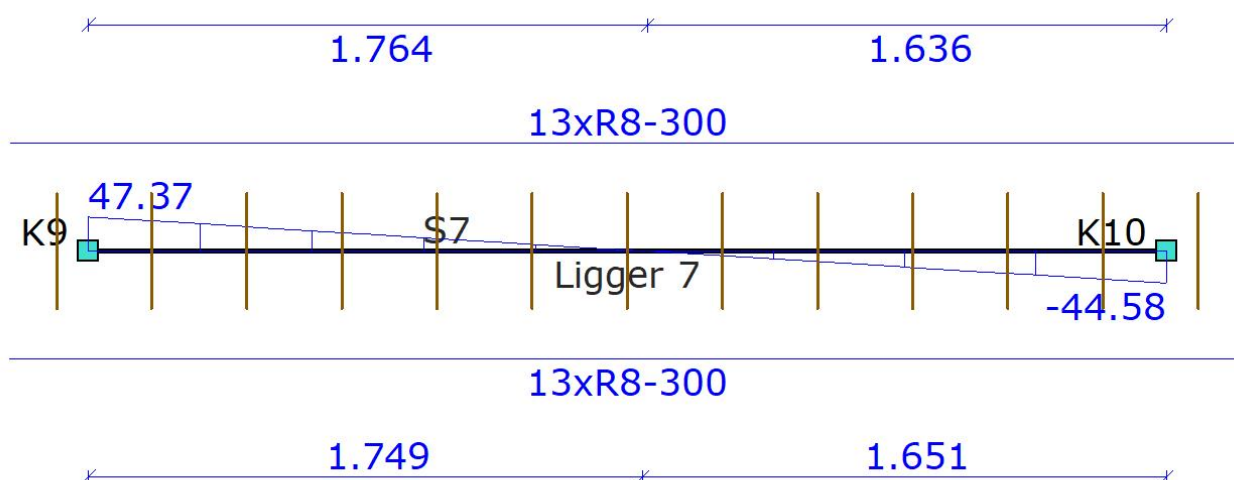
### AFBOUWEN FLANKWAPENING

Ligger 7

| Wap.  | X <sub>b</sub> | Verank. | M <sub>0b</sub> | M <sub>0e</sub> | Verank. | X <sub>e</sub> | Lengte |
|-------|----------------|---------|-----------------|-----------------|---------|----------------|--------|
| 1R8b2 | -0.170         | 0.200   | 0.000           | 3.400           | 0.200   | 3.570          | 3.740  |
|       | m              | m       | m               | m               | m       | m              | m      |

Dwarskrachtwap. (Afbouw)

Ligger 7



### AFBOUWEN BEUGELWAPENING

Ligger 7

| Wap.      | Oplegging | Zijde  | X <sub>b</sub> | X <sub>e</sub> | Lengte | V <sub>Ed</sub> | V <sub>Rd</sub> |
|-----------|-----------|--------|----------------|----------------|--------|-----------------|-----------------|
| 13xR8-300 | S8        | Rechts | -0.250         | 3.650          | 3.900  | 47.37           | 148.55          |
|           |           |        | m              | m              | m      | kN              | kN              |

### AFBOUWEN HAARSPELDWAPENING

Ligger 7

| Wap.  | Positie | Haarspeldlengte | Straal | Totale lengte |
|-------|---------|-----------------|--------|---------------|
| 1R8e2 | Begin   | 0.200           | 4.0D   | 0.713         |
| 1R8g2 | Einde   | 0.200           | 4.0D   | 0.713         |
|       |         | m               |        | m             |

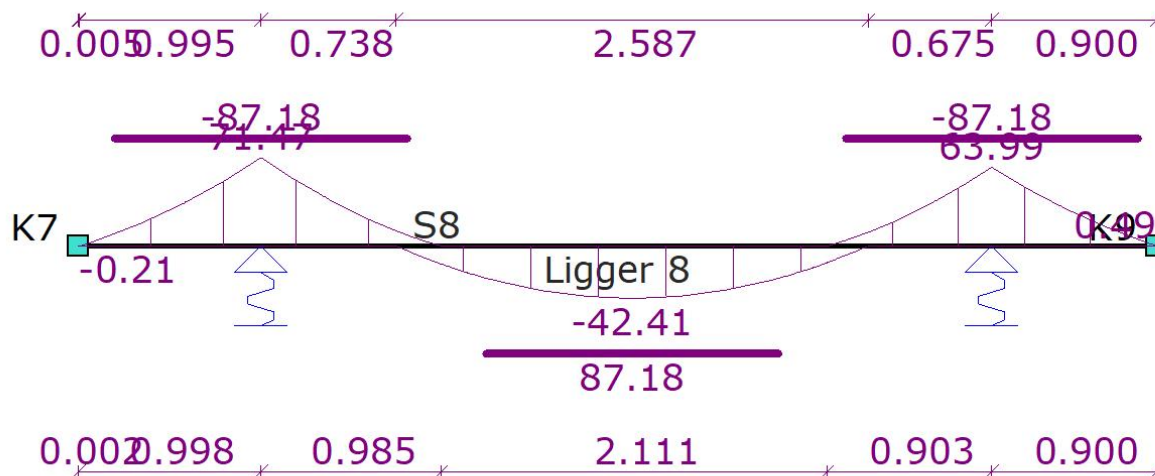
### DOORBUIGINGSBEREKENING (VERKORT)

Ligger 7

| Veld | Begin | Einde | Limiet w <sub>max</sub> | Limiet w <sub>2+w3</sub> | Abs. limiet | Zeeg | w <sub>1</sub> | w <sub>max</sub> | w <sub>2+w3</sub> | UC(w <sub>max</sub> ) | UC(w <sub>2+w3</sub> ) | Toetsing |
|------|-------|-------|-------------------------|--------------------------|-------------|------|----------------|------------------|-------------------|-----------------------|------------------------|----------|
| V1   | 0.000 | 3.400 | L/250                   | L/250                    | 0.0         | 0.0  | 0.3            | 0.8<=13.6        | 0.5<=13.6         | 0.06                  | 0.04                   | Ok       |
|      | m     | m     |                         |                          | mm          | mm   | mm             | mm               | mm                |                       |                        |          |

Langswap. (Capaciteit)

Ligger 8



#### DOORSNEDE BOVENWAPENING

Ligger 8

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Verdeel Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 1.000   | 71.47           | 4R12        |        | 371                | 452                      |               |        |                    |                          | 15.4                    | 169              |          |
| 5.000   | 63.99           | 4R12        |        | 331                | 452                      |               |        |                    |                          | 19.1                    | 204              |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

#### DOORSNEDE ONDERWAPENING

Ligger 8

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Verdeel Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 3.032   | 42.41           | 4R12        |        | 219                | 452                      |               |        |                    |                          | 36.3                    | 300              |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

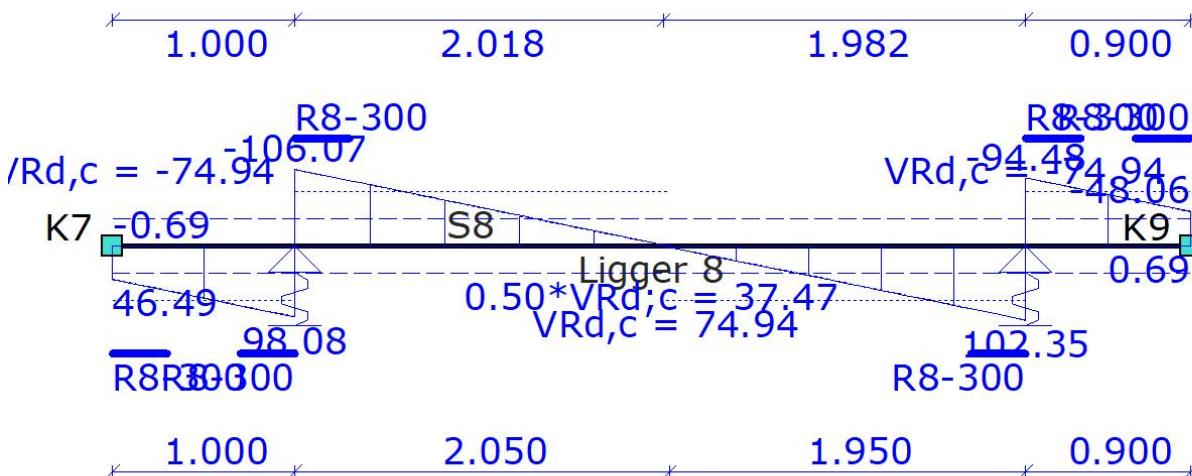
#### DOORSNEDE FLANKWAPENING

Ligger 8

| Positie | M <sub>x</sub> | Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> |
|---------|----------------|-------|--------|--------------------|--------------------------|
| 1.000   | 0.24           | 1R8   |        | 2                  | 50                       |
| m       | kNm            |       |        | mm <sup>2</sup>    | mm <sup>2</sup>          |

Dwarskrachtwap. (Capaciteit)

Ligger 8



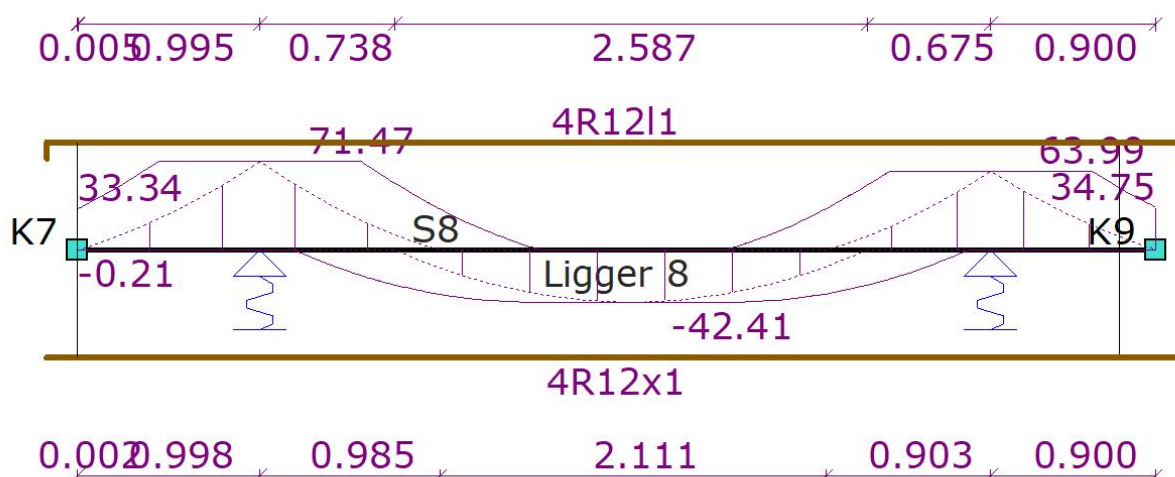
#### DOORSNEDE BEUGELWAPENING

Ligger 8

| Positie | Zijde  | V <sub>Ed</sub> | Basis  | Totaal | A <sub>s,benV</sub> | A <sub>s,benT</sub> | A <sub>s,toegepast</sub> | V <sub>Rd,c</sub> | V <sub>Rd</sub> | V <sub>Rdi</sub> | V <sub>Edi</sub> |
|---------|--------|-----------------|--------|--------|---------------------|---------------------|--------------------------|-------------------|-----------------|------------------|------------------|
| 0.000   | Rechts | 45.80           | R8-300 | R8-300 | 103                 | 0                   | 335                      | 74.94             | 148.55          |                  |                  |
| 1.000   | Links  | 97.39           | R8-300 | R8-300 | 220                 | 2                   | 335                      | 74.94             | 148.55          |                  |                  |
| 1.000   | Rechts | 105.39          | R8-300 | R8-300 | 238                 | 2                   | 335                      | 74.94             | 148.55          |                  |                  |
| 5.000   | Links  | 101.66          | R8-300 | R8-300 | 229                 | 2                   | 335                      | 74.94             | 148.55          |                  |                  |
| 5.000   | Rechts | 93.79           | R8-300 | R8-300 | 212                 | 2                   | 335                      | 74.94             | 148.55          |                  |                  |
| 5.900   | Links  | 47.37           | R8-300 | R8-300 | 107                 | 0                   | 335                      | 74.94             | 148.55          |                  |                  |
| m       |        | kN              |        |        | mm <sup>2</sup>     | mm <sup>2</sup>     | mm <sup>2</sup>          | kN                | kN              | kN               | kN               |

Langswap. (Afbouw)

Ligger 8



#### AFBOUWEN BOVENWAPENING

Ligger 8

| Wap.          | X <sub>b</sub> | Y1 <sub>b</sub> | Straal | Verank. | α <sub>1</sub> | α <sub>4</sub> | M0 <sub>b</sub> | M0 <sub>e</sub> | Verank. | α <sub>1</sub> | α <sub>4</sub> | X <sub>e</sub> | Y1 <sub>e</sub> | Straal | Lengte |
|---------------|----------------|-----------------|--------|---------|----------------|----------------|-----------------|-----------------|---------|----------------|----------------|----------------|-----------------|--------|--------|
| 4R12I1(basis) | -0.170         | 0.089           | 4.0D   | 0.253   | 1.0            | 1.0            | 0.000           | 5.700           | 0.387   | 1.0            | 1.0            | 6.064          | 0.023           | 4.0D   | 6.346  |
|               | m              | m               |        | m       |                |                | m               | m               | m       |                |                | m              | m               |        | m      |

### AFBOUWEN ONDERWAPENING

Ligger 8

| Wap.          | X <sub>b</sub> | Y <sub>1b</sub> | Straal | Verank. | α <sub>1</sub> | α <sub>4</sub> | M <sub>0b</sub> | M <sub>0e</sub> | Verank. | α <sub>1</sub> | α <sub>4</sub> | X <sub>e</sub> | Y <sub>1e</sub> | Straal | Lengte |
|---------------|----------------|-----------------|--------|---------|----------------|----------------|-----------------|-----------------|---------|----------------|----------------|----------------|-----------------|--------|--------|
| 4R12x1(basis) | -0.170         | 0.000           | -      | 0.125   | 1.0            | 1.0            | 0.000           | 5.700           | 0.129   | 1.0            | 1.0            | 6.070          | 0.000           | -      | 6.240  |
|               | m              | m               |        | m       |                |                | m               | m               | m       |                |                | m              | m               |        | m      |

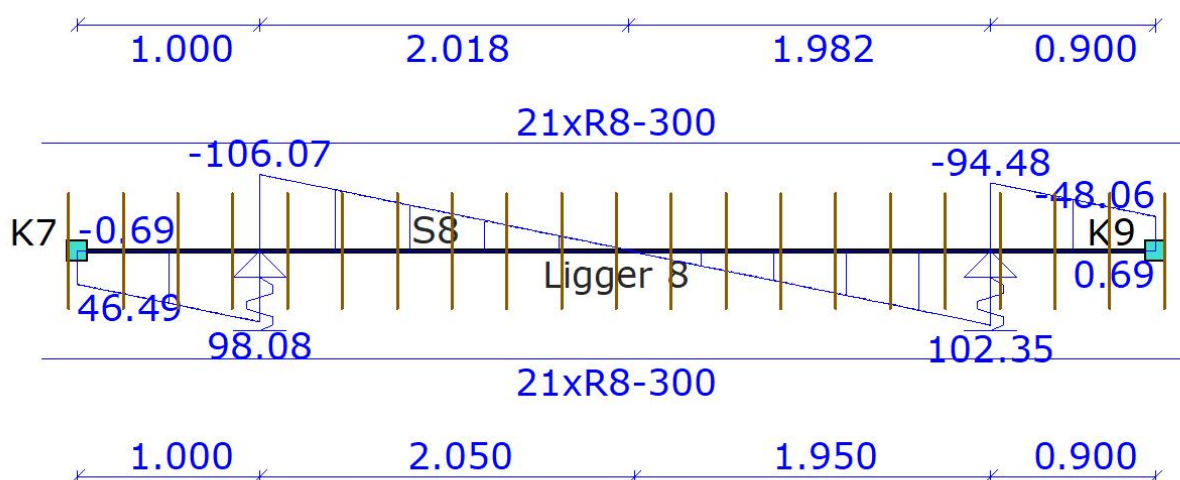
### AFBOUWEN FLANKWAPENING

Ligger 8

| Wap.  | X <sub>b</sub> | Verank. | M <sub>0b</sub> | M <sub>0e</sub> | Verank. | X <sub>e</sub> | Lengte |
|-------|----------------|---------|-----------------|-----------------|---------|----------------|--------|
| 1R8c2 | -0.170         | 0.200   | 0.000           | 5.900           | 0.200   | 6.070          | 6.240  |
|       | m              | m       | m               | m               | m       | m              | m      |

Dwarskrachtwap. (Afbouw)

Ligger 8



### AFBOUWEN BEUGELWAPENING

Ligger 8

| Wap.      | Oplegging | Zijde  | X <sub>b</sub> | X <sub>e</sub> | Lengte | V <sub>Ed</sub> | V <sub>Rd</sub> |
|-----------|-----------|--------|----------------|----------------|--------|-----------------|-----------------|
| 21xR8-300 | S6        | Rechts | -0.200         | 6.100          | 6.300  | 106.07          | 148.55          |
|           |           |        | m              | m              | m      | kN              | kN              |

### AFBOUWEN HAARSPELDWAPENING

Ligger 8

| Wap.  | Positie | Haarspeldlengte | Straal | Totale lengte |
|-------|---------|-----------------|--------|---------------|
| 1R8e2 | Begin   | 0.200           | 4.0D   | 0.713         |
| 1R8f2 | Einde   | 0.200           | 4.0D   | 0.713         |
|       |         | m               |        | m             |

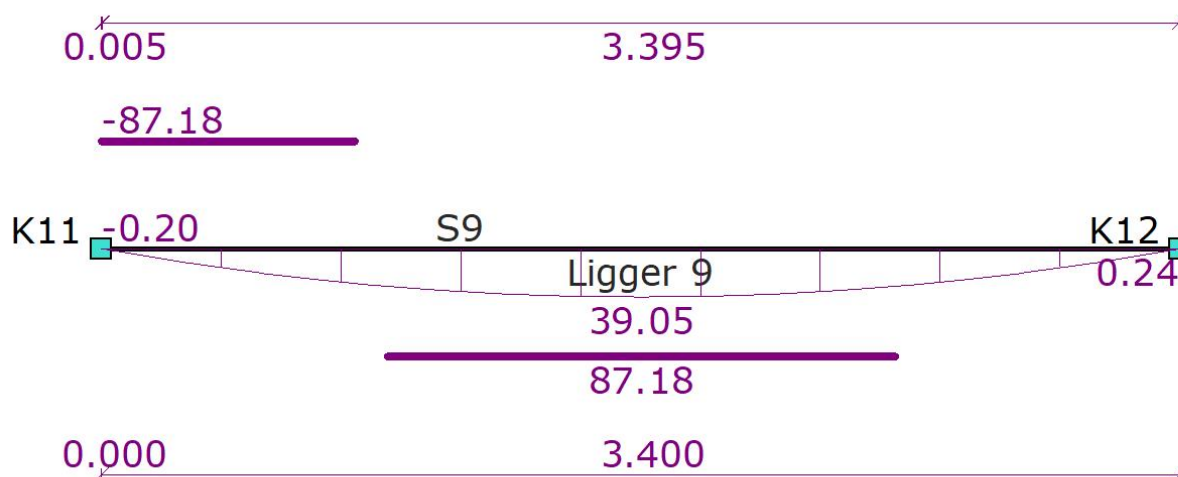
### DOORBUIGINGSBEREKENING (VERKORT)

Ligger 8

| Veld | Begin | Einde | Limiet w <sub>max</sub> | Limiet w <sub>2+w3</sub> | Abs. limiet | Zeeg | w <sub>1</sub> | w <sub>max</sub> | w <sub>2+w3</sub> | UC(w <sub>max</sub> ) | UC(w <sub>2+w3</sub> ) | Toetsing |
|------|-------|-------|-------------------------|--------------------------|-------------|------|----------------|------------------|-------------------|-----------------------|------------------------|----------|
| V1   | 0.000 | 1.000 | L/250                   | L/250                    | 0.0         | 0.0  | -0.0           | -0.1<=4.0        | -0.0<=4.0         | 0.01                  | 0.01                   | Ok       |
| V2   | 1.000 | 5.000 | L/250                   | L/250                    | 0.0         | 0.0  | 0.2            | 0.5<=16.0        | 0.4<=16.0         | 0.03                  | 0.03                   | Ok       |
| V3   | 5.000 | 5.900 | L/250                   | L/250                    | 0.0         | 0.0  | -0.0           | -0.1<=3.6        | -0.0<=3.6         | 0.01                  | 0.01                   | Ok       |
|      | m     | m     |                         |                          | mm          | mm   | mm             | mm               | mm                |                       |                        |          |

Langswap. (Capaciteit)

Ligger 9



#### DOORSNEDE BOVENWAPENING

Ligger 9

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Verdeel Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 0.000   | 0.00            | 4R12        |        | 0                  | 452                      |               |        |                    |                          |                         |                  |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

#### DOORSNEDE ONDERWAPENING

Ligger 9

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Verdeel Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 1.703   | 39.05           | 4R12        |        | 199                | 452                      |               |        |                    |                          | 36.3                    | 300              |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

#### DOORSNEDE FLANKWAPENING

Ligger 9

| Positie | M <sub>x</sub> | Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> |
|---------|----------------|-------|--------|--------------------|--------------------------|
| 0.000   | 0.21           | 1R8   |        | 0                  | 50                       |
| m       | kNm            |       |        | mm <sup>2</sup>    | mm <sup>2</sup>          |



### AFBOUWEN ONDERWAPENING

Ligger 9

| Wap.          | $X_b$  | $Y1_b$ | Straal | Verank. | $\alpha_1$ | $\alpha_4$ | $M0_b$ | $M0_e$ | Verank. | $\alpha_1$ | $\alpha_4$ | $X_e$ | $Y1_e$ | Straal | Lengte |
|---------------|--------|--------|--------|---------|------------|------------|--------|--------|---------|------------|------------|-------|--------|--------|--------|
| 4R12m1(basis) | -0.170 | 0.000  | -      | 0.125   | 1.0        | 1.0        | 0.000  | 3.200  | 0.125   | 1.0        | 1.0        | 3.570 | 0.000  | -      | 3.740  |
|               | m      | m      |        | m       |            |            | m      | m      | m       |            |            | m     | m      |        | m      |

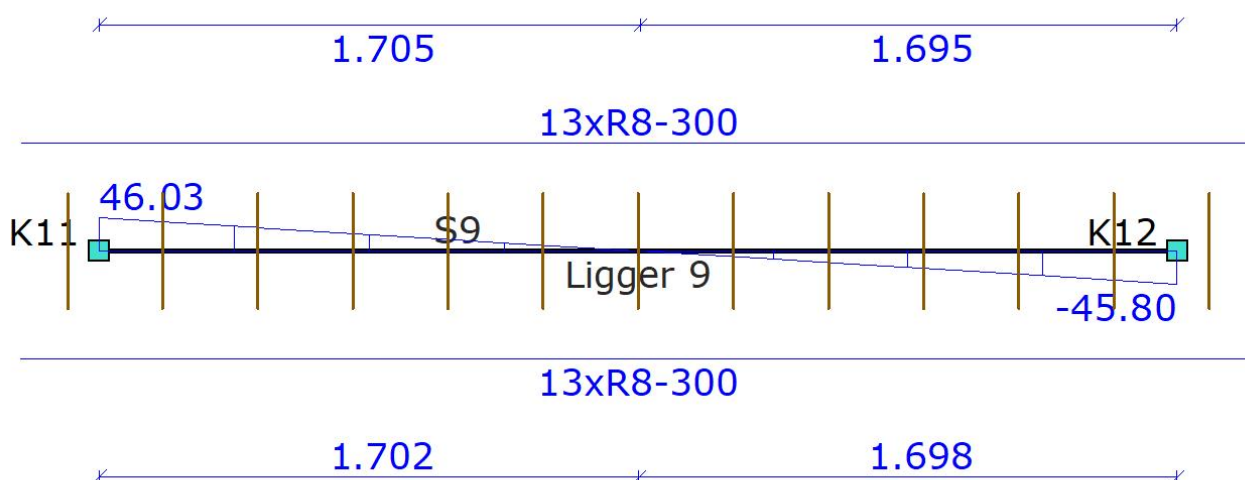
### AFBOUWEN FLANKWAPENING

Ligger 9

| Wap.  | $X_b$  | Verank. | $M0_b$ | $M0_e$ | Verank. | $X_e$ | Lengte |
|-------|--------|---------|--------|--------|---------|-------|--------|
| 1R8d2 | -0.170 | 0.200   | 0.000  | 3.400  | 0.200   | 3.570 | 3.740  |
|       | m      | m       | m      | m      | m       | m     | m      |

Dwarskrachtwap. (Afbouw)

Ligger 9



### AFBOUWEN BEUGELWAPENING

Ligger 9

| Wap.      | Oplegging | Zijde  | $X_b$  | $X_e$ | Lengte | $V_{Ed}$ | $V_{Rd}$ |
|-----------|-----------|--------|--------|-------|--------|----------|----------|
| 13xR8-300 | S4        | Rechts | -0.250 | 3.650 | 3.900  | 46.03    | 148.55   |
|           |           |        | m      | m     | m      | kN       | kN       |

### AFBOUWEN HAARSPELDWAPENING

Ligger 9

| Wap.  | Positie | Haarspeldlengte | Straal | Totale lengte |
|-------|---------|-----------------|--------|---------------|
| 1R8e2 | Begin   | 0.200           | 4.0D   | 0.713         |
| 1R8g2 | Einde   | 0.200           | 4.0D   | 0.713         |
|       |         | m               |        | m             |

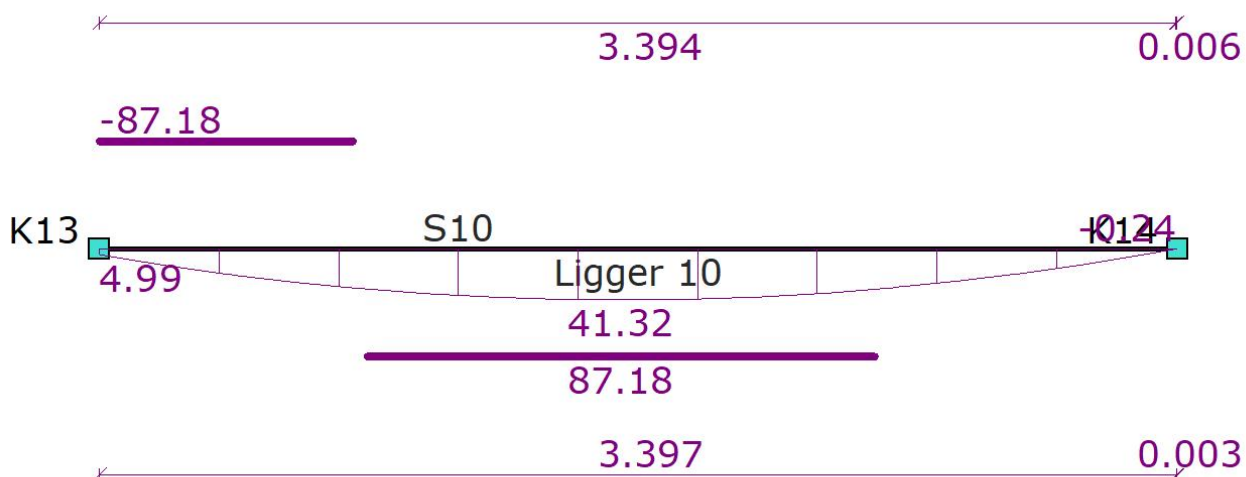
### DOORBUIGINGSBEREKENING (VERKORT)

Ligger 9

| Veld | Begin | Einde | Limiet $w_{max}$ | Limiet $w2+w3$ | Abs. limiet | Zeeg | $w1$ | $w_{max}$ | $w2+w3$   | UC( $w_{max}$ ) | UC( $w2+w3$ ) | Toetsing |
|------|-------|-------|------------------|----------------|-------------|------|------|-----------|-----------|-----------------|---------------|----------|
| V1   | 0.000 | 3.400 | L/250            | L/250          | 0.0         | 0.0  | 0.2  | 0.7<=13.6 | 0.5<=13.6 | 0.05            | 0.04          | Ok       |
|      | m     | m     |                  |                | mm          | mm   | mm   | mm        | mm        |                 |               |          |

Langswap. (Capaciteit)

Ligger 10



#### DOORSNEDE BOVENWAPENING

Ligger 10

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Verdeel Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 0.000   | 0.00            | 4R12        |        | 0                  | 452                      |               |        |                    |                          |                         |                  |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

#### DOORSNEDE ONDERWAPENING

Ligger 10

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Verdeel Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 1.645   | 41.32           | 4R12        |        | 211                | 452                      |               |        |                    |                          | 36.3                    | 300              |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

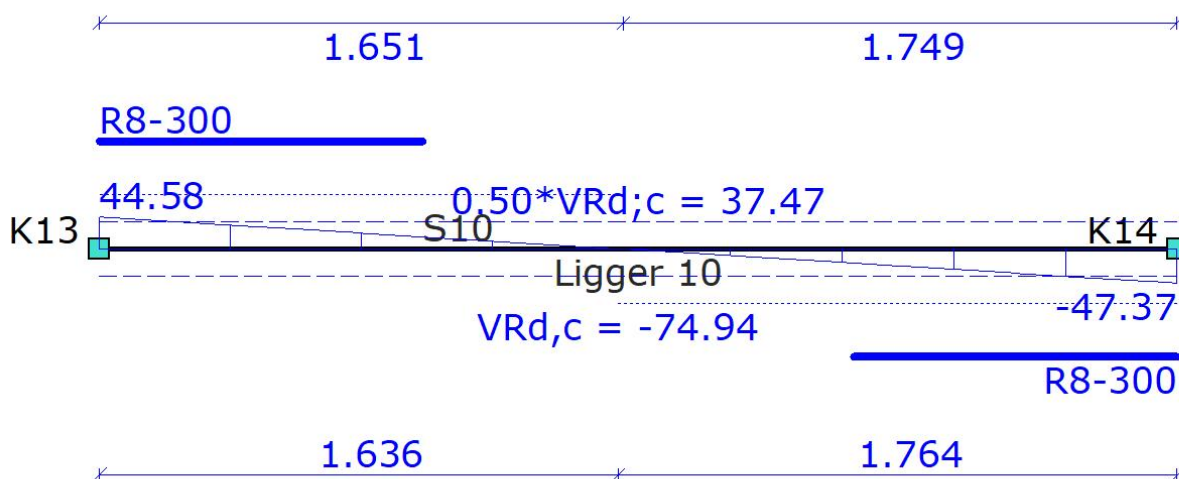
#### DOORSNEDE FLANKWAPENING

Ligger 10

| Positie | M <sub>x</sub> Basis | bijleg | A <sub>s,ben</sub> | A <sub>s,toegepast</sub> |
|---------|----------------------|--------|--------------------|--------------------------|
| 0.000   | 0.49 1R8             |        | 0                  | 50                       |
| m       | kNm                  |        | mm <sup>2</sup>    | mm <sup>2</sup>          |

Dwarskrachtwap. (Capaciteit)

Ligger 10



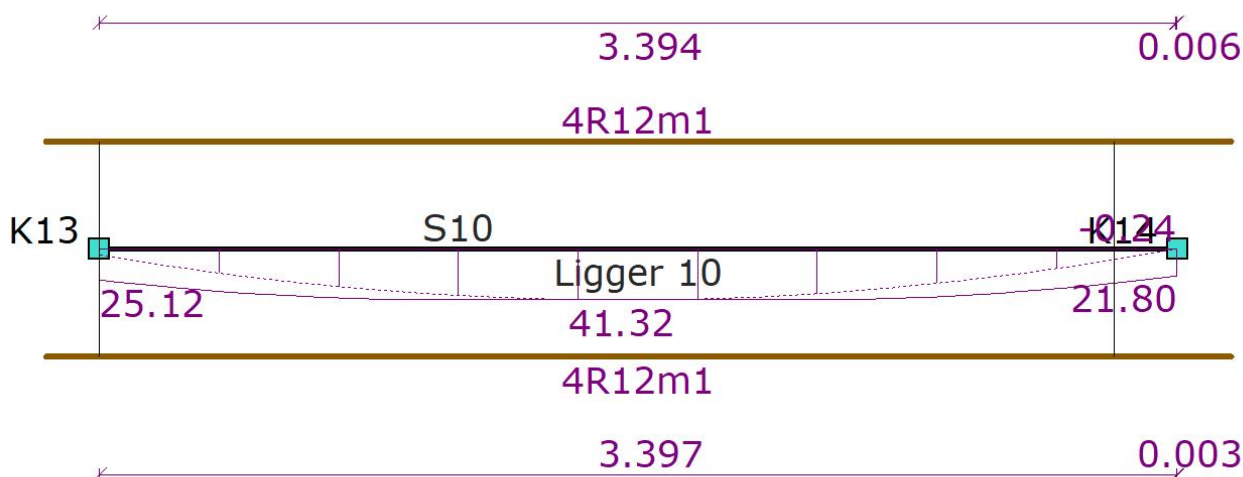
### DOORSNEDE BEUGELWAPENING

Ligger 10

| Positie | Zijde  | $V_{Ed}$ | Basis  | Totaal | $A_{s,benV}$    | $A_{s,benT}$    | $A_{s,toegepast}$ | $V_{Rd,c}$ | $V_{Rd}$ | $V_{Rdi}$ | $V_{Edi}$ |
|---------|--------|----------|--------|--------|-----------------|-----------------|-------------------|------------|----------|-----------|-----------|
| 0.000   | Rechts | 44.58    | R8-300 | R8-300 | 101             | 0               | 335               | 74.94      | 148.55   |           |           |
| 3.400   | Links  | 47.37    | R8-300 | R8-300 | 107             | 0               | 335               | 74.94      | 148.55   |           |           |
| m       |        | kN       |        |        | mm <sup>2</sup> | mm <sup>2</sup> | mm <sup>2</sup>   | kN         | kN       | kN        | kN        |

Langswap. (Afbouw)

Ligger 10



### AFBOUWEN BOVENWAPENING

Ligger 10

| Wap.          | $X_b$  | $Y1_b$ | Straal | Verank. | $\alpha_1$ | $\alpha_4$ | $M0_b$ | $M0_e$ | Verank. | $\alpha_1$ | $\alpha_4$ | $X_e$ | $Y1_e$ | Straal | Lengte |
|---------------|--------|--------|--------|---------|------------|------------|--------|--------|---------|------------|------------|-------|--------|--------|--------|
| 4R12m1(basis) | -0.170 | 0.000  | -      | 0.120   | 1.0        | 1.0        | 0.000  | 3.200  | 0.120   | 1.0        | 1.0        | 3.570 | 0.000  | -      | 3.740  |
|               | m      | m      |        | m       |            |            | m      | m      | m       |            |            | m     | m      |        | m      |

### AFBOUWEN ONDERWAPENING

Ligger 10

| Wap.          | X <sub>b</sub> | Y1 <sub>b</sub> | Straal | Verank. | α <sub>1</sub> | α <sub>4</sub> | M0 <sub>b</sub> | M0 <sub>e</sub> | Verank. | α <sub>1</sub> | α <sub>4</sub> | X <sub>e</sub> | Y1 <sub>e</sub> | Straal | Lengte |
|---------------|----------------|-----------------|--------|---------|----------------|----------------|-----------------|-----------------|---------|----------------|----------------|----------------|-----------------|--------|--------|
| 4R12m1(basis) | -0.170         | 0.000           | -      | 0.122   | 1.0            | 1.0            | 0.000           | 3.200           | 0.129   | 1.0            | 1.0            | 3.570          | 0.000           | -      | 3.740  |
|               | m              | m               |        | m       |                |                | m               | m               | m       |                |                | m              | m               |        | m      |

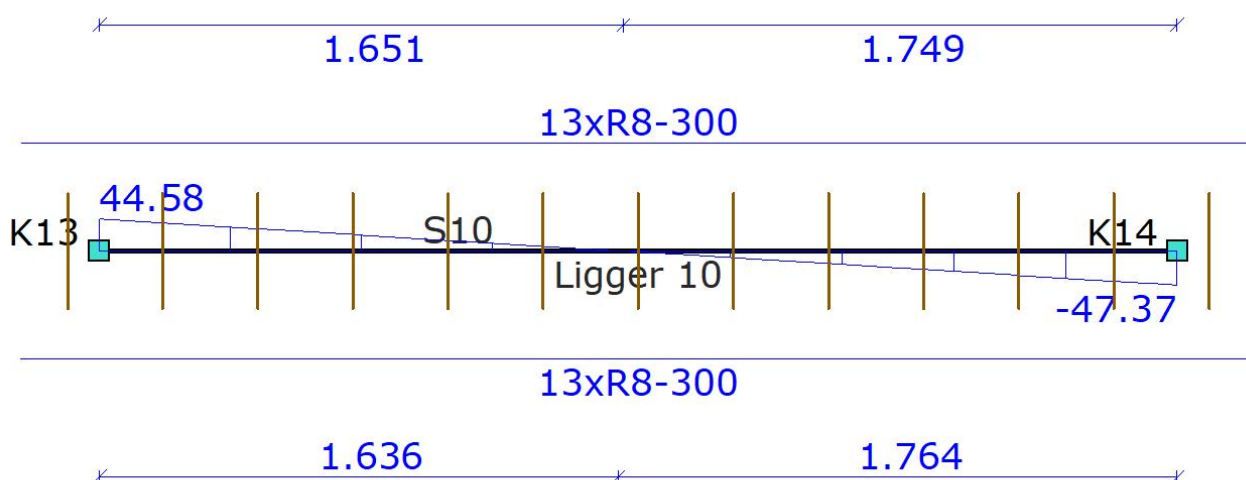
### AFBOUWEN FLANKWAPENING

Ligger 10

| Wap.  | X <sub>b</sub> | Verank. | M0 <sub>b</sub> | M0 <sub>e</sub> | Verank. | X <sub>e</sub> | Lengte |
|-------|----------------|---------|-----------------|-----------------|---------|----------------|--------|
| 1R8d2 | -0.170         | 0.200   | 0.000           | 3.400           | 0.200   | 3.570          | 3.740  |
|       | m              | m       | m               | m               | m       | m              | m      |

Dwarskrachtwap. (Afbouw)

Ligger 10



### AFBOUWEN BEUGELWAPENING

Ligger 10

| Wap.      | Oplegging | Zijde  | X <sub>b</sub> | X <sub>e</sub> | Lengte | V <sub>Ed</sub> | V <sub>Rd</sub> |
|-----------|-----------|--------|----------------|----------------|--------|-----------------|-----------------|
| 13xR8-300 | S4        | Rechts | -0.250         | 3.650          | 3.900  | 47.37           | 148.55          |
|           |           |        | m              | m              | m      | kN              | kN              |

### AFBOUWEN HAARSPELDWAPENING

Ligger 10

| Wap.  | Positie | Haarspeldlengte | Straal | Totale lengte |
|-------|---------|-----------------|--------|---------------|
| 1R8e2 | Begin   | 0.200           | 4.0D   | 0.713         |
| 1R8g2 | Einde   | 0.200           | 4.0D   | 0.713         |
|       |         | m               |        | m             |

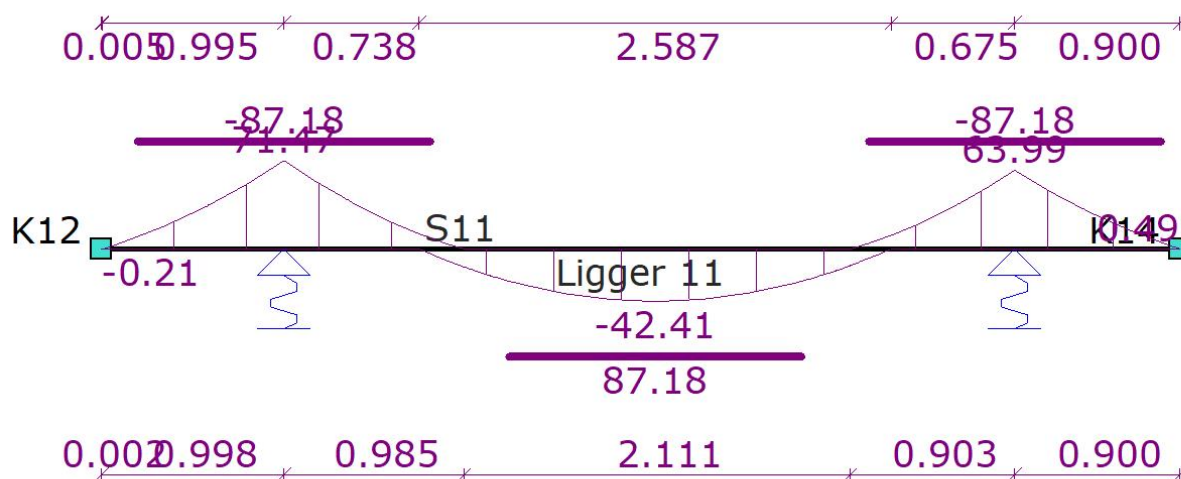
### DOORBUIGINGSBEREKENING (VERKORT)

Ligger 10

| Veld | Begin | Einde | Limiet w <sub>max</sub> | Limiet w <sub>2+w3</sub> | Abs. limiet | Zeeg | w <sub>1</sub> | w <sub>max</sub> | w <sub>2+w3</sub> | UC(w <sub>max</sub> ) | UC(w <sub>2+w3</sub> ) | Toetsing |
|------|-------|-------|-------------------------|--------------------------|-------------|------|----------------|------------------|-------------------|-----------------------|------------------------|----------|
| V1   | 0.000 | 3.400 | L/250                   | L/250                    | 0.0         | 0.0  | 0.3            | 0.8<=13.6        | 0.5<=13.6         | 0.06                  | 0.04                   | Ok       |
|      | m     | m     |                         |                          | mm          | mm   | mm             | mm               | mm                |                       |                        |          |

Langswap. (Capaciteit)

Ligger 11



#### DOORSNEDE BOVENWAPENING

Ligger 11

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s;ben</sub> | A <sub>s;toegepast</sub> | Verdeel Basis | bijleg | A <sub>s;ben</sub> | A <sub>s;toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 1.000   | 71.47           | 4R12        |        | 371                | 452                      |               |        |                    |                          | 15.4                    | 169              |          |
| 5.000   | 63.99           | 4R12        |        | 331                | 452                      |               |        |                    |                          | 19.1                    | 204              |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

#### DOORSNEDE ONDERWAPENING

Ligger 11

| Positie | M <sub>Ed</sub> | Hoofd Basis | bijleg | A <sub>s;ben</sub> | A <sub>s;toegepast</sub> | Verdeel Basis | bijleg | A <sub>s;ben</sub> | A <sub>s;toegepast</sub> | Scheur D <sub>max</sub> | S <sub>max</sub> | Toetsing |
|---------|-----------------|-------------|--------|--------------------|--------------------------|---------------|--------|--------------------|--------------------------|-------------------------|------------------|----------|
| 3.032   | 42.41           | 4R12        |        | 219                | 452                      |               |        |                    |                          | 36.3                    | 300              |          |
| m       | kNm             |             |        | mm <sup>2</sup>    | mm <sup>2</sup>          |               |        | mm <sup>2</sup>    | mm <sup>2</sup>          | mm                      | mm               |          |

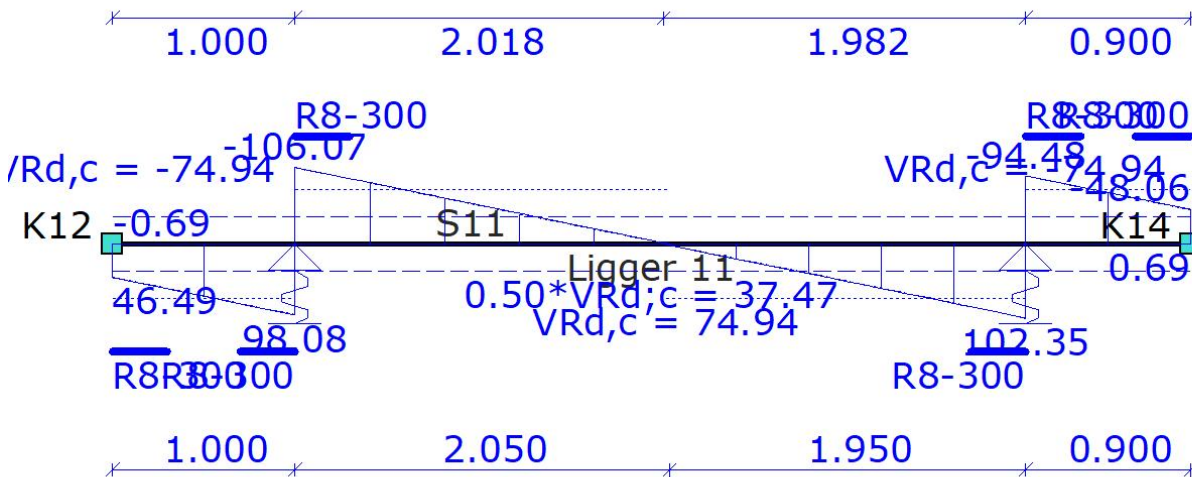
#### DOORSNEDE FLANKWAPENING

Ligger 11

| Positie | M <sub>x</sub> | Basis | bijleg | A <sub>s;ben</sub> | A <sub>s;toegepast</sub> |
|---------|----------------|-------|--------|--------------------|--------------------------|
| 1.000   | 0.24           | 1R8   |        | 2                  | 50                       |
| m       | kNm            |       |        | mm <sup>2</sup>    | mm <sup>2</sup>          |

Dwarskrachtwap. (Capaciteit)

Ligger 11



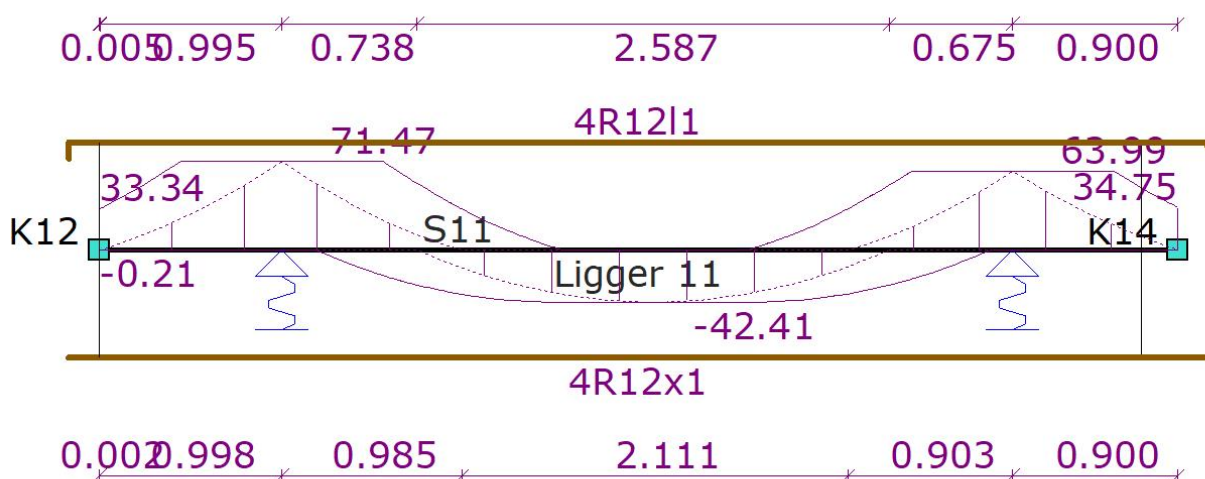
#### DOORSNEDE BEUGELWAPENING

Ligger 11

| Positie | Zijde  | V <sub>Ed</sub> | Basis  | Totaal | A <sub>s,benV</sub> | A <sub>s,benT</sub> | A <sub>s,toegepast</sub> | V <sub>Rd,c</sub> | V <sub>Rd</sub> | V <sub>Rdi</sub> | V <sub>Edi</sub> |
|---------|--------|-----------------|--------|--------|---------------------|---------------------|--------------------------|-------------------|-----------------|------------------|------------------|
| 0.000   | Rechts | 45.80           | R8-300 | R8-300 | 103                 | 0                   | 335                      | 74.94             | 148.55          |                  |                  |
| 1.000   | Links  | 97.39           | R8-300 | R8-300 | 220                 | 2                   | 335                      | 74.94             | 148.55          |                  |                  |
| 1.000   | Rechts | 105.39          | R8-300 | R8-300 | 238                 | 2                   | 335                      | 74.94             | 148.55          |                  |                  |
| 5.000   | Links  | 101.66          | R8-300 | R8-300 | 229                 | 2                   | 335                      | 74.94             | 148.55          |                  |                  |
| 5.000   | Rechts | 93.79           | R8-300 | R8-300 | 212                 | 2                   | 335                      | 74.94             | 148.55          |                  |                  |
| 5.900   | Links  | 47.37           | R8-300 | R8-300 | 107                 | 0                   | 335                      | 74.94             | 148.55          |                  |                  |
| m       |        | kN              |        |        | mm <sup>2</sup>     | mm <sup>2</sup>     | mm <sup>2</sup>          | kN                | kN              | kN               | kN               |

Langswap. (Afbouw)

Ligger 11



#### AFBOUWEN BOVENWAPENING

Ligger 11

| Wap.          | X <sub>b</sub> | Y1 <sub>b</sub> | Straal | Verank. | α <sub>1</sub> | α <sub>4</sub> | M0 <sub>b</sub> | M0 <sub>e</sub> | Verank. | α <sub>1</sub> | α <sub>4</sub> | X <sub>e</sub> | Y1 <sub>e</sub> | Straal | Lengte |
|---------------|----------------|-----------------|--------|---------|----------------|----------------|-----------------|-----------------|---------|----------------|----------------|----------------|-----------------|--------|--------|
| 4R12I1(basis) | -0.170         | 0.089           | 4.0D   | 0.253   | 1.0            | 1.0            | 0.000           | 5.700           | 0.387   | 1.0            | 1.0            | 6.064          | 0.023           | 4.0D   | 6.346  |
|               | m              | m               |        | m       |                |                | m               | m               | m       |                |                | m              | m               |        | m      |

### AFBOUWEN ONDERWAPENING

Ligger 11

| Wap.          | $X_b$  | $Y1_b$ | Straal | Verank. | $\alpha_1$ | $\alpha_4$ | $M0_b$ | $M0_e$ | Verank. | $\alpha_1$ | $\alpha_4$ | $X_e$ | $Y1_e$ | Straal | Lengte |
|---------------|--------|--------|--------|---------|------------|------------|--------|--------|---------|------------|------------|-------|--------|--------|--------|
| 4R12x1(basis) | -0.170 | 0.000  | -      | 0.125   | 1.0        | 1.0        | 0.000  | 5.700  | 0.129   | 1.0        | 1.0        | 6.070 | 0.000  | -      | 6.240  |
|               | m      | m      |        | m       |            |            | m      | m      | m       |            |            | m     | m      |        | m      |

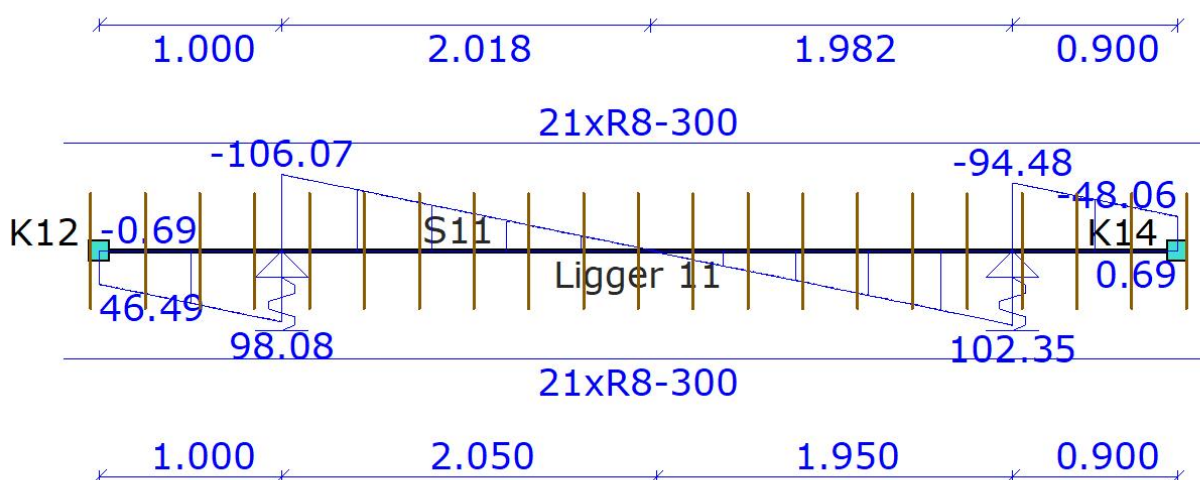
### AFBOUWEN FLANKWAPENING

Ligger 11

| Wap.  | $X_b$  | Verank. | $M0_b$ | $M0_e$ | Verank. | $X_e$ | Lengte |
|-------|--------|---------|--------|--------|---------|-------|--------|
| 1R8c2 | -0.170 | 0.200   | 0.000  | 5.900  | 0.200   | 6.070 | 6.240  |
|       | m      | m       | m      | m      | m       | m     | m      |

Dwarskrachtwap. (Afbouw)

Ligger 11



### AFBOUWEN BEUGELWAPENING

Ligger 11

| Wap.      | Oplegging | Zijde  | $X_b$  | $X_e$ | Lengte | $V_{Ed}$ | $V_{Rd}$ |
|-----------|-----------|--------|--------|-------|--------|----------|----------|
| 21xR8-300 | S9        | Rechts | -0.200 | 6.100 | 6.300  | 106.07   | 148.55   |
|           |           |        | m      | m     | m      | kN       | kN       |

### AFBOUWEN HAARSPELDWAPENING

Ligger 11

| Wap.  | Positie | Haarspeldlengte | Straal | Totale lengte |
|-------|---------|-----------------|--------|---------------|
| 1R8e2 | Begin   | 0.200           | 4.0D   | 0.713         |
| 1R8f2 | Einde   | 0.200           | 4.0D   | 0.713         |
|       |         | m               |        | m             |

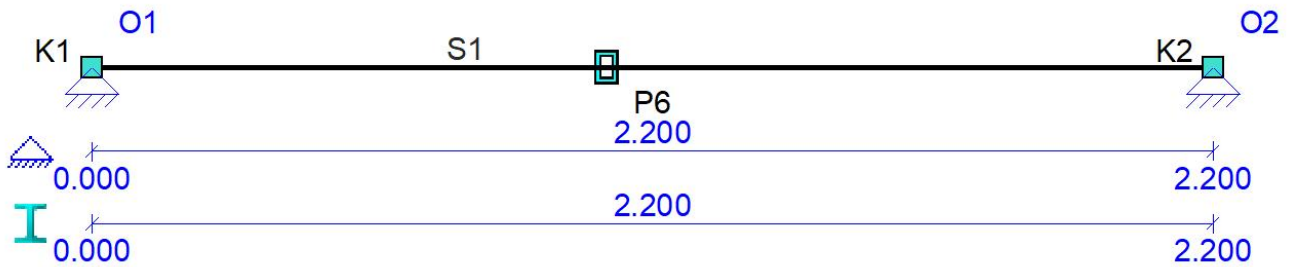
### DOORBUIGINGSBEREKENING (VERKORT)

Ligger 11

| Veld | Begin | Einde | Limiet $w_{max}$ | Limiet $w2+w3$ | Abs. limiet | Zeeg | $w1$ | $w_{max}$ | $w2+w3$   | UC( $w_{max}$ ) | UC( $w2+w3$ ) | Toetsing |
|------|-------|-------|------------------|----------------|-------------|------|------|-----------|-----------|-----------------|---------------|----------|
| V1   | 0.000 | 1.000 | L/250            | L/250          | 0.0         | 0.0  | -0.0 | -0.1<=4.0 | -0.0<=4.0 | 0.01            | 0.01          | Ok       |
| V2   | 1.000 | 5.000 | L/250            | L/250          | 0.0         | 0.0  | 0.2  | 0.5<=16.0 | 0.4<=16.0 | 0.03            | 0.03          | Ok       |
| V3   | 5.000 | 5.900 | L/250            | L/250          | 0.0         | 0.0  | -0.0 | -0.1<=3.6 | -0.0<=3.6 | 0.01            | 0.01          | Ok       |
|      | m     | m     |                  |                | mm          | mm   | mm   | mm        | mm        |                 |               |          |

|                               |                                                                                                                                                               |               |               |                  |  |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|------------------|--|
| Bouwkundig Adviesburo Baas bv |                                                                                                                                                               | Moltzerhof 20 |               | 3052VA Rotterdam |  |
|                               |                                                                                                                                                               |               |               |                  |  |
| Projectomschrijving           | Heerjansdam                                                                                                                                                   |               | Projectnummer | 222.073          |  |
| Onderdeel                     | Dijkwoningen - Stalen ligger ivm doorgang van woonhuis naar "uitbouw"                                                                                         |               | Constructeur  | M.N.D. den Exter |  |
| Opdrachtgever                 |                                                                                                                                                               |               | Eenheden      | m, mm, kN, kNm   |  |
| Bestand                       | C:\Users\donny\OneDrive\Bureaublad\Diverse_werken\Te doen\dd15122023\222073\ber-Baas\BER-04_Dijkwoningen_versie_Alw222073-Dijkwoningen_Staal_ivm_doorgang.mxf |               |               |                  |  |

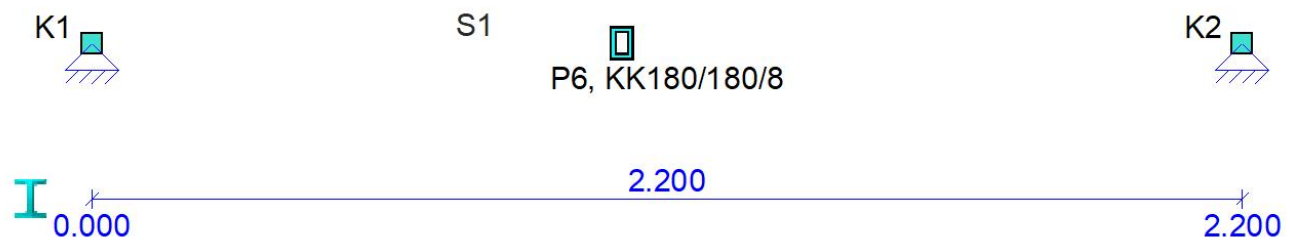
Constructie



## BALKGEOMETRIE

| Positie           | Profielnaam | Hoek | Traagheidsmoment | Materiaal        | E-Modulus         | Uitzettingcoëff | Gewicht |
|-------------------|-------------|------|------------------|------------------|-------------------|-----------------|---------|
| 0.000 - 2.200 (L) | KK180/180/8 | 0    | 2.5459e+07       | S235H(EN10219-1) | 2.1000e+05        | 12.0000e-06     | 0.41    |
| m                 |             | °    | mm <sup>4</sup>  |                  | N/mm <sup>2</sup> | C°m             | kN/m    |

Profielen



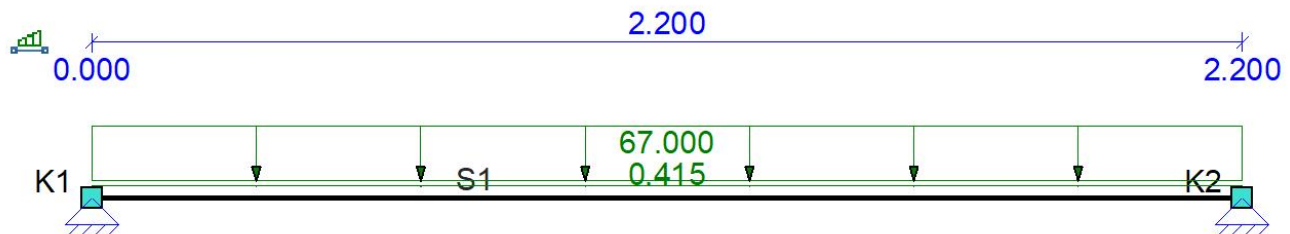
## MATERIALEN

| Materiaalnaam    | Poison | Dichtheid         | E-Modulus         | Uitzettingcoëff |
|------------------|--------|-------------------|-------------------|-----------------|
| S235H(EN10219-1) | 0.30   | 78.50             | 2.1000e+05        | 12.0000e-06     |
|                  |        | kN/m <sup>3</sup> | N/mm <sup>2</sup> | C°m             |

## OPLEGGINGEN

| Oplegging | Object | Positie   | Z    | Yr      |
|-----------|--------|-----------|------|---------|
| O1        | S1     | 0.000     | Vast | Vrij    |
| O2        | S1     | 2.200 (L) | Vast | Vrij    |
|           |        | m         | kN/m | kNm/rad |

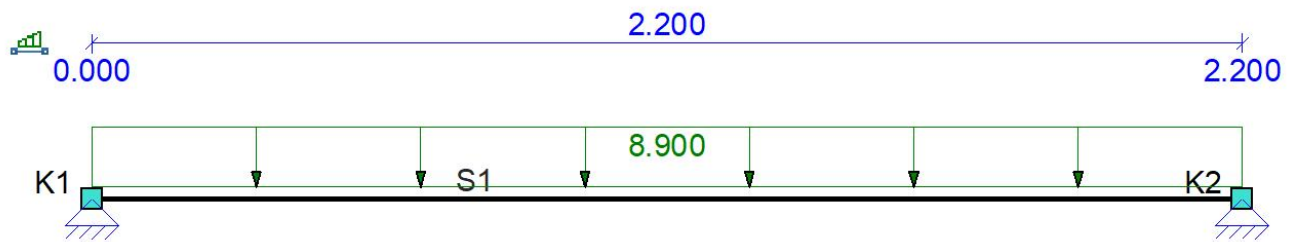
B.G.1: Permanent



## B.G.1: PERMANENT

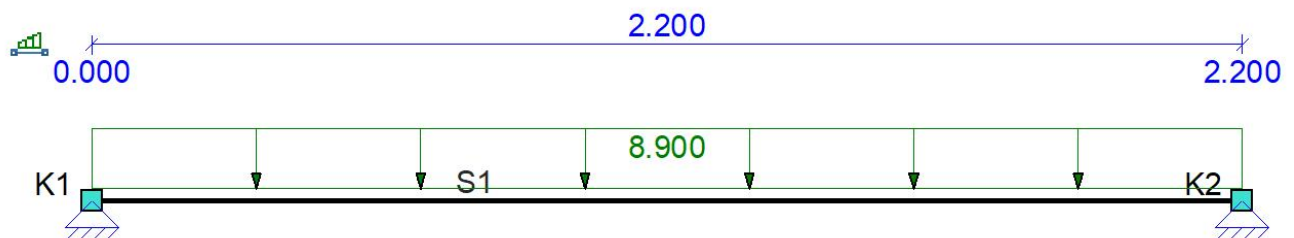
| Type       | Beginwaarde | Eindwaarde  | Beginafstand | Eindafstand | Richting | Omschrijving |
|------------|-------------|-------------|--------------|-------------|----------|--------------|
| qG         | 1.00 (0.41) | 1.00 (0.41) | 0.000        | 2.200 (L)   | Z        |              |
| q          | 67.000      | 67.000      | 0.000        | 2.200 (L)   | Z        |              |
| Som lasten |             | Z: 148.313  |              |             |          |              |
|            |             | m           | m            |             |          |              |

## B.G.2: Opgelegd - 1e verd (Generatief)

**B.G.2: OPGELEGD - 1E VERD (GENERATIEF)**

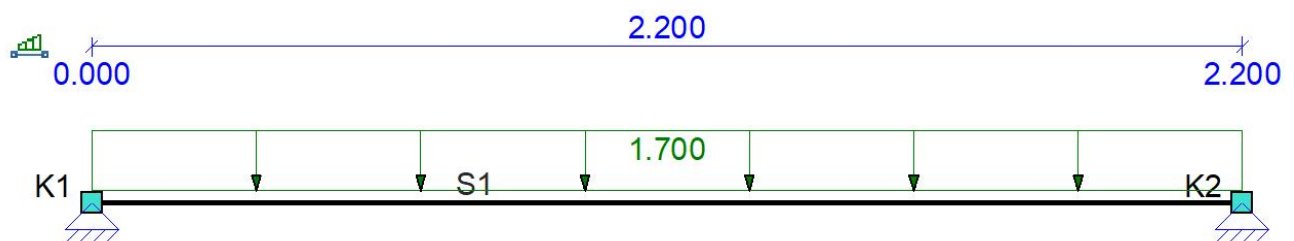
| Type | Beginwaarde | Eindwaarde | Beginafstand | Eindafstand | Richting | Omschrijving |
|------|-------------|------------|--------------|-------------|----------|--------------|
| q    | 8.900       | 8.900      | 0.000        | 2.200 (L)   | Z        |              |
|      |             |            | m            | m           |          |              |

## B.G.3: Opgelegd - 2e verd (Generatief)

**B.G.3: OPGELEGD - 2E VERD (GENERATIEF)**

| Type | Beginwaarde | Eindwaarde | Beginafstand | Eindafstand | Richting | Omschrijving |
|------|-------------|------------|--------------|-------------|----------|--------------|
| q    | 8.900       | 8.900      | 0.000        | 2.200 (L)   | Z        |              |
|      |             |            | m            | m           |          |              |

## B.G.4: Opgelegd - Dak aanbouw (plat) (Generatief)

**B.G.4: OPGELEGD - DAK AANBOUW (PLAT) (GENERATIEF)**

| Type | Beginwaarde | Eindwaarde | Beginafstand | Eindafstand | Richting | Omschrijving |
|------|-------------|------------|--------------|-------------|----------|--------------|
| q    | 1.700       | 1.700      | 0.000        | 2.200 (L)   | Z        |              |
|      |             |            | m            | m           |          |              |

**BELASTINGSCOMBINATIES****Fundamenteel**

| B.G.    | Omschrijving           | Fu.C.1 | Fu.C.2 | Fu.C.3 | Fu.C.4 | Fu.C.5 |
|---------|------------------------|--------|--------|--------|--------|--------|
| B.G.1   | Permanent              | 1.20   | 1.20   | 1.20   | 1.20   | 1.35   |
| B.G.2.1 | Opgelegd - 1e verd (1) | 0.60   | 1.50   | 1.50   | 0.60   | 0.60   |
| B.G.3.1 | Opgelegd - 2e verd (1) | 0.60   | 1.50   | 0.60   | 1.50   | 0.60   |
| B.G.4.1 | Opgelegd - Dak aanb... | 1.50   |        |        |        |        |

**Karakteristiek**

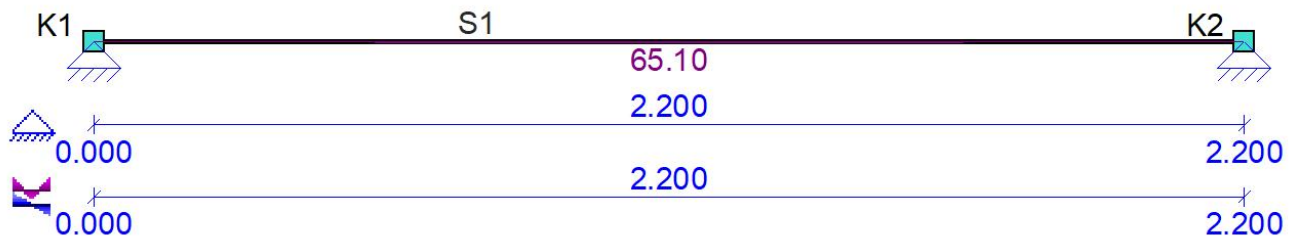
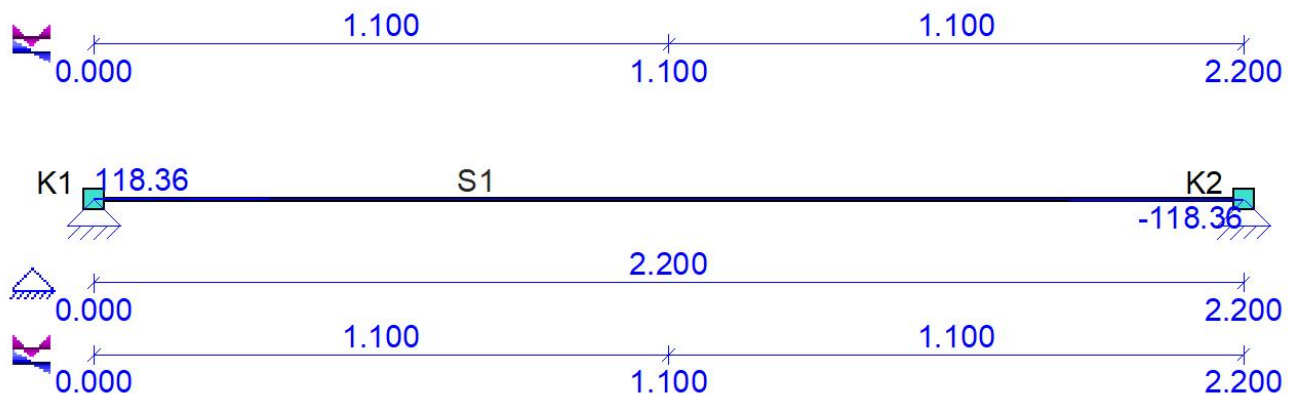
| B.G.    | Omschrijving           | Ka.C.(w1) | Ka.C.1 | Ka.C.2 | Ka.C.3 | Ka.C.4 |
|---------|------------------------|-----------|--------|--------|--------|--------|
| B.G.1   | Permanent              | 1.00      | 1.00   | 1.00   | 1.00   | 1.00   |
| B.G.2.1 | Opgelegd - 1e verd (1) |           | 0.40   | 1.00   | 0.40   | 0.40   |
| B.G.3.1 | Opgelegd - 2e verd (1) |           | 0.40   | 0.40   | 1.00   | 0.40   |
| B.G.4.1 | Opgelegd - Dak aanb... |           |        |        |        | 1.00   |

**Quasi-permanent**

| B.G.    | Omschrijving           | Qu.C.1 |
|---------|------------------------|--------|
| B.G.1   | Permanent              | 1.00   |
| B.G.2.1 | Opgelegd - 1e verd (1) | 0.30   |
| B.G.3.1 | Opgelegd - 2e verd (1) | 0.30   |
| B.G.4.1 | Opgelegd - Dak aanb... |        |

**UITGANGSPUNTEN VAN DE ANALYSE**

Lineaire Elastische Analyse uitgevoerd

**Fu.C. Omhullende Momenten (My)****Fu.C. Omhullende Dwarskracht (Vz)****OMHULLENDE (FUNDAMENTEEL)**

| Staaf | Vz-     | Vz+    | My-  | My+   |
|-------|---------|--------|------|-------|
| S1    | -118.36 | 118.36 | 0.00 | 65.10 |
|       | kN      | kN     | kNm  | kNm   |

**EXTREME STAAFKRACHTEN**

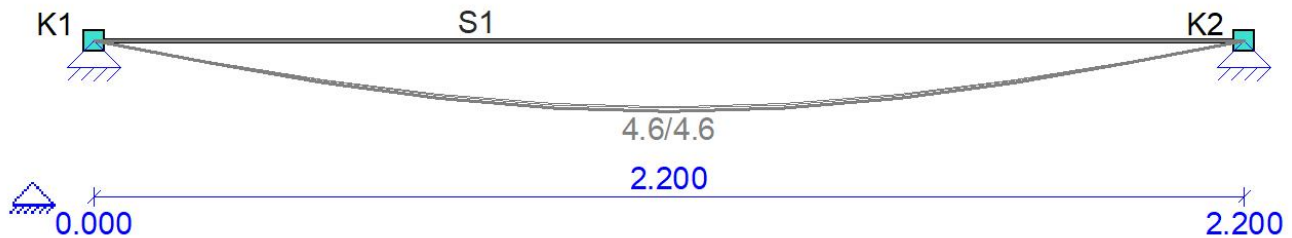
| Veld                   | B.C.   | Mb   | Mmax  | xMmax | Me   | xM0 | xM0 | Vb     | Vmax   | Ve      |
|------------------------|--------|------|-------|-------|------|-----|-----|--------|--------|---------|
| <b>Fundamenteel</b>    |        |      |       |       |      |     |     |        |        |         |
| Veld 1 (0.000 - 2.200) | Fu.C.2 | 0.00 | 65.10 | 1.100 | 0.00 |     |     | 118.36 | 118.36 | -118.36 |
| Veld 1 (0.000 - 2.200) | Fu.C.5 | 0.00 | 61.52 | 1.100 | 0.00 |     |     | 111.86 | 111.86 | -111.86 |
| m                      |        | kNm  | kNm   | m     | kNm  | m   | m   | kN     | kN     | kN      |

| Oplegging                      | Positie         | B.C.   | Z <sub>max</sub> | Yr   | B.C. | Z  | Yr <sub>max</sub> |
|--------------------------------|-----------------|--------|------------------|------|------|----|-------------------|
| O1                             | S1 0.000        | Fu.C.2 | -118.36          | 0.00 |      |    |                   |
| O2                             | S1 2.200<br>(L) | Fu.C.2 | -118.36          | 0.00 |      |    |                   |
| <b>Globale extreme waarden</b> |                 |        |                  |      |      |    |                   |
| O2                             | S1 2.200<br>(L) | Fu.C.2 | -118.36          | 0.00 |      |    |                   |
|                                |                 |        |                  | kN   | kNm  | kN | kNm               |

Diagram of a beam element S1 between nodes K1 and K2. The beam has a length of 2.200. At node K1, there is a vertical reaction force of 0.000 and a moment of -74.16. At node K2, there is a vertical reaction force of 2.200 and a moment of -74.16.

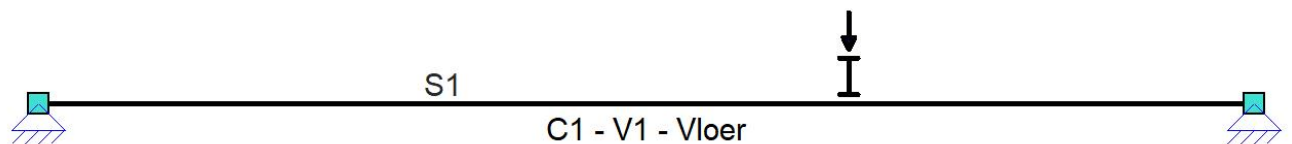
| Oplegging                      | Positie         | B.C.   | Z <sub>max</sub> | Yr B.C. | Z Yr <sub>max</sub> |
|--------------------------------|-----------------|--------|------------------|---------|---------------------|
| O1                             | S1 0.000        | Ka.C.2 | -87.86           | 0.00    |                     |
| O2                             | S1 2.200<br>(L) | Ka.C.2 | -87.86           | 0.00    |                     |
| <b>Globale extreme waarden</b> |                 |        |                  |         |                     |
| O2                             | S1 2.200<br>(L) | Ka.C.2 | -87.86           | 0.00    |                     |
|                                |                 |        | kN               | kNm     | kN kNm              |

Ka.C. Omhullende Doorbuigingen

**EXTREME DOORBUIGINGEN (KARAKTERISTIEK)**

| Veld                   | B.C.   | Veld Begin | Z   | Z'afst | Z'  | Veld | Z' glb dist | Z' glb | Veld Eind | Z    |
|------------------------|--------|------------|-----|--------|-----|------|-------------|--------|-----------|------|
| Veld 1 (0.000 - 2.200) | Ka.C.2 |            | 0.0 | 1.100  | 4.6 |      | 1.100       | 4.6    |           | -0.0 |
| m                      |        |            | mm  | m      | mm  |      | m           | mm     |           | mm   |

Staaldefinitie

**CONSTRUCTIEDELEN**

| Constructiedeel | Staal/staven |
|-----------------|--------------|
| C1              | S1           |

**INVOER GEGEVENS****DOORBUIGINGGEGEVENS**

| Staal               | Constructietype | Toetsing | Zeeg Z' | Zeegvorm    | w <sub>max</sub> | w <sub>2</sub> + w <sub>3</sub> | Abs. limiet w <sub>2</sub> + w <sub>3</sub> |
|---------------------|-----------------|----------|---------|-------------|------------------|---------------------------------|---------------------------------------------|
| C1-V1 (0.000-2.200) | Vloer           | Algemeen | 0       | Parabolisch | L/250            | L/333                           |                                             |
|                     |                 |          | mm      |             |                  |                                 | mm                                          |

**STAALTOETS RESULTATEN**

NEN-EN1993-1-1:2016/NB:2016

Uitgangspunten berekening voor staalcontrole

**DOORSNEDE GEGEVENS**

Staal C1-V1 (0.000-2.200)

**KK180/180/8**

|                |          |                |                           |                     |                           |                     |                           |
|----------------|----------|----------------|---------------------------|---------------------|---------------------------|---------------------|---------------------------|
| h              | 180.0 mm | A              | 5.2842e-03 m <sup>2</sup> | W <sub>pl,y</sub>   | 3.3570e-04 m <sup>3</sup> | W <sub>el,y</sub>   | 2.8287e-04 m <sup>3</sup> |
| b              | 180.0 mm | I <sub>y</sub> | 2.5459e-05 m <sup>4</sup> | W <sub>pl,z</sub>   | 3.3570e-04 m <sup>3</sup> | W <sub>el,z</sub>   | 2.8287e-04 m <sup>3</sup> |
| t <sub>f</sub> | 8.0 mm   | I <sub>z</sub> | 2.5459e-05 m <sup>4</sup> | A <sub>w,pl,y</sub> | 2.6421e-03 m <sup>2</sup> | A <sub>w,el,y</sub> | 2.6421e-03 m <sup>2</sup> |
| t <sub>w</sub> | 8.0 mm   | Massa/m        | 41.5 kg/m                 | A <sub>w,pl,z</sub> | 2.6421e-03 m <sup>2</sup> | A <sub>w,el,z</sub> | 2.6421e-03 m <sup>2</sup> |
| r <sub>i</sub> | 12.0 mm  |                |                           | I <sub>t</sub>      | 4.0708e-05 m <sup>4</sup> | I <sub>w</sub>      | 1.8829e-07 m <sup>6</sup> |
| r <sub>o</sub> | 20.0 mm  |                |                           |                     |                           |                     |                           |

**S235H(EN10219-1)**

|                         |                          |
|-------------------------|--------------------------|
| f <sub>y</sub> (≤40 mm) | 235.00 N/mm <sup>2</sup> |
| f <sub>y</sub> (>40 mm) | 0.00 N/mm <sup>2</sup>   |

**DOORSNEDE (#6.2)**

Staaf C1-V1 (0.000-2.200)

| Maatgevende combinatie |                   | Fu.C.2    | Doorsnedeklasse  |        |                   | 1          |
|------------------------|-------------------|-----------|------------------|--------|-------------------|------------|
| Maatgevende positie    |                   | 1.100 m   |                  |        |                   |            |
| Normaalkracht          | N <sub>Ed</sub>   | 0.00 kN   | Ontwerpweerstand | (6.6)  | N <sub>Rd</sub>   | 1241.80 kN |
| Buigmoment             | M <sub>y,Ed</sub> | 65.10 kNm | Ontwerpweerstand | (6.13) | M <sub>y,Rd</sub> | 78.89 kNm  |
| Buigmoment             | M <sub>z,Ed</sub> | 0.00 kNm  | Ontwerpweerstand | (6.13) | M <sub>z,Rd</sub> | 78.89 kNm  |
| Dwarskracht            | V <sub>y,Ed</sub> | 0.00 kN   | Ontwerpweerstand | (6.18) | V <sub>y,Rd</sub> | 358.48 kN  |
| Dwarskracht            | V <sub>z,Ed</sub> | 0.00 kN   | Ontwerpweerstand | (6.18) | V <sub>z,Rd</sub> | 358.48 kN  |

**Buiging en schuif #6.2.8**

|                    |       |                    |       |
|--------------------|-------|--------------------|-------|
| Verhouding         | 0.0 % | Verhouding         | 0.0 % |
| Is reductie nodig? | Nee   | Is reductie nodig? | Nee   |

**Uitgevoerde controles**

NEN-EN1993-1-1(6.5): UC = 0.00  
 NEN-EN1993-1-1(6.12): UC (y) = 0.83  
 NEN-EN1993-1-1(6.12): UC (z) = 0.00  
 NEN-EN1993-1-1(6.17): UC (y) = 0.00  
 NEN-EN1993-1-1(6.17): UC (z) = 0.00

**DOORBUIGINGSTOETSING**

Staaf C1-V1 (0.000-2.200)

|                 |          |              |             |
|-----------------|----------|--------------|-------------|
| Constructietype | Vloer    | Zeeg functie | Parabolisch |
| Toetsing        | Algemeen | Zeeg         | $w_c$ 0 mm  |

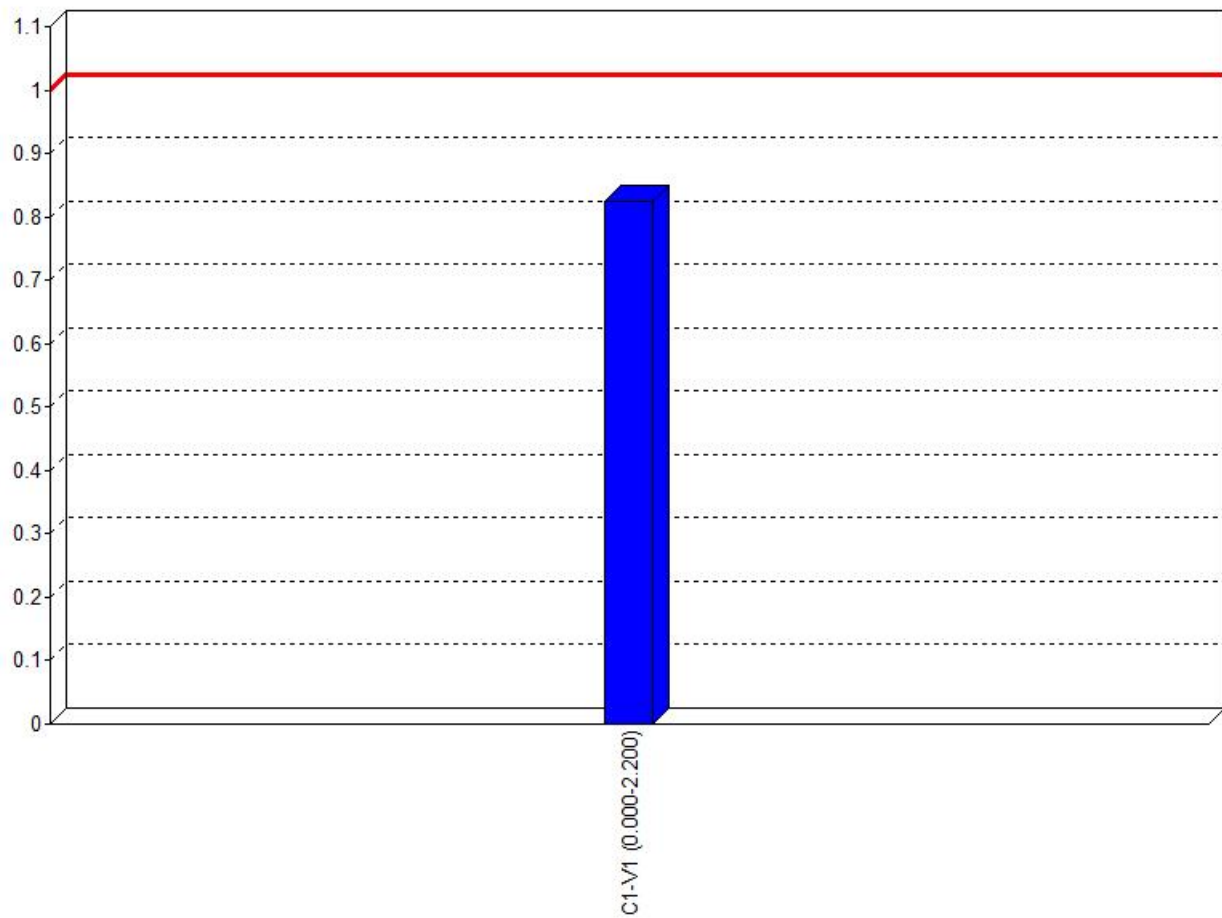
 **$w_{max}$** 

| As | Positie | $w_1$ B.G.    | $w_3$ B.G. | $w_{tot}$ | $w_c$ | $w$ | Limiet (L/250) | UC   |
|----|---------|---------------|------------|-----------|-------|-----|----------------|------|
| Z' | 1.100   | 3.8 Fr.C.(w1) | 0.3 Qu.C.1 | 4.2       | 0.0   | 4.2 | 8.8            | 0.47 |
|    | m       | mm            | mm         | mm        | mm    | mm  | mm             |      |

 **$(w_2+w_3)$** 

| As | Positie | $w_3$ B.G. | $w$ | Abs. limiet | Limiet (L/333) | UC   |
|----|---------|------------|-----|-------------|----------------|------|
| Z' | 1.100   | 0.4 Fr.C.1 | 0.4 | 0.0         | 6.6            | 0.06 |
|    | m       | mm         | mm  | mm          | mm             |      |

Afb. Staal UC Diagram

**UNITY CHECK**

| Label               | Toetsing             | Combinatie | Artikel              | Unity Check |
|---------------------|----------------------|------------|----------------------|-------------|
| C1-V1 (0.000-2.200) | Doorsnede            | Fu.C.2     | NEN-EN1993-1-1(6.12) | 0.83        |
|                     | Doorbuigingstoetsing | Qu.C.1     | NEN-EN1990/NB A1.4.2 | 0.47        |

Bestand : .....ber-Baas\w222073-Dijkwoningen\_kzst\_penant.vnks  
 Nationale annex : Nederlands

**Module 1 - Twee- of meerszijdig gesteunde dragende wand met moment in het midden en aan de uiteinden van de wand**

**INVOERGEGEVENS**

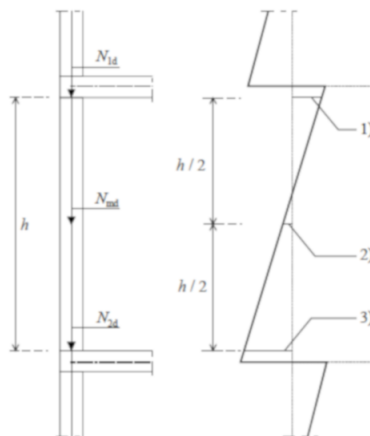
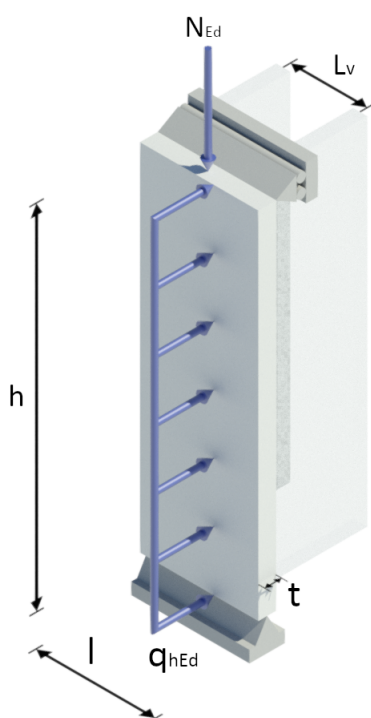
**ONDERDEEL : Penant onder stalen ligger**

Materiaaleigenschappen:

gevolgklasse: CC2

genormaliseerde gemiddelde druksterkte kalkzandsteen (CS 12)  $f_b = 12 \text{ N/mm}^2$

mortelkwaliteit: morteltype: Lijmmortel



- 1)  $M_{Ed t}$  (inwendig moment aan de bovenzijde van de wand)
- 2)  $M_{Ed m}$  (inwendig moment in het midden van de hoogte van de wand)
- 3)  $M_{Ed b}$  (inwendig moment aan de onderzijde van de wand)

Geometrie van de wand:

dikte

$t = 240 \text{ mm}$

hoogte

$h = 2650 \text{ mm}$

breedte

$\ell = 400 \text{ mm}$

Aantal gesteunde randen: 2

Soort vloeroplegging: wand met aan beide zijden betonvloer

Belastingen:

normaalkracht

$N_{Ed} = 118,4 \text{ kN}$

maximale normaalkracht

$N_{Ed, max} = 118,4 \text{ kN}$

moment aan de top

$M_{Ed t} = 0,00 \text{ kNm}$

moment in het midden

$M_{Ed m} = 0,00 \text{ kNm}$

moment aan de voet

$M_{Ed b} = 0,00 \text{ kNm}$

## BEREKENING

**Bepaling capaciteit volgens art. 5.5.1 van NEN-EN 1996-1-1 (nl):**

### Tussenresultaten

$$f_k = K (f_b)^\alpha (f_m)^\beta = 0,8 \times 12^{0,85} \times 12,5^0 = 6,61 \text{ N/mm}^2 \quad \dots(3.3)$$

$$f_d = \frac{f_k}{\gamma_M} = \frac{6,61}{1,7} = 3,89 \text{ N/mm}^2$$

$$\frac{t \ell}{10^6} < 0,1 \text{ m}^2 \quad f_d = (0,7 + 3 \frac{t \ell}{10^6}) f_d = 3,84 \text{ N/mm}^2 \quad \dots(6.3)$$

$$\rho = 0,75 \quad \dots(5.3)$$

$$h_{ef} = \rho h = 0,75 \times 2650 = 1988 \text{ mm} \quad \dots(5.2)$$

Artikel 5.5.1.4 (2)

$$\lambda = \frac{h_{ef}}{t_{ef}} = 8,28 < 27 \text{ u.c.} = 0,31 \quad \text{Slankheid van de wand voldoet.}$$

Artikel 5.5.1.1 (4)

$$e_{init} = \frac{h_{ef}}{450} = 4,4 \text{ mm}$$

Artikel 6.1.2.2

Excentriciteit boven

$$e_t = \frac{M_{Ed,t}}{N_{Ed}} = 0 \text{ mm} \quad e_{i,t,f} = \max(|e_t| + e_{init}; 0,05 t) = 12 \text{ mm} \quad \dots(6.5)$$

$$\frac{N_{Ed}}{\ell t f_d} > 0,1 \quad e_{i,t} = e_{i,t,f} = 12 \text{ mm}$$

$$\Phi_{i,t} = 1 - 2 \frac{e_{i,t}}{t} = 0,9 \quad \dots(6.4) \quad N_{Rd,t} = \Phi_{i,t} \ell t f_d = 332,06 \text{ kN} \quad \dots(6.2)$$

Excentriciteit onder

$$e_b = \frac{M_{Ed,b}}{N_{Ed}} = 0 \text{ mm} \quad e_{i,b,f} = \max(|e_b| + e_{init}; 0,05 t) = 12 \text{ mm} \quad \dots(6.5)$$

$$\frac{N_{Ed}}{\ell t f_d} > 0,1 \quad e_{i,b} = e_{i,b,f} = 12 \text{ mm}$$

$$\Phi_{i,b} = 1 - 2 \frac{e_{i,b}}{t} = 0,9 \quad \dots(6.4) \quad N_{Rd,b} = \Phi_{i,b} \ell t f_d = 332,06 \text{ kN} \quad \dots(6.2)$$

Excentriciteit midden

$$e_{Ed,m} = \frac{M_{Ed,m}}{N_{Ed}} = 0 \text{ mm} \quad e_m = |e_{Ed,m}| + e_{init} = 4,4 \text{ mm}$$

$$e_k = 0 \text{ mm} \dots (6.8) \quad e_{mk} = \max(|e_m| + e_k; 0,05 t_{ef}) = 12 \text{ mm} \dots (6.6)$$

$$A_1 = 1 - 2 \frac{e_{mk}}{t} = 1 - 2 \frac{12}{240} = 0,9 \dots (G.2)$$

$$\lambda_\phi = \frac{h_{ef}}{t_{ef}} \sqrt{\frac{f_k}{E}} = \frac{1987,5}{240} \sqrt{\frac{6,6}{4629,1}} = 0,313 \dots (G.4)$$

$$u = \frac{\lambda_\phi - 0,063}{0,73 - 1,17 \frac{e_{mk}}{t_{ef}}} = \frac{0,313 - 0,063}{0,73 - 1,17 \frac{12}{240}} = 0,372 \dots (G.3)$$

$$\Phi_m = A_1 e^{-(u u)^2} = 0,84 \dots (G.1) \quad N_{Rd,m} = \Phi_m \ell t f_d = 309,83 \text{ kN} \dots (6.2)$$

Artikel 6.1.2.1(1)

$$N_{Ed} = 118,4 \text{ kN} < N_{Rd} = 309,8 \text{ kN} \quad u.c. = 0,38 \quad \text{Capaciteit van de wand voldoet.}$$

Bij constante minimale eerste-orde excentriciteit

$$h_{ef2} = \rho_2 h = 1,00 \times 2650 = 2650 \text{ mm} \dots (5.2)$$

Artikel 5.5.1.4 (2)

$$\lambda = \frac{h_{ef2}}{t_{ef}} = 11,04 < 27 \quad u.c. = 0,41 \quad \text{Slangheid van de wand voldoet.}$$

$$e_{m2} = \max\left(10; \frac{h_{ef2}}{300}\right) = 10 \text{ mm}$$

$$e_k = 0 \text{ mm} \dots (6.8) \quad e_{mk2} = \max(e_{m2} + e_k; 0,05 t) = 12 \text{ mm} \dots (6.6)$$

$$A_1 = 1 - 2 \frac{e_{mk2}}{t} = 1 - 2 \frac{12}{240} = 0,9 \dots (G.2)$$

$$\lambda_\phi = \frac{h_{ef2}}{t_{ef}} \sqrt{\frac{f_k}{E}} = \frac{2650}{240} \sqrt{\frac{6,6}{4629,1}} = 0,417 \dots (G.4)$$

$$u = \frac{\lambda_\phi - 0,063}{0,73 - 1,17 \frac{e_{mk}}{t}} = \frac{0,417 - 0,063}{0,73 - 1,17 \frac{12}{240}} = 0,528 \dots (G.3)$$

$$\Phi_{m2} = A_1 e^{-(u u)^2} = 0,783 \dots (G.1) \quad N_{Rd,m2} = \Phi_{m2} \ell t f_d = 288,9 \text{ kN} \dots (6.2)$$

Artikel 5.5.1.1(5)

$$N_{Ed,max} = 118,4 \text{ kN} < N_{Rd,m2} = 288,9 \text{ kN} \quad u.c. = 0,41 \quad \text{Capaciteit van de wand voldoet.}$$

### Resultaten

$$\frac{t \ell}{10^6} < 0,1 \text{ m}^2 \quad f_d = (0,7 + 3 \frac{t \ell}{10^6}) f_d = 3,84 \text{ N/mm}^2 \quad \dots(6.3)$$

Bij gegeven momenten

$$h_{ef} = \rho \ h = 0,75 \times 2650 = 1988 \text{ mm} \quad \dots(5.2)$$

$$\Phi_{i,t} = 1 - 2 \frac{e_{i,t}}{t} = 0,9 \quad \dots(6.4) \quad N_{Rd,t} = \Phi_{i,t} \ell t f_d = 332,06 \text{ kN} \quad \dots(6.2)$$

$$\Phi_{i,b} = 1 - 2 \frac{e_{i,b}}{t} = 0,9 \quad \dots(6.4) \quad N_{Rd,b} = \Phi_{i,b} \ell t f_d = 332,06 \text{ kN} \quad \dots(6.2)$$

$$\Phi_m = A_1 e^{-(u u)/2} = 0,84 \quad \dots(G.1) \quad N_{Rd,m} = \Phi_m \ell t f_d = 309,83 \text{ kN} \quad \dots(6.2)$$

Artikel 6.1.2.1(1)

$$N_{Ed} = 118,4 \text{ kN} < N_{Rd} = 309,8 \text{ kN} \quad u.c. = 0,38 \quad \text{Capaciteit van de wand voldoet.}$$

$$h_{ef2} = \rho_2 \ h = 1,00 \times 2650 = 2650 \text{ mm} \quad \dots(5.2)$$

$$\Phi_{m2} = A_1 e^{-(u u)/2} = 0,783 \quad \dots(G.1) \quad N_{Rd,m2} = \Phi_{m2} \ell t f_d = 288,9 \text{ kN} \quad \dots(6.2)$$

Artikel 5.5.1.1(5)

$$N_{Ed,max} = 118,4 \text{ kN} < N_{Rd,m2} = 288,9 \text{ kN} \quad u.c. = 0,41 \quad \text{Capaciteit van de wand voldoet.}$$

**Conclusie : Wand voldoet.**