

# BOUWADVIESBUREAU

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**WERK:**

**Nieuwbouw Boskalis Vlaardingen**

**WERKNR.:**

**18009**

**OPDRACHTGEVER:**

**Bouwbedrijf Vrolijk B.V.**

**Campagneweg 16**

**4761 RM Zevenbergen**

**ONDERDEEL:**

**Gewichtsberekening**

**Datum:**

**13-07-2018**

## **PROJECT : NIEUWBOUW BOSKALIS VLAARDINGEN**

### **GEWICHTS- EN STABILITEITS BEREKENING**

#### **ALGEMEEN**

Het betreft de bouw van een distributiecentrum in 1 bouwlaag met aan de voorgevelzijde op de begane grond een kantoorgedeelte tussen as A - C en as 5- 7. Het kantoorgedeelte heeft een verdiepingsvloer op 3500+P en 7000+P tussen as A - C en as 6-7. (zie op blz. 4 een overzichtstekening)

Ook zit er aan de voorgevelzijde een mezzaninevloer op 7000+P, tussen as A - C en as 1-5, boven de docklevellers.

De vrije hoogte in de hal is 12,25 meter.

De hoofddraagstructuur van het gebouw bestaat uit een staalconstructie met stalen dakplaten en gevelbeplating. De verdiepingsvloer van het kantoor is een kanaalplaatvloer uitgevoerd met een druklaag. De mezzanine vloer is ook een kanaalplaatvloer met druklaag.

De begane grondvloer wordt uitgevoerd als een in het werk gestorte monoliet afgewerkte betonvloer op vibro palen.

De begane grondvloer van het kantoor is een geïsoleerde kanaalplaatvloer.

Het gebouw wordt gefundeerd op palen met een betonnen ringbalk t.b.v. de gevels en betonpoeren t.b.v. de kolommen in de ruimte. Onder de constructie balken en poeren worden prefab betonpalen toegepast.

Voor de docklevellers is een onderheide betonnen hellingbaan gesitueerd.

De stabiliteit van het gebouw wordt verzorgd door windverbanden in het dak en verticale windverbanden in de gevels en een stabiliteits portaal op as C.

Het gebouw wordt gedilateerd vanwege de brandcompartimentering, waardoor er 7 aparte hallen ontstaan. De dilataties liggen op as 2 t/m 6 en as C.

De constructie van de hal wordt uitgerekend in gevolgklasse CC1.

#### **Normen**

Uitgangspunt voor de berekeningen vormt de normenserie volgens de Eurocode

|                   |                                                               |
|-------------------|---------------------------------------------------------------|
| Belastingen       | - NEN-EN 1991-1-1-1 t/m 1991-1-7 inclusief Nationale bijlagen |
| Betonconstructies | - NEN-EN 1992 inclusief nationale bijlagen                    |
| Staalconstructie  | - NEN-EN 1993 inclusief nationale bijlagen                    |
| Steenconstructie  | - NEN-EN 1996 inclusief nationale bijlagen                    |
| Geotechniek       | - NEN-EN 1997 inclusief nationale bijlagen                    |

**Gevolgklassen, referentieperiode en belastingfactoren**

gebouwtype volgens bouwbesluit  
gevolgklasse:  
referentieperiode:

|     |                                                           |   |
|-----|-----------------------------------------------------------|---|
| 5   | Industriefunctie                                          | ▼ |
| CC1 | geringe gevolgen / verminderde veiligheid                 | ▼ |
| 15  | jaar, land- / tuinbouw constructies of industrie gebouwen | ▼ |

gebouwtype volgens bouwbesluit  
gevolgklasse:  
referentieperiode:

|     |                                              |   |
|-----|----------------------------------------------|---|
| 6   | Kantoorfunctie                               | ▼ |
| CC2 | middelmatige gevolgen / gewone veiligheid    | ▼ |
| 50  | jaar, gebouwen en andere gewone constructies | ▼ |

belastingfactoren uiterste grenstoestand

|              |           | eigen gewicht |         | veranderlijk<br>$\gamma_Q$ | buitengewoon<br>$\gamma_A$ |
|--------------|-----------|---------------|---------|----------------------------|----------------------------|
|              |           | $\gamma_G$    |         |                            |                            |
|              |           | normaal       | gunstig |                            |                            |
| Stabiliteit  | (EQU)     | 1,00          | 0,90    | 1,35                       | 0,00                       |
| Fundamenteel | (STR/GEO) | 1,22          | 0,90    | 1,35                       | 0,00                       |
| buitengewoon | (STR)     | 1,00          | 1,00    | 1,00                       | 1,00                       |
|              |           |               |         |                            |                            |

belastingfactoren bruikbaarheids grenstoestand

|                | eigen gewicht |         | veranderlijk<br>$\gamma_Q$ | buitengewoon<br>$\gamma_A$ |
|----------------|---------------|---------|----------------------------|----------------------------|
|                | $\gamma_G$    |         |                            |                            |
|                | normaal       | gunstig |                            |                            |
| Karakteristiek | 1,00          | 1,00    | 1,00                       | 0,00                       |

**fundamentele belastingcombinaties hal:**

|        |                           |                        |       |                                       |
|--------|---------------------------|------------------------|-------|---------------------------------------|
| 6.10 a | $1,22 \cdot G$            | +                      | + som | $1,35 \cdot \psi_{0,i} \cdot Q_{k,i}$ |
| 6.10 b | $1,22 \cdot 0,89 \cdot G$ | + $1,35 \cdot Q_{k,1}$ | + som | $1,35 \cdot \psi_{0,i} \cdot Q_{k,i}$ |

**fundamentele belastingcombinaties kantoorgedeelte en mezzanine:**

|        |                           |                        |       |                                       |
|--------|---------------------------|------------------------|-------|---------------------------------------|
| 6.10 a | $1,35 \cdot G$            | +                      | + som | $1,50 \cdot \psi_{0,i} \cdot Q_{k,i}$ |
| 6.10 b | $1,35 \cdot 0,89 \cdot G$ | + $1,50 \cdot Q_{k,1}$ | + som | $1,50 \cdot \psi_{0,i} \cdot Q_{k,i}$ |

**Sterkte bij Brand**

bestaand / nieuw

- ☐ Bestaande bouw
- ☒ Nieuwbouw

hoogste verblijfsruimte t.o.v. meetnivo

- ☐ < 5,0 m.
- ☒ < 13,0 m.
- ☐ > 13,0 m.

permanente vuurbelasting

- ☒ < 500 MJ/m<sup>2</sup>
- ☐ > 500 MJ/m<sup>2</sup>

Tijdsduur brandwerendheid m.b.t. bezwijken 90 minuten

Reductie t.g.v. permanenten vuurbel. 30 - minuten

Totale tijdsduur brandw. m.b.t. bezwijken 60 minuten

Vloer, trap of hellingbaan waarover of waaronder een vluchtroute voert bezwijkt niet binnen 30 minuten bij brand

Uitgangspunt voor de constructie is dat op de dilatatie assen een dubbele constructie wordt gemaakt met een brandscheiding van 150 mm cellenbeton.

Op deze wijze zijn de brandcompartimenten gescheiden en is er geen brandeis voor de staalconstructie.

## PROJECT : NIEUWBOUW BOSKALIS VLAARDINGEN

### GEWICHTS- EN STABILITEITS BEREKENING

#### BELASTINGAANNAMEN

##### belastingen

##### plat dak hal

###### permanente belastingen

|                                      |   |             |                   |
|--------------------------------------|---|-------------|-------------------|
| stalen dakplaat h=135 mm             | = | 0,15        | kN/m <sup>2</sup> |
| isolatie en afwerking en klein staal | = | 0,10        | "                 |
| leidingen sprinkler installatie      | = | 0,10        | "                 |
| zonnepanelen                         | = | 0,20        | "                 |
|                                      |   | <u>0,55</u> | +                 |

###### opgelegde belastingen

vloerklasse NEN-EN 1991-1- H daken niet toegankelijk ▼

|                            |          |   |      |                   |
|----------------------------|----------|---|------|-------------------|
| vloer gelijkmatig verdeeld | $q_k$    | = | 1,00 | kN/m <sup>2</sup> |
| vloer geconcentreerd       | $Q_k$    | = | 1,50 | kN                |
| momentaanfactor            | $\psi_0$ | = | 0,00 |                   |

aan te houden belasting  $q_k$  = 0,56 kN/m<sup>2</sup>

##### plat dak kantoor

###### permanente belastingen

|                                      |   |             |                   |
|--------------------------------------|---|-------------|-------------------|
| stalen dakplaten h=135mm             | = | 0,15        | kN/m <sup>2</sup> |
| isolatie en afwerking en klein staal | = | 0,10        | "                 |
| leidingen sprinkler installatie      | = | 0,10        | "                 |
|                                      |   | <u>0,35</u> | +                 |

###### opgelegde belastingen

vloerklasse NEN-EN 1991-1- H daken niet toegankelijk ▼

|                            |          |   |      |                   |
|----------------------------|----------|---|------|-------------------|
| vloer gelijkmatig verdeeld | $q_k$    | = | 1,00 | kN/m <sup>2</sup> |
| vloer geconcentreerd       | $Q_k$    | = | 1,50 | kN                |
| momentaanfactor            | $\psi_0$ | = | 0,00 |                   |

aan te houden belasting  $q_k$  = 0,56 kN/m<sup>2</sup>

##### mezzaninevloer hal op 7000 +

###### permanente belastingen

|                      |   |             |                   |
|----------------------|---|-------------|-------------------|
| kanaalplaat d=400 mm | = | 4,90        | kN/m <sup>2</sup> |
| druklaag gem. 80 mm  | = | 2,00        | "                 |
| klein ijzerwerk etc  | = | 0,25        | "                 |
|                      |   | <u>7,15</u> | +                 |

###### opgelegde belastingen

vloerklasse NEN-EN 1991-1- E2 opslag; industrieel gebruik ▼

|                                        |          |   |       |                   |
|----------------------------------------|----------|---|-------|-------------------|
| vloer gelijkmatig verdeeld             | $q_k$    | = | > 3,0 | kN/m <sup>2</sup> |
| vloer geconcentreerd                   | $Q_k$    | = | > 7,0 | kN                |
| ontsluitingswegen gelijkmatig verdeeld | $q_k$    | = | 4,00  | kN/m <sup>2</sup> |
| ontsluitingswegen geconcentreerd       | $Q_k$    | = | 4,00  | kN                |
| momentaanfactor                        | $\psi_0$ | = | 1,00  |                   |

aan te houden belasting  $q_k$  = 10,00 kN/m<sup>2</sup>

**entresolvloer op 7000 +***permanente belastingen*

|                      |   |        |                   |
|----------------------|---|--------|-------------------|
| kanaalplaat d=400 mm | = | 4,90   | kN/m <sup>2</sup> |
| druklaag gem. 80 mm  | = | 2,00   | "                 |
| klein ijzerwerk etc  | = | 0,25   | "                 |
|                      |   | <hr/>  |                   |
|                      |   | 7,15 + | "                 |

*opgelegde belastingen*

vloerklasse NEN-EN 1991-1-

E2 opslag; industrieel gebruik

vloer gelijkmatig verdeeld

q<sub>k</sub> = > 3,0 kN/m<sup>2</sup>

vloer geconcentreerd

Q<sub>k</sub> = > 7,0 kN

ontsluitingswegen gelijkmatig verdeeld

q<sub>k</sub> = 4,00 kN/m<sup>2</sup>

ontsluitingswegen geconcentreerd

Q<sub>k</sub> = 4,00 kN

momentaanfactor

ψ<sub>0</sub> = 1,00aan te houden belasting q<sub>k</sub> = 10,00 kN/m<sup>2</sup>**verdiepingsvloer kantoor***permanente belastingen*

|                      |   |        |                   |
|----------------------|---|--------|-------------------|
| kanaalplaat d=200 mm | = | 3,00   | kN/m <sup>2</sup> |
| druklaag gem. 80 mm  | = | 2,00   | "                 |
| klein ijzerwerk etc  | = | 0,25   | "                 |
|                      |   | <hr/>  |                   |
|                      |   | 5,25 + | "                 |

*opgelegde belastingen*

vloerklasse NEN-EN 1991-1-

B kantoren

vloer gelijkmatig verdeeld

q<sub>k</sub> = 2,50 kN/m<sup>2</sup>

vloer geconcentreerd

Q<sub>k</sub> = 3,00 kN

ontsluitingswegen gelijkmatig verdeeld

q<sub>k</sub> = 3,00 kN/m<sup>2</sup>

ontsluitingswegen geconcentreerd

Q<sub>k</sub> = 3,00 kN

momentaanfactor

ψ<sub>0</sub> = 0,50aan te houden belasting q<sub>k</sub> = 4,00 kN/m<sup>2</sup>**begane grond vloer hal***permanente belastingen*

|                     |   |      |                   |
|---------------------|---|------|-------------------|
| betonvloer d=200 mm | = | 7,50 | kN/m <sup>2</sup> |
|---------------------|---|------|-------------------|

*opgelegde belastingen*

vloerklasse NEN-EN 1991-1-

E2 opslag; industrieel gebruik

vloer gelijkmatig verdeeld

q<sub>k</sub> = 50,00 kN/m<sup>2</sup>

vloer geconcentreerd

Q<sub>k</sub> = > 7,0 kN

ontsluitingswegen gelijkmatig verdeeld

q<sub>k</sub> = 4,00 kN/m<sup>2</sup>

ontsluitingswegen geconcentreerd

Q<sub>k</sub> = 4,00 kN

momentaanfactor

ψ<sub>0</sub> = 0,80gehanteerde puntlast uit stellingen  
(2x 70 kN)Q<sub>k</sub> = 140,00 kN

**begane grond vloer kantoor***permanente belastingen*

geïsoleerde kanaalplaat d=200mm

=

3,08 kN/m<sup>2</sup>

afwerklaag gem 60mm

=

1,50 "

---

4,58 + "*opgelegde belastingen*

vloerklasse NEN-EN 1991-1-B kantoren



vloer gelijkmatig verdeeld

 $q_k$ 

=

2,50 kN/m<sup>2</sup>

vloer geconcentreerd

 $Q_k$ 

=

3,00 kN

ontsluitingswegen gelijkmatig verdeeld

 $q_k$ 

=

3,00 kN/m<sup>2</sup>

ontsluitingswegen geconcentreerd

 $Q_k$ 

=

3,00 kN

momentaanfactor

 $\psi_0$ 

=

0,50

---

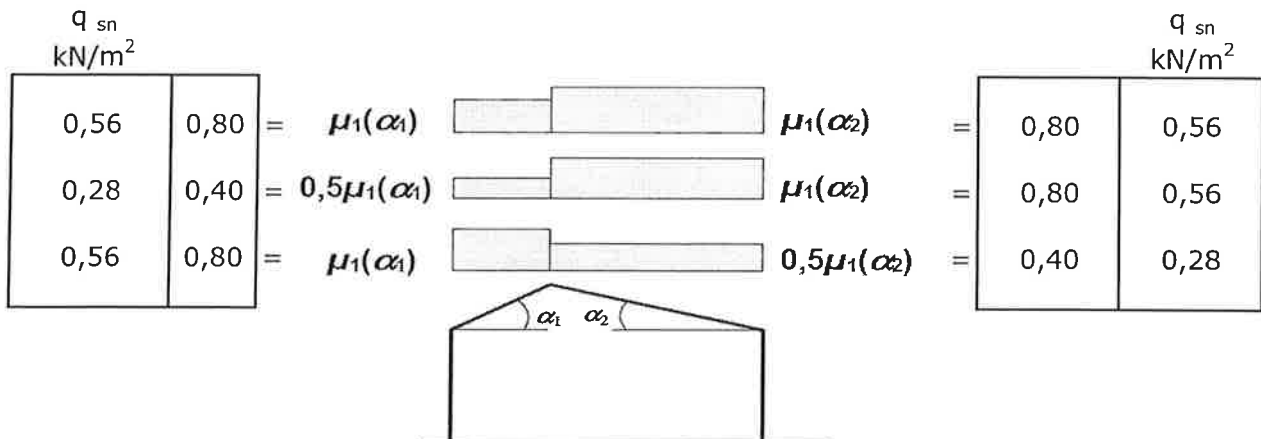
aan te houden belasting  $q_k$  = 4,00 kN/m<sup>2</sup>

## sneeuw belasting

$$S_k = 0,70 \text{ kN/m}^2$$

dakhelling  $\alpha_1 = 0^\circ \quad \mu_1 = 0,80$

dakhelling  $\alpha_2 = 0^\circ \quad \mu_1 = 0,80$



voor eenzijdig hellende daken reken  $q_{sn} = \mu_1(\alpha_1) * S_k = 0,56 \text{ kN/m}^2$   
voor Cillinderdaken en zaagtand daken zie NEN-EN 1991-1-3

## sneeuwlast door afglijden en opwaaien

dakhelling  $\alpha_1 = 0^\circ \quad \mu_1 = 0,80$   
 $\mu_s = 0,00$

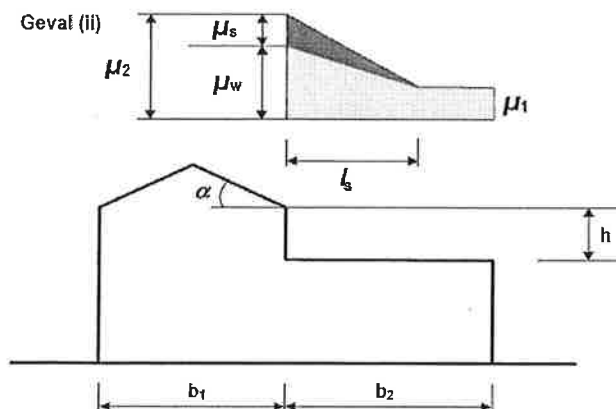
$b_1 = 100,00 \text{ m.}$   
 $b_2 = 15,00 \text{ m.}$   
 $h = 0,00 \text{ m}$

$\mu_w = \text{nvt}$   
 $\mu_2 = \text{nvt}$

$q_{sn} \text{ nvt} \quad \text{kN/m}^2$

$\mu_1 = 0,80 \quad q_{sn} \quad 0,56 \text{ kN/m}^2$

$l_s = 5,00 \text{ m.}$



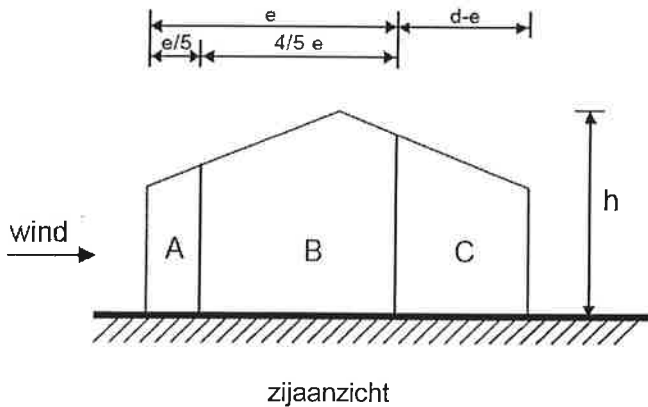
### windbelasting

windgebied II ▼

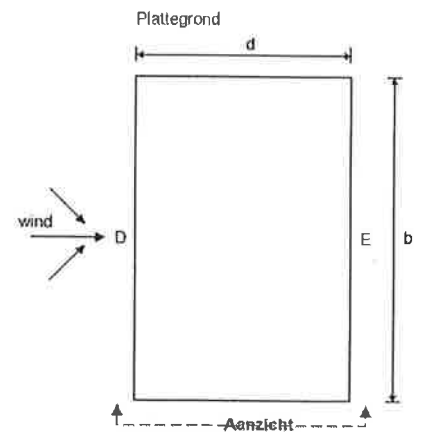
terrein categorie II Onbebouwd gebied ▼

|                           |         |                        |  |                                  |         |
|---------------------------|---------|------------------------|--|----------------------------------|---------|
| hoogte boven maaiveld (z) | z =     | 14,70 m.               |  |                                  |         |
| hoogte borstwering        | hp =    | 0,30 m.                |  |                                  |         |
| hoogte dak                | h =     | 14,40 m.               |  | e =                              | 28,8 m. |
| gebouwbreedte ⊥ W         | b =     | 138,80 m.              |  | h/b =                            | 0,10    |
| gebouwlengte // W         | d =     | 121,90 m.              |  | h/d =                            | 0,12    |
| Extreme stuwdruk          | qp =    | 0,97 kN/m <sup>2</sup> |  | stuwdruk over de hoogte constant |         |
| bouwwerk factor           | cs cd = | 1,00                   |  |                                  |         |
| correlatie factor         |         | 0,85                   |  |                                  |         |

### Druk coëfficiënten gevels C pe10

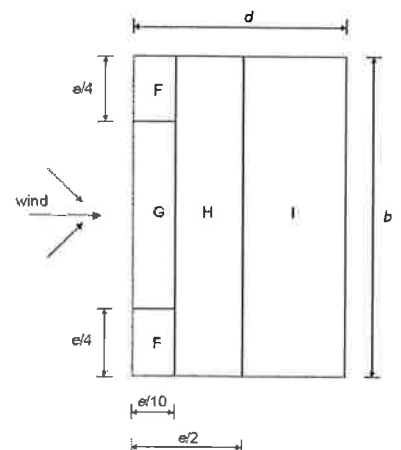


| A      | B      | C      | D     | E      |                                             |
|--------|--------|--------|-------|--------|---------------------------------------------|
| -1,020 | -0,680 | -0,425 | 0,680 | -0,425 | qp [kN/m <sup>2</sup> ]<br>zone breedte [m] |
| -0,989 | -0,659 | -0,412 | 0,659 | -0,412 |                                             |
| 5,76   | 23,04  | 93,10  |       |        |                                             |



### Druk coëfficiënten daken C pe10 (platte daken)

| F      | G      | H      | I      |                                                                |
|--------|--------|--------|--------|----------------------------------------------------------------|
| -1,8   | -1,2   | -0,7   | -0,2   | qp [kN/m <sup>2</sup> ]<br>zone breedte [m]<br>zone lengte [m] |
| -1,745 | -1,163 | -0,679 | -0,194 |                                                                |
| 2,88   | 2,88   | 11,52  | 107,50 |                                                                |
| 7,20   | 124,40 | 138,80 | 138,80 |                                                                |



## BELASTINGEN OP FUNDERING

### Kolommen in de hal (as 2, 3 en 4)

| belastingen    | n   | b      | h         | q eg    | q vb   | perm. | verand.   |
|----------------|-----|--------|-----------|---------|--------|-------|-----------|
| P 1 : balk     |     | 5,40   |           | * 12,00 |        | =     | 64,80     |
| vloer          |     | 2,80 * | 5,40 *    | 5,00 \  | 50,00  | =     | 75,60     |
| scheidingswand |     | 5,40 * | 14,00 *   | 1,20    |        | =     | 90,72     |
| dak            | 2 * |        |           | 40,00   |        | =     | 80,00     |
|                |     |        |           |         |        |       | 311,12    |
|                |     |        |           | psi     | =      | 0,8   |           |
| windzuiging    |     |        |           |         |        |       | 85,2 kN   |
| Paalbelasting  |     | 1,08 * | 311,12 +  | 1,35 *  | 756,00 | =     | 1356,6 kN |
|                |     | 1,22 * | 311,12 +  | 1,08 *  | 756,00 | =     | 1196,0 kN |
|                |     | 0,9 *  | 311,12 -  | 1,35 *  | 85,20  | =     | 165,0 kN  |
|                |     |        | 1 palen á |         |        |       | 1356,6 kN |

### Kolommen in de hal (as 5 en 6)

| belastingen    | n   | b      | h         | q eg    | q vb   | perm. | verand.   |
|----------------|-----|--------|-----------|---------|--------|-------|-----------|
| P 1 : balk     |     | 5,40   |           | * 12,00 |        | =     | 64,80     |
| vloer          |     | 2,50 * | 5,40 *    | 5,00 \  | 50,00  | =     | 67,50     |
| scheidingswand |     | 5,40 * | 14,00 *   | 1,20    |        | =     | 90,72     |
| dak            | 2 * |        |           | 40,00   |        | =     | 80,00     |
| uit kraanbaan  |     |        |           |         |        | =     | -         |
|                |     |        |           |         |        |       | 303,02    |
|                |     |        |           | psi     | =      | 0,8   |           |
| windzuiging    |     |        |           |         |        |       | 85,2 kN   |
| Paalbelasting  |     | 1,08 * | 303,02 +  | 1,35 *  | 815,00 | =     | 1427,5 kN |
|                |     | 1,22 * | 303,02 +  | 1,08 *  | 815,00 | =     | 1249,9 kN |
|                |     | 0,9 *  | 303,02 -  | 1,35 *  | 85,20  | =     | 157,7 kN  |
|                |     |        | 1 palen á |         |        |       | 1427,5 kN |

### Kolom in de hal as 2-L

| belastingen    | n   | b      | h         | q eg    | q vb   | perm. | verand.   |
|----------------|-----|--------|-----------|---------|--------|-------|-----------|
| P 1 : balk     |     | 4,90   |           | * 12,00 |        | =     | 58,80     |
| vloer          |     | 2,80 * | 4,90 *    | 5,00 \  | 50,00  | =     | 68,60     |
| scheidingswand |     | 4,90 * | 14,00 *   | 1,20    |        | =     | 82,32     |
| dak            | 2 * |        |           | 41,00   |        | =     | 82,00     |
|                |     |        |           |         |        |       | 291,72    |
|                |     |        |           | psi     | =      | 0,8   |           |
| windzuiging    |     |        |           |         |        |       | 85,2 kN   |
| Paalbelasting  |     | 1,08 * | 291,72 +  | 1,35 *  | 686,00 | =     | 1241,2 kN |
|                |     | 1,22 * | 291,72 +  | 1,08 *  | 686,00 | =     | 1096,8 kN |
|                |     | 0,9 *  | 291,72 -  | 1,35 *  | 85,20  | =     | 147,5 kN  |
|                |     |        | 1 palen á |         |        |       | 1241,2 kN |

### Kolommen in de gevel (bijv as 1)

| belastingen    | n   | b      | h        | q eg    | q vb     | perm. | verand.  |            |
|----------------|-----|--------|----------|---------|----------|-------|----------|------------|
| P 1 : balk     |     | 5,40   |          | * 10,50 |          | =     | 56,70    | - kN       |
| vloer          |     | 1,40 * | 5,40 *   | 5,00 \  | 50,00    | =     | 37,80    | 378,00 "   |
| gevel sandwich |     | 5,40 * | 11,00 *  | 0,80    |          | =     | 47,52    | - "        |
| gevel prefab   |     | 5,40 * | 3,00 *   | 4,30    |          | =     | 69,66    |            |
| dak            | 1 * |        |          | 41,00   |          | =     | 41,00    | "          |
|                |     |        |          |         |          |       | 252,68   | 378,00 + " |
|                |     |        |          | psi     | =        | 0,8   |          |            |
| windzuiging    |     |        |          |         |          |       |          | 109 kN     |
| Paalbelasting  |     | 1,08 * | 252,68 + | 1,35 *  | 378,00 = |       | 783,2 kN |            |
|                |     | 1,22 * | 252,68 + | 1,08 *  | 378,00 = |       | 716,5 kN |            |
|                |     | 0,9 *  | 252,68 - | 1,35 *  | 109,00 = |       | 80,3 kN  |            |
|                |     | 1      | palen á  |         |          |       | 783,2 kN |            |

### Kolom in de gevel as 1-L

| belastingen    | n   | b      | h        | q eg    | q vb     | perm. | verand.  |            |
|----------------|-----|--------|----------|---------|----------|-------|----------|------------|
| P 1 : balk     |     | 4,90   |          | * 10,50 |          | =     | 51,45    | - kN       |
| vloer          |     | 1,40 * | 4,90 *   | 5,00 \  | 50,00    | =     | 34,30    | 343,00 "   |
| gevel sandwich |     | 4,90 * | 11,00 *  | 0,80    |          | =     | 43,12    | - "        |
| gevel prefab   |     | 4,90 * | 3,00 *   | 4,30    |          | =     | 63,21    |            |
| dak            | 1 * |        |          | 41,00   |          | =     | 41,00    | "          |
|                |     |        |          |         |          |       | 233,08   | 343,00 + " |
|                |     |        |          | psi     | =        | 0,8   |          |            |
| windzuiging    |     |        |          |         |          |       |          | 109 kN     |
| Paalbelasting  |     | 1,08 * | 233,08 + | 1,35 *  | 343,00 = |       | 714,8 kN |            |
|                |     | 1,22 * | 233,08 + | 1,08 *  | 343,00 = |       | 654,8 kN |            |
|                |     | 0,9 *  | 233,08 - | 1,35 *  | 109,00 = |       | 62,6 kN  |            |
|                |     | 1      | palen á  |         |          |       | 714,8 kN |            |

### Hoekkolom in de gevel as 1

| belastingen    | n   | b      | h        | q eg    | q vb     | perm. | verand.  |            |
|----------------|-----|--------|----------|---------|----------|-------|----------|------------|
| P 1 : balk     |     | 5,00   |          | * 10,50 |          | =     | 52,50    | - kN       |
| vloer          |     | 1,40 * | 2,20 *   | 5,00 \  | 50,00    | =     | 15,40    | 154,00 "   |
| gevel sandwich |     | 5,00 * | 11,00 *  | 0,80    |          | =     | 44,00    | - "        |
| gevel prefab   |     | 5,00 * | 3,00 *   | 4,30    |          | =     | 64,50    |            |
| dak            | 1 * |        |          | 41,00   |          | =     | 12,40    | "          |
|                |     |        |          |         |          |       | 188,80   | 154,00 + " |
|                |     |        |          | psi     | =        | 0,8   |          |            |
| Paalbelasting  |     | 1,08 * | 188,80 + | 1,35 *  | 154,00 = |       | 411,8 kN |            |
|                |     | 1,22 * | 188,80 + | 1,08 *  | 154,00 = |       | 396,7 kN |            |
|                |     | 1      | palen á  |         |          |       | 411,8 kN |            |

### Kolommen in de achtergevel (bijv as L')

| belastingen    | n | b      | h        | q eg    | q vb   | perm.       | verand.  |    |
|----------------|---|--------|----------|---------|--------|-------------|----------|----|
| P 1 : balk     |   | 5,75   |          | * 10,50 |        | = 60,38     | -        | kN |
| vloer          |   | 1,20 * | 5,75 *   | 5,00 \  | 50,00  | = 34,50     | 345,00   | "  |
| gevel sandwich |   | 5,75 * | 11,00 *  | 0,80    |        | = 50,60     | -        | "  |
| gevel prefab   |   | 5,75 * | 3,00 *   | 4,30    |        | = 74,18     |          |    |
| dak            |   |        |          |         |        | = 27,00     | -        | "  |
|                |   |        |          |         |        | 246,65      | 345,00 + | "  |
|                |   |        |          | psi =   | 0,8    |             |          |    |
| windzuiging    |   |        |          |         |        |             | 246,81   | kN |
| Paalbelasting  |   | 1,08 * | 246,65 + | 1,35 *  | 345,00 | = 732,1 kN  |          |    |
|                |   | 1,22 * | 246,65 + | 1,08 *  | 345,00 | = 673,5 kN  |          |    |
|                |   | 0,9 *  | 246,65 - | 1,35 *  | 246,81 | = -111,2 kN |          |    |
|                |   | 1      | palen á  |         | 732,1  | kN          |          |    |

### Kolommen in de hal as 5

| belastingen    | n | b      | h        | q eg    | q vb   | perm.       | verand.  |    |
|----------------|---|--------|----------|---------|--------|-------------|----------|----|
| P 1 : balk     |   | 5,40   |          | * 12,00 |        | = 64,80     | -        | kN |
| vloer          |   | 2,50 * | 5,40 *   | 5,00 \  | 50,00  | = 67,50     | 675,00   | "  |
| scheidingswand |   | 5,40 * | 14,00 *  | 1,20    |        | = 90,72     | -        | "  |
| dak            |   |        |          |         |        | = 80,00     |          | "  |
| kraanbaan      |   |        |          |         |        | =           | 140,00   | "  |
|                |   |        |          |         |        | 303,02      | 815,00 + | "  |
|                |   |        |          | psi =   | 0,8    |             |          |    |
| windzuiging    |   |        |          |         |        |             | 85,2     | kN |
| Paalbelasting  |   | 1,08 * | 303,02 + | 1,35 *  | 815,00 | = 1427,5 kN |          |    |
|                |   | 1,22 * | 303,02 + | 1,08 *  | 815,00 | = 1249,9 kN |          |    |
|                |   | 0,9 *  | 303,02 - | 1,35 *  | 85,20  | = 157,7 kN  |          |    |
|                |   | 2      | palen á  |         | 713,8  | kN          |          |    |

### Kolommen in de gevel (bijv as L t.p.v. PGS ruimte)

| belastingen   | n | b      | h         | q eg    | q vb     | perm.    | verand.    |
|---------------|---|--------|-----------|---------|----------|----------|------------|
| P 1 : balk    |   | 5,75   |           | * 10,50 |          | = 60,38  | - kN       |
| vloer hal     |   | 1,15 * | 5,75 *    | 5,00 \  | 50,00 =  | 33,06    | 330,63 "   |
| vloer pgs     |   | 1,25 * | 5,75 *    | 5,00 \  | 25,00 =  | 35,94    | 179,69 "   |
| gevel         |   | 5,75 * | 14,00 *   | 1,20    |          | = 96,60  | - "        |
| dak hal       |   |        |           |         |          | = 22,50  | - "        |
| dak PGS       |   |        |           |         |          | = 25,20  | - "        |
|               |   |        |           |         |          | 273,68   | 510,31 + " |
|               |   |        |           | psi =   | 0,8      |          |            |
| windzuiging   |   |        |           |         |          |          | 155,41 kN  |
| Paalbelasting |   | 1,08 * | 273,68 +  | 1,35 *  | 510,31 = | 984,5 kN |            |
|               |   | 1,22 * | 273,68 +  | 1,08 *  | 510,31 = | 885,0 kN |            |
|               |   | 0,9 *  | 273,68 -  | 1,35 *  | 155,41 = | 36,5 kN  |            |
|               |   |        | 1 palen á |         | 984,5 kN |          |            |

### Kolom in de gevel as 3 t.p.v. PGS ruimte

| belastingen   | n | b      | h         | q eg    | q vb     | perm.    | verand.    |
|---------------|---|--------|-----------|---------|----------|----------|------------|
| P 1 : balk    |   | 5,00   |           | * 10,50 |          | = 52,50  | - kN       |
| vloer pgs     |   | 1,25 * | 5,00 *    | 5,00 \  | 25,00 =  | 31,25    | 156,25 "   |
| gevel         |   | 5,00 * | 7,00 *    | 4,30    |          | = 150,50 | - "        |
| dak PGS       |   |        |           |         |          | = 9,71   | - "        |
|               |   |        |           |         |          | 243,96   | 156,25 + " |
|               |   |        |           | psi =   | 0,8      |          |            |
| windzuiging   |   |        |           |         |          |          | 55,51 kN   |
| Paalbelasting |   | 1,08 * | 243,96 +  | 1,35 *  | 156,25 = | 474,4 kN |            |
|               |   | 1,22 * | 243,96 +  | 1,08 *  | 156,25 = | 466,4 kN |            |
|               |   | 0,9 *  | 243,96 -  | 1,35 *  | 55,51 =  | 144,6 kN |            |
|               |   |        | 1 palen á |         | 474,4 kN |          |            |

### Kolom in de gevel as 3 t.p.v. PGS ruimte / hal BC 3

| belastingen   | n | b      | h         | q eg    | q vb     | perm.    | verand.    |
|---------------|---|--------|-----------|---------|----------|----------|------------|
| P 1 : balk    |   | 7,90   |           | * 10,50 |          | = 82,95  | - kN       |
| vloer pgs     |   | 1,25 * | 5,00 *    | 5,00 \  | 25,00 =  | 31,25    | 156,25 "   |
| vloer hal     |   | 1,20 * | 1,40 *    | 5,00 \  | 50,00 =  | 8,40     | 84,00 "    |
| gevel         |   | 5,00 * | 7,00 *    | 4,30    |          | = 150,50 | - "        |
| dak PGS       |   |        |           |         |          | = 9,71   | - "        |
|               |   |        |           |         |          | 282,81   | 240,25 + " |
|               |   |        |           | psi =   | 0,8      |          |            |
| Paalbelasting |   | 1,08 * | 282,81 +  | 1,35 *  | 240,25 = | 629,8 kN |            |
|               |   | 1,22 * | 282,81 +  | 1,08 *  | 240,25 = | 604,5 kN |            |
|               |   |        | 1 palen á |         | 629,8 kN |          |            |

### Hoekkolom as 3-L

| belastingen   | n | b      | h        | q eg    | q vb     | perm.     | verand.    |
|---------------|---|--------|----------|---------|----------|-----------|------------|
| P 1 : balk    |   | 5,15   |          | * 10,50 |          | = 54,08   | - kN       |
| vloer pgs     |   | 1,25 * | 2,50 *   | 5,00 \  | 25,00 =  | 15,63     | 78,13 "    |
| vloer hal     |   | 1,40 * | 7,80 *   | 5,00 \  | 50,00 =  | 54,60     | 546,00 "   |
| gevel         |   | 5,80 * | 7,00 *   | 4,30    | =        | 174,58    | - "        |
| dak PGS       |   |        |          |         | =        | 25,20     | "          |
|               |   |        |          |         |          | 324,08    | 624,13 + " |
|               |   |        |          | psi =   | 0,8      |           |            |
| Paalbelasting |   | 1,08 * | 324,08 + | 1,35 *  | 624,13 = | 1192,6 kN |            |
|               |   | 1,22 * | 324,08 + | 1,08 *  | 624,13 = | 1069,4 kN |            |
|               |   | 1      | palen á  |         | 1192,6   | kN        |            |

### Kolommen in de gevel as M t.p.v. PGS ruimte

| belastingen   | n | b      | h        | q eg    | q vb     | perm.    | verand.    |
|---------------|---|--------|----------|---------|----------|----------|------------|
| P 1 : balk    |   | 5,80   |          | * 10,50 |          | = 60,90  | - kN       |
| vloer pgs     |   | 1,25 * | 5,80 *   | 5,00 \  | 25,00 =  | 36,25    | 181,25 "   |
| gevel         |   | 5,80 * | 7,00 *   | 4,30    | =        | 174,58   | - "        |
| dak PGS       |   |        |          |         | =        | 25,20    | "          |
|               |   |        |          |         |          | 296,93   | 181,25 + " |
|               |   |        |          | psi =   | 0,8      |          |            |
| Paalbelasting |   | 1,08 * | 296,93 + | 1,35 *  | 181,25 = | 565,4 kN |            |
|               |   | 1,22 * | 296,93 + | 1,08 *  | 181,25 = | 558,0 kN |            |
|               |   | 1      | palen á  |         | 565,4    | kN       |            |

### Hoekkolom as 3-M t.p.v. PGS ruimte

| belastingen   | n | b      | h        | q eg    | q vb     | perm.    | verand.    |
|---------------|---|--------|----------|---------|----------|----------|------------|
| P 1 : balk    |   | 5,40   |          | * 10,50 |          | = 56,70  | - kN       |
| vloer pgs     |   | 1,25 * | 5,40 *   | 5,00 \  | 25,00 =  | 33,75    | 168,75 "   |
| gevel         |   | 5,40 * | 7,00 *   | 4,30    | =        | 162,54   | - "        |
| dak PGS       |   |        |          |         | =        | 9,71     | "          |
|               |   |        |          |         |          | 262,70   | 168,75 + " |
|               |   |        |          | psi =   | 0,8      |          |            |
| Paalbelasting |   | 1,08 * | 262,70 + | 1,35 *  | 168,75 = | 511,5 kN |            |
|               |   | 1,22 * | 262,70 + | 1,08 *  | 168,75 = | 502,7 kN |            |
|               |   | 1      | palen á  |         | 511,5    | kN       |            |

### Kolom in de gevel // as 3 t.p.v. PGS ruimte

| belastingen   | n | b      | h        | q eg    | q vb    | perm.         | verand.   |
|---------------|---|--------|----------|---------|---------|---------------|-----------|
| P 1 : balk    |   | 3,00   |          | * 10,50 |         | = 31,50       | - kN      |
| vloer pgs     |   | 1,25 * | 3,00 *   | 5,00 \  | 25,00   | = 18,75       | 93,75 "   |
| gevel         |   | 3,00 * | 7,00 *   | 4,30    |         | = 90,30       | - "       |
| dak PGS       |   |        |          |         |         | = 9,71        | - "       |
|               |   |        |          |         |         | <u>150,26</u> | 93,75 + " |
|               |   |        |          | psi =   | 0,8     |               |           |
| windzuiging   |   |        |          |         |         |               | 55,51 kN  |
| Paalbelasting |   | 1,08 * | 150,26 + | 1,35 *  | 93,75 = | 288,8 kN      |           |
|               |   | 1,22 * | 150,26 + | 1,08 *  | 93,75 = | 284,6 kN      |           |
|               |   | 0,9 *  | 150,26 - | 1,35 *  | 55,51 = | 60,3 kN       |           |
|               |   | 1      | palen á  |         | 288,8   | kN            |           |

### Kolom in de gevel // as 3 t.p.v. PGS ruimte

| belastingen   | n | b      | h        | q eg    | q vb     | perm.         | verand.    |
|---------------|---|--------|----------|---------|----------|---------------|------------|
| P 1 : balk    |   | 4,50   |          | * 10,50 |          | = 47,25       | - kN       |
| vloer pgs     |   | 1,25 * | 4,50 *   | 5,00 \  | 25,00    | = 28,13       | 140,63 "   |
| gevel         |   | 4,50 * | 7,00 *   | 4,30    |          | = 135,45      | - "        |
| dak PGS       |   |        |          |         |          | = 9,71        | - "        |
|               |   |        |          |         |          | <u>220,54</u> | 140,63 + " |
|               |   |        |          | psi =   | 0,8      |               |            |
| windzuiging   |   |        |          |         |          |               | 55,51 kN   |
| Paalbelasting |   | 1,08 * | 220,54 + | 1,35 *  | 140,63 = | 428,0 kN      |            |
|               |   | 1,22 * | 220,54 + | 1,08 *  | 140,63 = | 420,9 kN      |            |
|               |   | 0,9 *  | 220,54 - | 1,35 *  | 55,51 =  | 123,5 kN      |            |
|               |   | 1      | palen á  |         | 428,0    | kN            |            |

### Kolom in de gevel // as 3 t.p.v. PGS ruimte / luifel

| belastingen   | n | b      | h        | q eg    | q vb     | perm.         | verand.    |
|---------------|---|--------|----------|---------|----------|---------------|------------|
| P 1 : balk    |   | 3,65   |          | * 10,50 |          | = 38,33       | - kN       |
| vloer pgs     |   | 1,25 * | 3,65 *   | 5,00 \  | 25,00    | = 22,81       | - "        |
| gevel         |   | 3,65 * | 7,00 *   | 4,30    |          | = 109,87      | - "        |
| dak PGS       |   |        |          |         |          | = 9,71        | - "        |
| uit luifel    |   |        |          |         |          | = 84,00       | 197,00     |
|               |   |        |          |         |          | <u>180,71</u> | 197,00 + " |
|               |   |        |          | psi =   | 0,8      |               |            |
| windzuiging   |   |        |          |         |          |               | 55,51 kN   |
| Paalbelasting |   | 1,08 * | 180,71 + | 1,35 *  | 197,00 = | 461,1 kN      |            |
|               |   | 1,22 * | 180,71 + | 1,08 *  | 197,00 = | 433,2 kN      |            |
|               |   | 0,9 *  | 180,71 - | 1,35 *  | 55,51 =  | 87,7 kN       |            |
|               |   | 1      | palen á  |         | 461,1    | kN            |            |

### Hoekkolom // as 3 t.p.v. PGS ruimte / luifel

| belastingen   | n | b      | h         | q eg    | q vb   | perm. | verand.  |
|---------------|---|--------|-----------|---------|--------|-------|----------|
| P 1 : balk    |   | 4,35   |           | * 10,50 |        | =     | 45,68    |
| vloer pgs     |   | 1,25 * | 4,35 *    | 5,00 \  | 25,00  | =     | 27,19    |
| gevel         |   | 4,35 * | 7,00 *    | 4,30    |        | =     | 130,94   |
| dak PGS       |   |        |           |         |        | =     | 9,71     |
|               |   |        |           |         |        |       | 213,51   |
|               |   |        |           | psi     | =      | 0,8   |          |
| windzuiging   |   |        |           |         |        |       | 55,51 kN |
| Paalbelasting |   | 1,08 * | 213,51 +  | 1,35 *  | 135,94 | =     | 414,1 kN |
|               |   | 1,22 * | 213,51 +  | 1,08 *  | 135,94 | =     | 407,3 kN |
|               |   | 0,9 *  | 213,51 -  | 1,35 *  | 55,51  | =     | 117,2 kN |
|               |   |        | 1 palen á |         | 414,1  | kN    |          |

### Kolommen in de gevel (bijv as L t.p.v. hal BC 5 en 6)

| belastingen      | n | b      | h         | q eg    | q vb   | perm. | verand.  |
|------------------|---|--------|-----------|---------|--------|-------|----------|
| P 1 : balk       |   | 5,75   |           | * 10,50 |        | =     | 60,38    |
| vloer hal        |   | 1,00 * | 5,75 *    | 5,00 \  | 50,00  | =     | 28,75    |
| gevel sandwichpa |   | 5,75 * | 7,00 *    | 0,80    |        | =     | 32,20    |
| gevel prefab     |   | 5,75 * | 7,00 *    | 4,30    |        | =     | 173,08   |
| dak hal          |   |        |           |         |        | =     | 23,30    |
| luifel           |   |        |           |         |        | =     | 17,93    |
|                  |   |        |           |         |        |       | 335,63   |
|                  |   |        |           | psi     | =      | 0,8   |          |
| windzuiging      |   |        |           |         |        |       | 24,3 kN  |
| Paalbelasting    |   | 1,08 * | 335,63 +  | 1,35 *  | 287,50 | =     | 750,6 kN |
|                  |   | 1,22 * | 335,63 +  | 1,08 *  | 287,50 | =     | 720,0 kN |
|                  |   | 0,9 *  | 335,63 -  | 1,35 *  | 24,30  | =     | 269,3 kN |
|                  |   |        | 1 palen á |         | 750,6  | kN    |          |

### Kolom in de gevel (bijv as L t.p.v. hal BC 5)

| belastingen         | n | b      | h         | q eg    | q vb      | perm.     | verand.    |
|---------------------|---|--------|-----------|---------|-----------|-----------|------------|
| P 1 : balk hal BC 5 |   | 5,75   |           | * 10,50 |           | = 60,38   | - kN       |
| balk hal BC 11      |   | 2,20   |           | * 10,50 |           | = 23,10   | - "        |
| vloer hal BC 5      |   | 1,00 * | 5,75 *    | 5,00 \  | 50,00     | = 28,75   | 287,50 "   |
| vloer hal BC 11     |   | 1,65 * | 5,75 *    | 5,00 \  | 25,00     | = 47,44   | 237,19 "   |
| gevel sandwichpa    |   | 5,75 * | 7,00 *    | 0,80    |           | = 32,20   | - "        |
| gevel prefab        |   | 5,75 * | 7,00 *    | 4,30    |           | = 173,08  | - "        |
| dak hal             |   |        |           |         |           | = 23,30   | - "        |
| luifel              |   |        |           |         |           | = 17,93   | - "        |
|                     |   |        |           |         |           | 406,17    | 524,69 + " |
|                     |   |        |           | psi =   | 0,8       |           |            |
| windzuiging         |   |        |           |         |           |           | 24,3 kN    |
| Paalbelasting       |   | 1,08 * | 406,17 +  | 1,35 *  | 524,69 =  | 1147,0 kN |            |
|                     |   | 1,22 * | 406,17 +  | 1,08 *  | 524,69 =  | 1062,2 kN |            |
|                     |   | 0,9 *  | 406,17 -  | 1,35 *  | 24,30 =   | 332,7 kN  |            |
|                     |   |        | 1 palen á |         | 1147,0 kN |           |            |

### Kolom in de gevel (as L t.p.v. hal BC 6 / wasplaats)

| belastingen      | n | b      | h         | q eg    | q vb     | perm.    | verand.    |
|------------------|---|--------|-----------|---------|----------|----------|------------|
| P 1 : balk hal   |   | 5,75   |           | * 10,50 |          | = 60,38  | - kN       |
| vloer hal        |   | 1,00 * | 5,75 *    | 5,00 \  | 50,00    | = 28,75  | 287,50 "   |
| vloer wasruimte  |   | 0,35 * | 5,75 *    | 5,00 \  | 25,00    | = 10,06  | 50,31 "    |
| gevel sandwichpa |   | 5,75 * | 7,00 *    | 0,80    |          | = 32,20  | - "        |
| gevel prefab     |   | 5,75 * | 7,00 *    | 4,30    |          | = 173,08 | - "        |
| dak hal          |   |        |           |         |          | = 23,30  | - "        |
| luifel           |   |        |           |         |          | = 17,93  | - "        |
|                  |   |        |           |         |          | 345,69   | 337,81 + " |
|                  |   |        |           | psi =   | 0,8      |          |            |
| windzuiging      |   |        |           |         |          |          | 24,3 kN    |
| Paalbelasting    |   | 1,08 * | 345,69 +  | 1,35 *  | 337,81 = | 829,4 kN |            |
|                  |   | 1,22 * | 345,69 +  | 1,08 *  | 337,81 = | 786,6 kN |            |
|                  |   | 0,9 *  | 345,69 -  | 1,35 *  | 24,30 =  | 278,3 kN |            |
|                  |   |        | 1 palen á |         | 829,4 kN |          |            |

### Kolom in de gevel (as L-7 t.p.v. wasplaats)

| belastingen      | n | b      | h        | q eg   | q vb     | perm.    | verand.     |
|------------------|---|--------|----------|--------|----------|----------|-------------|
| P 1 : balk       |   | 6,10   | *        | 10,50  | =        | 64,05    | - kN        |
| vloer hal BC 7   |   | 1,70   | *        | 6,10   | \ 25,00  | = 51,85  | 259,25 "    |
| vloer wasruimte  |   | 0,35   | *        | 6,10   | \ 25,00  | = 10,68  | 53,38 "     |
| gevel sandwichpa |   | 6,10   | *        | 7,00   | *        | 0,80     | = 34,16 - " |
| gevel prefab     |   | 6,10   | *        | 7,00   | *        | 4,30     | = 183,61    |
| dak hal          |   |        |          |        |          | = 23,30  | - "         |
| luifel           |   |        |          |        |          | = 17,93  | - "         |
|                  |   |        |          |        |          | 385,58   | 312,63 + "  |
|                  |   |        |          | psi    | = 0,8    |          |             |
| windzuiging      |   |        |          |        |          |          | 24,3 kN     |
| Paalbelasting    |   | 1,08 * | 385,58 + | 1,35 * | 312,63 = | 838,5 kN |             |
|                  |   | 1,22 * | 385,58 + | 1,08 * | 312,63 = | 808,0 kN |             |
|                  |   | 0,9 *  | 385,58 - | 1,35 * | 24,30 =  | 314,2 kN |             |
|                  |   | 1      | palen á  |        | 838,5    | kN       |             |

### Kolom in de gevel (as L t.p.v. wasplaats)

| belastingen      | n | b      | h        | q eg   | q vb     | perm.    | verand.     |
|------------------|---|--------|----------|--------|----------|----------|-------------|
| P 1 : balk       |   | 6,30   | *        | 10,50  | =        | 66,15    | - kN        |
| vloer hal BC 7   |   | 1,70   | *        | 6,30   | \ 25,00  | = 53,55  | 267,75 "    |
| vloer wasruimte  |   | 0,35   | *        | 6,30   | \ 25,00  | = 11,03  | 55,13 "     |
| gevel sandwichpa |   | 6,30   | *        | 7,00   | *        | 0,80     | = 35,28 - " |
| gevel prefab     |   | 6,30   | *        | 7,00   | *        | 4,30     | = 189,63    |
| dak hal          |   |        |          |        |          | = 23,30  | - "         |
| luifel           |   |        |          |        |          | = 17,93  | - "         |
|                  |   |        |          |        |          | 396,87   | 322,88 + "  |
|                  |   |        |          | psi    | = 0,8    |          |             |
| windzuiging      |   |        |          |        |          |          | 24,3 kN     |
| Paalbelasting    |   | 1,08 * | 396,87 + | 1,35 * | 322,88 = | 864,5 kN |             |
|                  |   | 1,22 * | 396,87 + | 1,08 * | 322,88 = | 832,9 kN |             |
|                  |   | 0,9 *  | 396,87 - | 1,35 * | 24,30 =  | 324,4 kN |             |
|                  |   | 1      | palen á  |        | 864,5    | kN       |             |

### Hoekkolom in de hal as 6 t.p.v. hal /

| belastingen    | n   | b      | h        | q eg    | q vb      | perm. | verand. |             |
|----------------|-----|--------|----------|---------|-----------|-------|---------|-------------|
| P 1 : balk     |     | 5,40   | *        | 12,00   |           | =     | 64,80   | - kN        |
| vloer BC 6     |     | 1,25 * | 5,40 *   | 5,00 \  | 50,00 =   |       | 33,75   | 337,50 "    |
| vloer BC 7     |     | 1,78 * | 2,70 *   | 5,00 \  | 25,00 =   |       | 24,03   | 120,15 "    |
| vloer BC 7     |     | 1,25 * | 2,70 *   | 5,00 \  | 50,00 =   |       | 16,88   | 168,75 "    |
| scheidingswand |     | 5,40 * | 14,00 *  | 1,20    | =         |       | 90,72   | - "         |
| entresol vloer |     | 6,25 * | 5,40 *   | 7,15 \  | 10,00 =   |       | 241,31  | 337,50 "    |
| dak            | 2 * |        | *        | 40,00   |           | =     | 80,00   | "           |
| kraanbaan BC 6 |     |        |          |         |           | =     |         | 140,00 "    |
| kraanbaan BC 7 |     |        |          |         |           | =     |         | 64,80 "     |
|                |     |        |          |         |           |       | 551,49  | 1168,70 + " |
|                |     |        |          | psi     | =         | 0,8   |         |             |
| Paalbelasting  |     | 1,08 * | 551,49 + | 1,35 *  | 1168,70 = |       | 2173,4  | kN          |
|                |     | 1,22 * | 551,49 + | 1,08 *  | 1168,70 = |       | 1935,0  | kN          |
|                |     |        | 3        | palen á |           |       | 724,5   | kN          |

### Kolommen in de hal as 6 t.p.v. expeditie tussenvloer

| belastingen    | n   | b      | h        | q eg    | q vb      | perm. | verand. |             |
|----------------|-----|--------|----------|---------|-----------|-------|---------|-------------|
| P 1 : balk     |     | 5,40   | *        | 12,00   |           | =     | 64,80   | - kN        |
| vloer BC 6     |     | 1,25 * | 5,40 *   | 5,00 \  | 50,00 =   |       | 33,75   | 337,50 "    |
| vloer BC 7     |     | 1,78 * | 5,40 *   | 5,00 \  | 25,00 =   |       | 48,06   | 240,30 "    |
| scheidingswand |     | 5,40 * | 14,00 *  | 1,20    | =         |       | 90,72   | - "         |
| entresol vloer |     | 6,25 * | 5,40 *   | 7,15 \  | 10,00 =   |       | 241,31  | 337,50 "    |
| dak            | 2 * |        | *        | 40,00   |           | =     | 80,00   | "           |
| kraanbaan BC 6 |     |        |          |         |           | =     |         | 140,00 "    |
| kraanbaan BC 7 |     |        |          |         |           | =     |         | 64,80 "     |
|                |     |        |          |         |           |       | 558,64  | 1120,10 + " |
|                |     |        |          | psi     | =         | 0,8   |         |             |
| Paalbelasting  |     | 1,08 * | 558,64 + | 1,35 *  | 1120,10 = |       | 2115,5  | kN          |
|                |     | 1,22 * | 558,64 + | 1,08 *  | 1120,10 = |       | 1891,3  | kN          |
|                |     |        | 3        | palen á |           |       | 705,2   | kN          |

### Kolommen in de hal as 6/7 t.p.v. expeditie tussenvloer

| belastingen    | n     | b       | h        | q eg    | q vb      | perm.     | verand.     |
|----------------|-------|---------|----------|---------|-----------|-----------|-------------|
| P 1 : balk     |       | 5,40    |          | * 10,50 |           | = 56,70   | - kN        |
| vloer BC 7     |       | 2,78 *  | 5,40 *   | 5,00 \  | 25,00 =   | 75,06     | 375,30 "    |
| scheidingswand |       | 5,40 *  | 6,30 *   | 1,20    | =         | 40,82     | - "         |
| entresol vloer | 0,5 * | 23,10 * | 5,40 *   | 7,15 \  | 10,00 =   | 445,95    | 623,70 "    |
| kraanbaan BC 7 |       |         |          |         | =         |           | 64,80 "     |
|                |       |         |          |         |           | 618,53    | 1063,80 + " |
|                |       |         |          | psi =   | 0,8       |           |             |
| Paalbelasting  |       | 1,08 *  | 618,53 + | 1,35 *  | 1063,80 = | 2104,1 kN |             |
|                |       | 1,22 *  | 618,53 + | 1,08 *  | 1063,80 = | 1903,5 kN |             |
|                |       | 3       | palen á  |         |           | 701,4 kN  |             |

### Gevelkolom as L tussen as 6/7 t.p.v. expeditie tussenvloer

| belastingen     | n     | b       | h        | q eg    | q vb     | perm.     | verand.    |
|-----------------|-------|---------|----------|---------|----------|-----------|------------|
| P 1 : balk      |       | 8,10    |          | * 10,50 |          | = 85,05   | - kN       |
| vloer BC 7      |       | 1,70 *  | 6,20 *   | 5,00 \  | 25,00 =  | 52,70     | 263,50 "   |
| vloer wasruimte |       | 0,35 *  | 6,20 *   | 5,00 \  | 25,00 =  | 10,85     | 54,25 "    |
| scheidingswand  |       | 6,20 *  | 6,30 *   | 1,20    | =        | 46,87     | - "        |
| entresol vloer  | 0,5 * | 23,10 * | 2,70 *   | 7,15 \  | 10,00 =  | 222,97    | 311,85 "   |
| kraanbaan BC 7  |       |         |          |         | =        |           | 64,80 "    |
| luifel          |       |         |          |         | =        | 17,93     |            |
|                 |       |         |          |         |          | 436,37    | 694,40 + " |
|                 |       |         |          | psi =   | 0,8      |           |            |
| Paalbelasting   |       | 1,08 *  | 436,37 + | 1,35 *  | 694,40 = | 1408,7 kN |            |
|                 |       | 1,22 *  | 436,37 + | 1,08 *  | 694,40 = | 1282,3 kN |            |
|                 |       | 2       | palen á  |         |          | 704,4 kN  |            |

### Kolommen in de gevel as 7 t.p.v. entresolvloer

| belastingen       | n     | b       | h        | q eg    | q vb     | perm.     | verand.    |
|-------------------|-------|---------|----------|---------|----------|-----------|------------|
| P 1 : balk        |       | 5,40    |          | * 10,50 |          | = 56,70   | - kN       |
| vloer             |       | 1,50 *  | 5,40 *   | 5,00 \  | 25,00 =  | 40,50     | 202,50 "   |
| gevel sandwichpan |       | 5,40 *  | 11,00 *  | 0,80    | =        | 47,52     | - "        |
| gevel prefab      |       | 5,40 *  | 3,00 *   | 4,30    | =        | 69,66     |            |
| entresol vloer    | 0,5 * | 10,50 * | 5,40 *   | 7,15 \  | 10,00 =  | 202,70    | 283,50 "   |
| dak               |       |         |          |         | =        | 41,00     | "          |
|                   |       |         |          |         |          | 458,08    | 486,00 + " |
|                   |       |         |          | psi =   | 0,8      |           |            |
| Paalbelasting     |       | 1,08 *  | 458,08 + | 1,35 *  | 486,00 = | 1150,8 kN |            |
|                   |       | 1,22 *  | 458,08 + | 1,08 *  | 486,00 = | 1083,7 kN |            |
|                   |       | 2       | palen á  |         |          | 575,4 kN  |            |

### Kolom in de gevel as 7 tussen as H-I t.p.v. entresolvloer / hal BC 7

| belastingen       | n     | b       | h        | q eg   | q vb     | perm.     | verand.    |
|-------------------|-------|---------|----------|--------|----------|-----------|------------|
| P 1 : balk        |       | 5,40    | *        | 10,50  | =        | 56,70     | - kN       |
| vloer             |       | 1,50 *  | 2,70 *   | 5,00 \ | 25,00 =  | 20,25     | 101,25 "   |
| vloer             |       | 1,50 *  | 2,70 *   | 5,00 \ | 50,00 =  | 20,25     | 202,50 "   |
| gevel sandwichpan |       | 5,40 *  | 11,00 *  | 0,80   | =        | 47,52     | - "        |
| gevel prefab      |       | 5,40 *  | 3,00 *   | 4,30   | =        | 69,66     |            |
| entresol vloer    | 0,5 * | 10,50 * | 5,40 *   | 7,15 \ | 10,00 =  | 202,70    | 283,50 "   |
| dak               |       |         |          |        | =        | 41,00     | "          |
|                   |       |         |          |        |          | 458,08    | 587,25 + " |
|                   |       |         |          | psi    | =        | 0,8       |            |
| Paalbelasting     |       | 1,08 *  | 458,08 + | 1,35 * | 587,25 = | 1287,5 kN |            |
|                   |       | 1,22 *  | 458,08 + | 1,08 * | 587,25 = | 1193,1 kN |            |
|                   |       | 2       | palen á  |        |          | 643,8 kN  |            |

### Kolommen in de hal tussen as H-I en 6-7

| belastingen         | n | b      | h        | q eg   | q vb      | perm.     | verand.     |
|---------------------|---|--------|----------|--------|-----------|-----------|-------------|
| P 1 : balk          |   | 5,78   | *        | 10,50  | =         | 60,69     | - kN        |
| vloer BC 7 magazijn |   | 1,83 * | 5,78 *   | 5,00 \ | 25,00 =   | 52,89     | 264,44 "    |
| vloer BC 7 hal      |   | 2,03 * | 5,78 *   | 5,00 \ | 50,00 =   | 58,67     | 586,67 "    |
| scheidingswand      |   | 5,78 * | 14,00 *  | 1,20   | =         | 97,10     | - "         |
| uit kolom           |   |        |          |        | =         | 253,00    | 340,00 "    |
|                     |   |        |          |        |           | 522,35    | 1191,11 + " |
|                     |   |        |          | psi    | =         | 0,8       |             |
| Paalbelasting       |   | 1,08 * | 522,35 + | 1,35 * | 1191,11 = | 2172,1 kN |             |
|                     |   | 1,22 * | 522,35 + | 1,08 * | 1191,11 = | 1923,7 kN |             |
|                     |   | 3      | palen á  |        |           | 724,0 kN  |             |

### Kolommen t.b.v. luifel

| belastingen     | n | b      | h        | q eg      | q vb     | perm.     | verand.   |
|-----------------|---|--------|----------|-----------|----------|-----------|-----------|
| P 1 : uit kolom |   |        |          | psi = 0,8 |          | 145,00    | 288,00 kN |
| windzuiging     |   |        |          |           |          |           | 173 kN    |
| Paalbelasting   |   |        |          |           |          |           |           |
|                 |   | 1,08 * | 145,00 + | 1,35 *    | 288,00 = | 545,4 kN  |           |
|                 |   | 1,22 * | 145,00 + | 1,08 *    | 288,00 = | 487,9 kN  |           |
|                 |   | 0,9 *  | 145,00 - | 1,35 *    | 173,00 = | -103,1 kN |           |
|                 |   | 1      | palen á  |           | 545,4 kN |           |           |

| belastingen     | n | b      | h        | q eg      | q vb     | perm.     | verand.   |
|-----------------|---|--------|----------|-----------|----------|-----------|-----------|
| P 1 : uit kolom |   |        |          | psi = 0,8 |          | 229,00    | 485,00 kN |
| windzuiging     |   |        |          |           |          |           | 291 kN    |
| Paalbelasting   |   |        |          |           |          |           |           |
|                 |   | 1,08 * | 229,00 + | 1,35 *    | 485,00 = | 902,1 kN  |           |
|                 |   | 1,22 * | 229,00 + | 1,08 *    | 485,00 = | 803,2 kN  |           |
|                 |   | 0,9 *  | 229,00 - | 1,35 *    | 291,00 = | -186,8 kN |           |
|                 |   | 1      | palen á  |           | 902,1 kN |           |           |

| belastingen     | n | b      | h        | q eg      | q vb     | perm.     | verand.   |
|-----------------|---|--------|----------|-----------|----------|-----------|-----------|
| P 1 : uit kolom |   |        |          | psi = 0,8 |          | 168,00    | 394,00 kN |
| windzuiging     |   |        |          |           |          |           | 236 kN    |
| Paalbelasting   |   |        |          |           |          |           |           |
|                 |   | 1,08 * | 168,00 + | 1,35 *    | 394,00 = | 713,3 kN  |           |
|                 |   | 1,22 * | 168,00 + | 1,08 *    | 394,00 = | 630,5 kN  |           |
|                 |   | 0,9 *  | 168,00 - | 1,35 *    | 236,00 = | -167,4 kN |           |
|                 |   | 1      | palen á  |           | 713,3 kN |           |           |

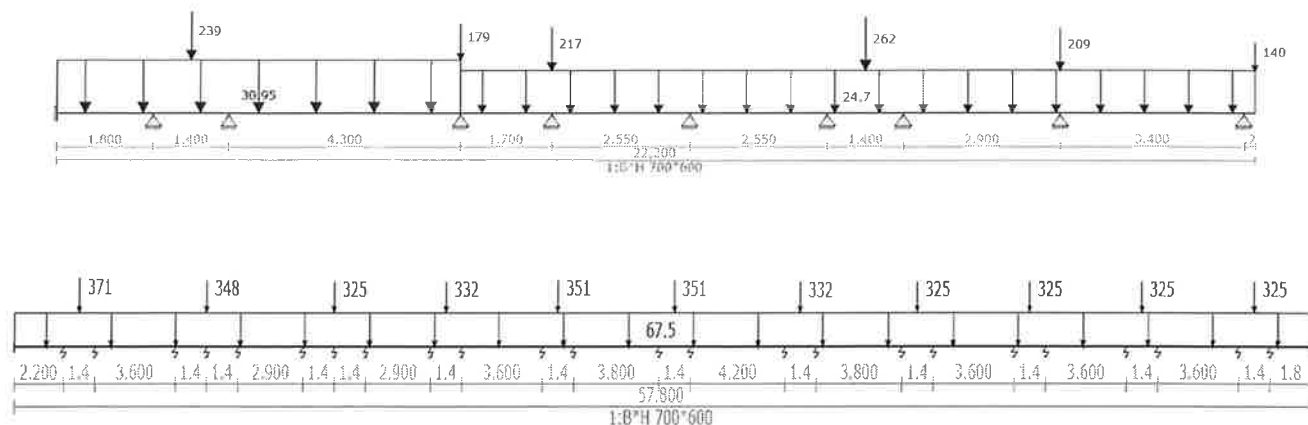
### Kolommen in de hal as B t.p.v. mezaninne tussenvloer

| belastingen    | n | b      | h         | q eg    | q vb      | perm.     | verand.     |
|----------------|---|--------|-----------|---------|-----------|-----------|-------------|
| P 1 : poer     |   | 2,50   |           | * 50,00 |           | = 125,00  | - kN        |
| vloer          |   | 4,00 * | 4,00 *    | 5,00 \  | 25,00     | = 80,00   | 400,00 "    |
| entresol vloer |   |        |           |         |           | = 979,00  | 1409,00 "   |
| kraanbaan BC 1 |   |        |           |         |           | =         | 45,00 "     |
|                |   |        |           |         |           | 1184,00   | 1854,00 + " |
|                |   |        |           | psi =   | 0,8       |           |             |
| windzuiging    |   |        |           |         |           |           | 35,3 kN     |
| Paalbelasting  |   | 1,08 * | 1184,00 + | 1,35 *  | 1854,00 = | 3781,6 kN |             |
|                |   | 1,22 * | 1184,00 + | 1,08 *  | 1854,00 = | 3446,8 kN |             |
|                |   | 0,9 *  | 1184,00 - | 1,35 *  | 35,30 =   | 1017,9 kN |             |
|                |   | 4      | palen á   |         | 945,4     | kN        |             |
| as B-5         |   | 6      | palen á   |         | 630,3     | kN        |             |

### schuine balk t.p.v. mezaninne vloer

| belastingen       | n | b      | h        | q eg    | q vb     | perm.    | verand.    |
|-------------------|---|--------|----------|---------|----------|----------|------------|
| P 1 : balk        |   | 5,10   |          | * 10,50 |          | = 53,55  | - kN       |
| vloer             |   | 1,00 * | 5,10 *   | 5,00 \  | 25,00    | = 25,50  | 127,50 "   |
| entresol vloer    |   |        |          |         |          | = 62,02  | 196,72 "   |
| gevel sandwichpan |   | 5,10 * | 11,00 *  | 0,80    |          | = 44,88  | - "        |
| gevel prefab      |   | 5,10 * | 3,00 *   | 4,30    |          | = 65,79  |            |
| dak               |   |        |          |         |          | = 36,70  | - "        |
| kraanbaan BC 1    |   |        |          |         |          | =        | 45,00 "    |
|                   |   |        |          |         |          | 288,44   | 369,22 + " |
|                   |   |        |          | psi =   | 0,8      |          |            |
| windzuiging       |   |        |          |         |          |          | 35,3 kN    |
| Paalbelasting     |   | 1,08 * | 288,44 + | 1,35 *  | 369,22 = | 810,0 kN |            |
|                   |   | 1,22 * | 288,44 + | 1,08 *  | 369,22 = | 750,7 kN |            |
|                   |   | 0,9 *  | 288,44 - | 1,35 *  | 35,30 =  | 211,9 kN |            |
|                   |   | 1      | palen á  |         | 810,0    | kN       |            |

## Kolommen in de gevel as A t.p.v. mezaninne vloer



| belastingen    | n | b    | h     | q eg | q vb   | perm.   | verand.   |
|----------------|---|------|-------|------|--------|---------|-----------|
| Q 1 b.g. vloer |   | 2,70 |       | *    | 5,00 \ | 25,00 = | 13,50     |
| gevel          |   |      | 14,00 | *    | 0,80   | =       | 11,20     |
|                |   |      |       |      |        |         | 24,70     |
|                |   |      |       |      |        |         | 67,50 + " |
| Q 1 b.g. vloer |   | 2,70 |       | *    | 5,00 \ | 25,00 = | 13,50     |
| gevel          |   |      | 14,00 | *    | 0,80   | =       | 11,20     |
| dockleveller   |   | 1,00 | 0,25  | *    | 25,00  | =       | 6,25      |
|                |   |      |       |      |        |         | 30,95     |
|                |   |      |       |      |        |         | 67,50 + " |

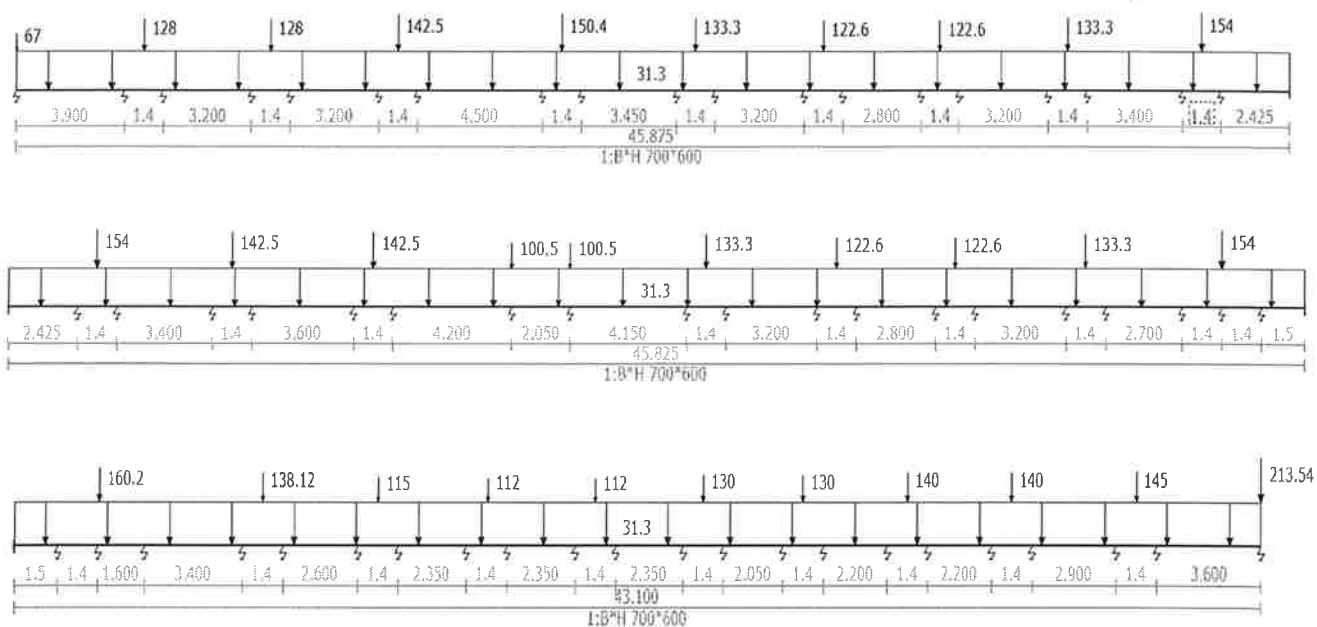
Zie comp berek blz. 1 t/m 11

De puntlasten zijn van de stalen kolommen

## Dockleveller

| belastingen        | n | b    | h | q eg    | q vb | perm.  | verand.    |
|--------------------|---|------|---|---------|------|--------|------------|
| P 1 b.g. vloer hal |   | 1,70 | * | 5,50    | *    | 5,00 \ | 25,00 =    |
| vloer dockleveller |   | 1,30 | * | 5,50    | *    | 5,00 \ | 25,00 =    |
| wand dockleveller  |   | 5,50 | * | 1,20    | *    | 8,75   | =          |
|                    |   |      |   |         |      |        | 140,25     |
|                    |   |      |   |         |      |        | 233,75 kN  |
|                    |   |      |   |         |      |        | 178,75 "   |
|                    |   |      |   |         |      |        | - "        |
|                    |   |      |   |         |      |        | 412,50 + " |
| Paalbelasting      |   | 1,08 | * | 140,25  | +    | 1,35   | *          |
|                    |   |      |   |         |      |        | 708,3 kN   |
|                    |   | 1    |   | palen á |      | 708,3  | kN         |

## Kolommen as C t.p.v. mezaninne vloer



| belastingen            | n | b    | h     | q eg | q vb   | perm.   | verand.    |
|------------------------|---|------|-------|------|--------|---------|------------|
| Q 1 vloer BC1          |   | 1,70 |       | *    | 5,00 \ | 25,00 = | 8,50       |
| vloer BC2              |   | 1,20 |       | *    | 5,00 \ | 50,00 = | 6,00       |
| scheidingswand         |   |      | 14,00 | *    | 1,20   | =       | 16,80      |
|                        |   |      |       |      |        |         | 31,30      |
|                        |   |      |       |      |        |         | 102,50 + " |
| Q 2 vloer BC1          |   | 1,70 |       | *    | 5,00 \ | 4,00 =  | 8,50       |
| vloer BC2              |   | 1,20 |       | *    | 5,00 \ | 50,00 = | 6,00       |
| scheidingswand         |   |      | 14,00 | *    | 1,20   | =       | 16,80      |
|                        |   |      |       |      |        |         | 31,30      |
|                        |   |      |       |      |        |         | 66,80 + "  |
| P 1 uit kolom hal BC 2 |   |      |       |      |        | =       | 10,70      |
| uit kolom hal BC 1     |   | 3,50 | 2,25  | *    | 7,15 \ | 10,00 = | 56,31      |
|                        |   |      |       |      |        |         | 67,01      |
|                        |   |      |       |      |        |         | 78,75 + "  |
| P 2 uit kolom hal BC 2 |   |      |       |      |        | =       | 15,40      |
| uit kolom hal BC 1     |   | 3,50 | 4,50  | *    | 7,15 \ | 10,00 = | 112,61     |
|                        |   |      |       |      |        |         | 128,01     |
|                        |   |      |       |      |        |         | 157,50 + " |
| P 3 uit kolom hal BC 2 |   |      |       |      |        | =       | 17,40      |
| uit kolom hal BC 1     |   | 3,50 | 5,00  | *    | 7,15 \ | 10,00 = | 125,13     |
|                        |   |      |       |      |        |         | 142,53     |
|                        |   |      |       |      |        |         | 175,00 + " |
| P 4 uit kolom hal BC 2 |   |      |       |      |        | =       | 22,80      |
| uit kolom hal BC 1     |   | 3,50 | 5,10  | *    | 7,15 \ | 10,00 = | 127,63     |
|                        |   |      |       |      |        |         | 150,43     |
|                        |   |      |       |      |        |         | 178,50 + " |
| P 5 uit kolom hal BC 3 |   |      |       |      |        | =       | 15,70      |
| uit kolom hal BC 1     |   | 3,50 | 4,70  | *    | 7,15 \ | 10,00 = | 117,62     |
|                        |   |      |       |      |        |         | 133,32     |
|                        |   |      |       |      |        |         | 164,50 + " |

|     |                      |        |         |        |         |        |          |    |
|-----|----------------------|--------|---------|--------|---------|--------|----------|----|
| P 6 | uit kolom hal BC 3   |        |         |        | =       | 13,70  | -        | kN |
|     | uit kolom hal BC 1   | 3,50 * | 4,35 *  | 7,15 \ | 10,00 = | 108,86 | 152,25   | "  |
|     |                      |        |         |        |         | 122,56 | 152,25 + | "  |
| P 7 | uit kolom hal BC 3   |        |         |        | =       | 15,70  | -        | kN |
|     | uit kolom hal BC 1   | 3,50 * | 5,53 *  | 7,15 \ | 10,00 = | 138,26 | 193,38   | "  |
|     |                      |        |         |        |         | 153,96 | 193,38 + | "  |
| P 8 | uit kolom hal BC 3/4 |        |         |        | =       | 23,42  | -        | kN |
|     | uit kolom hal BC 1   | 3,50 * | 4,70 *  | 7,15 \ | 10,00 = | 117,62 | 164,50   | "  |
|     |                      |        |         |        |         | 141,04 | 164,50 + | "  |
| P 9 | uit kolom hal BC 3/4 |        |         |        | =       | 23,42  | -        | kN |
|     | uit kolom hal BC 1   | 3,50 * | 5,35 *  | 7,15 \ | 10,00 = | 133,88 | 187,25   | "  |
|     |                      |        |         |        |         | 157,30 | 187,25 + | "  |
| P A | uit kolom hal BC 4/5 |        |         |        | =       | 14,16  | -        | kN |
|     | uit kolom hal BC 1   | 3,50 * | 3,45 *  | 7,15 \ | 10,00 = | 86,34  | 120,75   | "  |
|     |                      |        |         |        |         | 100,50 | 120,75 + | "  |
| P B | uit kolom hal BC 6/7 |        |         |        | =       | 17,60  | -        | kN |
|     | uit kolom hal BC 1   | 3,50 * | 5,70 *  | 7,15 \ | 10,00 = | 142,64 | 199,50   | "  |
|     |                      |        |         |        |         | 160,24 | 199,50 + | "  |
| P C | uit kolom hal BC 7   |        |         |        | =       | 12,30  | -        | kN |
|     | uit kolom kantoor    | 2,15 * | 3,50 *  | 5,25 \ | 4,00 =  | 39,51  | 30,10    | "  |
|     | uit kolom kantoor    | 2,15 * | 3,50 *  | 5,25 \ | 2,00 =  | 39,51  | 15,05    | "  |
|     | uit balk             | 6,20   | *       | 10,50  | =       | 65,10  | -        |    |
|     | uit gevel            | 6,20 * | 14,00 * | 0,80   | =       | 69,44  | -        |    |
|     |                      |        |         |        |         | 225,85 | 30,10 +  | "  |

Zie comp berek blz 12 t/m 28.

### Kolommen scheiding hal BC 1 / kantoor

| belastingen       | n   | b      | h      | q eg   | q vb    | perm.  | verand.    |
|-------------------|-----|--------|--------|--------|---------|--------|------------|
| P 1 : balk        |     | 3,90   | *      | 10,50  | =       | 40,95  | - kN       |
| vloer             |     | 3,20 * | 3,90 * | 5,00 \ | 25,00 = | 62,40  | 312,00 "   |
| scheidingswand    |     | 3,90 * | 7,00 * | 1,20   | =       | 32,76  | - "        |
| uit kolom hal     |     |        |        |        | =       | 107,00 | 307,00     |
| uit kolom kantoor | 2 * | 4,70 * | 7,50 * | 5,25 \ | 4,00 =  | 370,13 | 282,00     |
| dak               |     | 2,70 * | 3,90 * | 0,55   | =       | 5,79   | - "        |
|                   |     |        |        |        |         | 619,03 | 901,00 + " |
|                   |     |        |        | psi =  | 0,8     |        |            |

Paalbelasting 1,08 \* 619,03 + 1,35 \* 901,00 = 1884,9 kN

3 palen á 628,3 kN

| belastingen       | n   | b      | h      | q eg   | q vb    | perm.  | verand.    |
|-------------------|-----|--------|--------|--------|---------|--------|------------|
| P 1 : balk        |     | 4,30   | *      | 10,50  | =       | 45,15  | - kN       |
| vloer             |     | 3,20 * | 4,30 * | 5,00 \ | 25,00 = | 68,80  | 344,00 "   |
| scheidingswand    |     | 4,30 * | 7,00 * | 1,20   | =       | 36,12  | - "        |
| uit kolom kantoor | 2 * | 4,70 * | 6,50 * | 5,25 \ | 4,00 =  | 320,78 | 244,40     |
| dak               |     | 2,70 * | 4,30 * | 0,55   | =       | 6,39   | - "        |
|                   |     |        |        |        |         | 477,23 | 588,40 + " |
|                   |     |        |        | psi =  | 0,8     |        |            |

Paalbelasting 1,08 \* 477,23 + 1,35 \* 588,40 = 1309,7 kN

1,22 \* 477,23 + 1,08 \* 588,40 = 1217,7 kN

2 palen á 654,9 kN

| belastingen    | n | b      | h      | q eg   | q vb    | perm.  | verand.    |
|----------------|---|--------|--------|--------|---------|--------|------------|
| P 1 : balk     |   | 2,75   | *      | 10,50  | =       | 28,88  | - kN       |
| vloer          |   | 3,20 * | 2,75 * | 5,00 \ | 25,00 = | 44,00  | 220,00 "   |
| scheidingswand |   | 2,75 * | 7,00 * | 1,20   | =       | 23,10  | - "        |
| dak            |   | 2,70 * | 2,75 * | 0,55   | =       | 4,08   | - "        |
|                |   |        |        |        |         | 100,06 | 220,00 + " |
|                |   |        |        | psi =  | 0,8     |        |            |

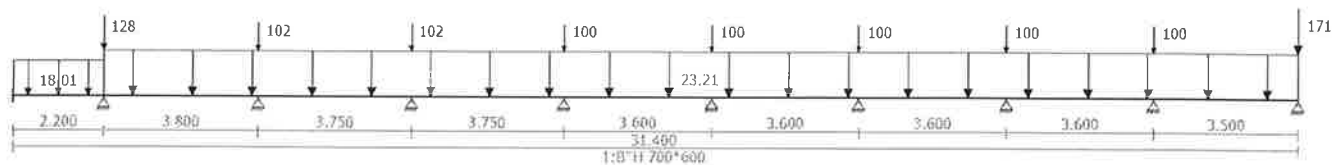
Paalbelasting 1,08 \* 100,06 + 1,35 \* 220,00 = 405,1 kN

1,22 \* 100,06 + 1,08 \* 220,00 = 359,7 kN

1 palen á 405,1 kN

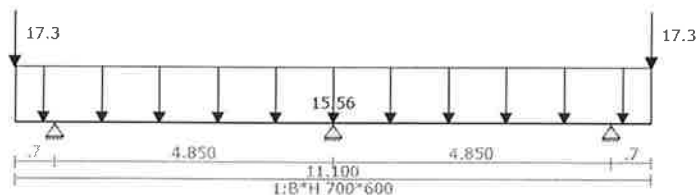
| belastingen    | n | b    | h | q eg    | q vb | perm.        | verand. |                   |
|----------------|---|------|---|---------|------|--------------|---------|-------------------|
| P 1 : balk     |   | 3,25 | * | 10,50   | =    | 34,13        | -       | kN                |
| vloer          |   | 3,20 | * | 3,25    | *    | 5,00 \ 25,00 | =       | 52,00 260,00 "    |
| scheidingswand |   | 3,25 | * | 7,00    | *    | 1,20         | =       | 27,30 - "         |
| dak            |   | 2,70 | * | 3,25    | *    | 0,55         | =       | 4,83 - "          |
|                |   |      |   |         |      | 118,25       |         | 260,00 + "        |
|                |   |      |   | psi     | =    | 0,8          |         |                   |
| Paalbelasting  |   | 1,08 | * | 118,25  | +    | 1,35         | *       | 260,00 = 478,7 kN |
|                |   | 1,22 | * | 118,25  | +    | 1,08         | *       | 260,00 = 425,1 kN |
|                |   | 1    |   | palen á |      | 478,7        |         | kN                |

## Kantoor as A



| belastingen                     | n | b    | h     | q eg     | q vb    | perm.  | verand.     |
|---------------------------------|---|------|-------|----------|---------|--------|-------------|
| Q 1 beg. grond kantoor<br>gevel |   | 2,50 | 14,70 | * 4,58 \ | 4,00 =  | 11,45  | 10,00 kN/m1 |
|                                 |   |      |       | * 0,80   | =       | 11,76  | - "         |
|                                 |   |      |       |          |         | 23,21  | 10,00 + "   |
| Q 2 beg. grond hal<br>gevel     |   | 1,25 | 14,70 | * 5,00 \ | 25,00 = | 6,25   | 31,25 kN/m1 |
|                                 |   |      |       | * 0,80   | =       | 11,76  | - "         |
|                                 |   |      |       |          |         | 18,01  | 31,25 + "   |
| P 2 uit kolom                   |   |      |       |          |         | 128,00 | 94,00 kN    |
| P 3 uit kolom                   |   |      |       |          |         | 102,00 | 76,00 kN    |
| P 4 uit kolom                   |   |      |       |          |         | 100,00 | 74,00 kN    |
| P 5 uit kolom                   |   |      |       |          |         | 171,00 | 71,00 kN    |

## Balk tussen as A-B kantoor

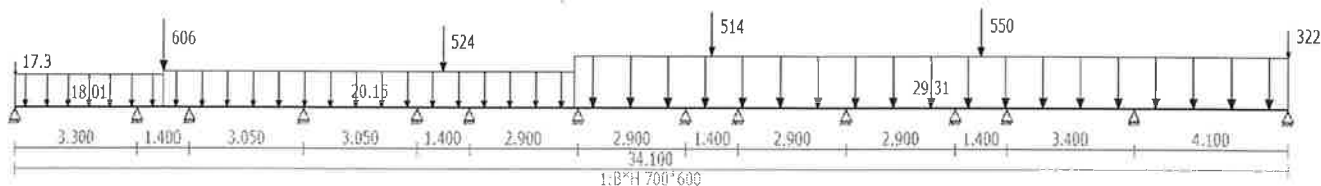


| belastingen            | n | b    | h | q eg     | q vb    | perm. | verand.    |
|------------------------|---|------|---|----------|---------|-------|------------|
| Q 1 beg. grond kantoor |   | 1,65 |   | * 4,58 \ | 4,00 =  | 7,56  | 6,60 kN/m1 |
| beg. Grond hal         |   | 1,60 |   | * 5,00 \ | 25,00 = | 8,00  | 40,00      |
|                        |   |      |   |          |         | 15,56 | 46,60 + "  |
| P 1 balk               |   | 1,65 |   | * 10,50  | =       | 17,33 | - kN       |

Voor balk as A zie comp berek blz 29 t/m 32.

Voor balk as A-B zie comp berek blz 33 t/m 35.

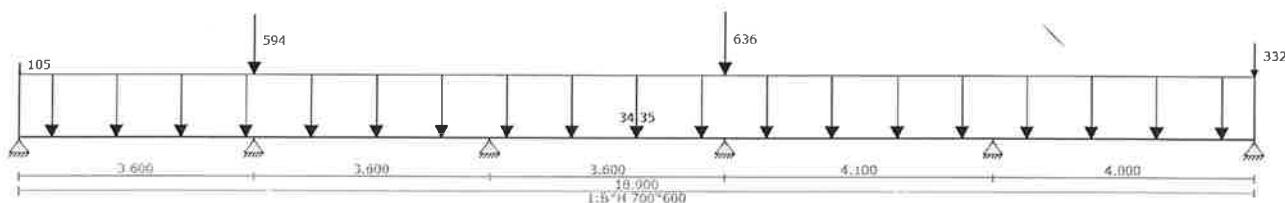
## Kantoor // as A



| belastingen                 | n | b    | h     | q eg     | q vb    | perm.  | verand.     |
|-----------------------------|---|------|-------|----------|---------|--------|-------------|
| Q 1 beg. grond hal<br>gevel |   | 1,25 |       | * 5,00 \ | 25,00 = | 6,25   | 31,25 kN/m1 |
|                             |   |      | 14,70 | * 0,80   | =       | 11,76  | - "         |
|                             |   |      |       |          |         | 18,01  | 31,25 + "   |
| Q 2 beg. grond hal          |   | 4,40 |       | * 4,58 \ | 4,00 =  | 20,15  | 17,60 kN/m1 |
| Q 3 beg. grond hal          |   | 6,40 |       | * 4,58 \ | 4,00 =  | 29,31  | 25,60 kN/m1 |
| P 1 uit balk                |   | 1,65 |       | * 10,50  | =       | 17,33  | - kN        |
| P 2 uit kolom               |   |      |       |          | =       | 606,00 | 318,00 kN   |
| P 3 uit kolom               |   |      |       |          | =       | 524,00 | 276,00 kN   |
| P 4 uit kolom               |   |      |       |          | =       | 514,00 | 270,00 kN   |
| P 5 uit kolom               |   |      |       |          | =       | 550,00 | 288,00 kN   |
| P 6 uit kolom               |   |      |       |          | =       | 322,00 | 153,00 kN   |

Zie comp berek blz 36 t/m 40.

## Kantoor as B



| belastingen            | n | b    | h       | q eg     | q vb    | perm.  | verand.     |
|------------------------|---|------|---------|----------|---------|--------|-------------|
| Q 1 beg. grond kantoor |   | 7,50 |         | * 4,58 \ | 4,00 =  | 34,35  | 30,00 kN/m1 |
| P 1 uit balk           |   | 5,50 |         | * 10,50  | =       | 57,75  | - kN        |
| uit vloer              |   | 1,70 | * 5,50  | * 5,00 \ | 25,00 = | 46,75  | 233,75 "    |
|                        |   |      |         |          |         | 104,50 | 233,75 + "  |
| p 2 uit kolom          |   |      |         |          | =       | 594,00 | 324,00 kN   |
| P 3 uit kolom          |   |      |         |          | =       | 636,00 | 347,00 kN   |
| P 4 uit kolom          |   |      |         |          | =       | 169,00 | 216,00 kN   |
| uit balk               |   | 7,50 |         | * 10,50  | =       | 78,75  | - "         |
| uit gevel              |   | 7,50 | * 14,00 | * 0,80   | =       | 84,00  | - "         |
|                        |   |      |         |          |         | 331,75 | 216,00 + "  |

Zie comp berek blz. 41 t/m 43.

BOUWADVIESBUREAU VAN DER VEN BV

Technosoft Liggers release 6.25c  
Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as A  
Constructeur..  
Opdrachtgever:  
Dimensies.....: KN/m/rad  
Datum.....: 31/05/2018  
Bestand.....: n:\rekenk\project\18009\funderingsbalken\balk op as a.dlw

Blad: 1  
12 jul 2018

Technosoft Liggers release 6.25c  
Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as A

Betrouwbaarheidsklasse : 1 Referentieperiode : 50  
Toevallige inklemmingen begin : geen Toevallige inklemming eind : geen  
Herverdelen van momenten : nee Maximale deellengte : 0.000  
Ouderdom bij belastingen : 28 Relatieve vochtigheid : 50%  
Doorbuigingen(beton) zijn dmv gecorrigeerde stijfningen berekend.

Fysisch lineair : Er is gerekend met de e-modulus uit de materiaaltabel.  
Fys.NIE.kort : Er is gerekend met een gecorrigeerde e-modulus (korte duur).  
Deze e-mod. is berekend mbv de krachten uit de fysisch lineair berekening.

Toegepaste normen volgens Eurocode met Nederlandse NB

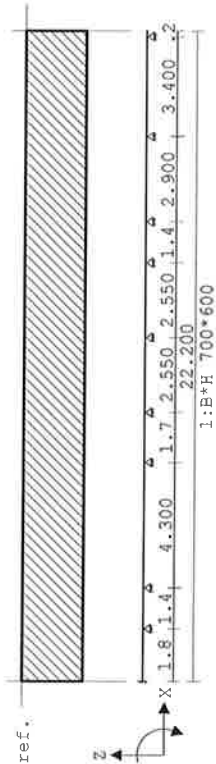
|             |                          |                |             |
|-------------|--------------------------|----------------|-------------|
| Belastingen | NEN-EN 1990:2002         | C2:2010        | NB:2011(nl) |
|             | NEN-EN 1991-1-1:2002     | C1:2009        | NB:2011(nl) |
| Beton       | NEN-EN 1992-1-1:2011(nl) | C2/A1:2015(nl) | NB:2016(nl) |

LIGGER: deel 2

Profiel : B\*H 700\*600

GEOMETRIE

Ligger:deel 2



VELDBELASTINGEN

Ligger:deel 2 B.G:1 Permanent



REACTIES Fysisch lineair

Ligger:deel 2 B.G:1 Permanent

| Stp | F      | M     |
|-----|--------|-------|
| 1   | 25.91  | -4.35 |
| 2   | 165.20 | 0.00  |
| 3   | 275.10 | 0.00  |
| 4   | 315.35 | 0.00  |
| 5   | 264.82 | 0.00  |
| 6   | 87.89  | 0.00  |
| 7   | 205.77 | 0.00  |
| 8   | 209.69 | 0.00  |
| 9   | 317.71 | 0.00  |

BOUWADVIESBUREAU VAN DER VEN BV

Blad: 2  
12 jul 2018

Technosoft Liggers release 6.25c  
Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as A

REACTIES Fysisch lineair

Ligger:deel 2 B.G:1 Permanent

| Stp | F        | M                                   |
|-----|----------|-------------------------------------|
| 10  | 206.88   | 0.00                                |
|     | 2074.31  | (absoluut) grootste som reacties    |
|     | -2074.31 | (absoluut) grootste som belastingen |

VELDBELASTINGEN

Ligger:deel 2 B.G:2 Veranderlijk



REACTIES Fysisch lineair

Ligger:deel 2 B.G:2 Veranderlijk

| Stp | Fmin   | Fmax   | Mmin   | Mmax  |
|-----|--------|--------|--------|-------|
| 1   | -39.08 | 87.58  | -34.32 | 23.45 |
| 2   | -40.39 | 329.29 | 0.00   | 0.00  |
| 3   | 0.00   | 430.30 | 0.00   | 0.00  |
| 4   | 0.00   | 484.58 | 0.00   | 0.00  |
| 5   | 0.00   | 427.84 | 0.00   | 0.00  |
| 6   | 0.00   | 207.12 | 0.00   | 0.00  |
| 7   | 0.00   | 353.74 | 0.00   | 0.00  |
| 8   | 0.00   | 357.93 | 0.00   | 0.00  |
| 9   | 0.00   | 493.22 | 0.00   | 0.00  |
| 10  | 0.00   | 239.87 | 0.00   | 0.00  |

BELASTINGCOMBINATIES

| BC Type  | BG Gen. | Factor | BG Gen. | Factor | BG Gen. | Factor |
|----------|---------|--------|---------|--------|---------|--------|
| 1 Fund.  | 1 Perm  | 1.22   |         |        |         |        |
| 2 Fund.  | 1 Perm  | 0.90   |         |        |         |        |
| 3 Fund.  | 1 Perm  | 1.22   | 2 psi0  | 1.35   |         |        |
| 4 Fund.  | 1 Perm  | 1.08   | 2 Extr  | 1.35   |         |        |
| 5 Fund.  | 1 Perm  | 0.90   | 2 Extr  | 1.35   |         |        |
| 6 Fund.  | 1 Perm  | 0.90   | 2 psi0  | 1.35   |         |        |
| 7 Kar.   | 1 Perm  | 1.00   | 2 Extr  | 1.00   |         |        |
| 8 Quas.  | 1 Perm  | 1.00   |         |        |         |        |
| 9 Quas.  | 1 Perm  | 1.00   | 2 psi2  | 1.00   |         |        |
| 10 Freq. | 1 Perm  | 1.00   |         |        |         |        |
| 11 Freq. | 1 Perm  | 1.00   | 2 psi1  | 1.00   |         |        |
| 12 Blij. | 1 Perm  | 1.00   |         |        |         |        |

GUNSTIGE WERKING PERMANENTE BELASTINGEN

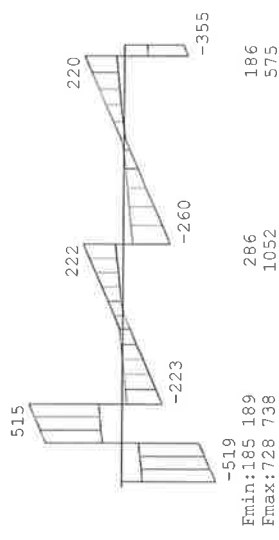
BC Velden met gunstige werking

- 1 Geen
- 2 Alle velden de factor:0.90
- 3 Geen
- 4 Geen
- 5 Alle velden de factor:0.90
- 6 Alle velden de factor:0.90

DWARSKRACHTEN Fysisch lineair

Veiden: 7 t/m 10

Ligger:deel 2 Fundamentele combinatie



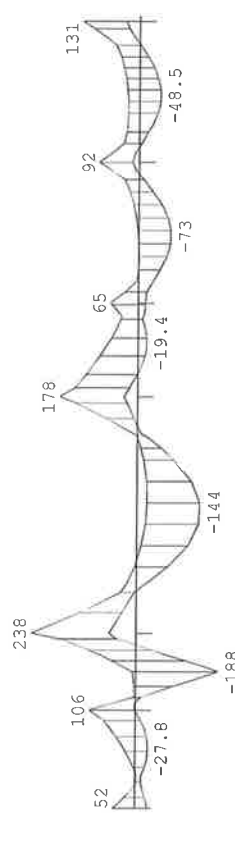
| REACTIES Fysisch lineair |        |         |        |       | Ligger:deel 2 Fundamentele combinatie |  |  |
|--------------------------|--------|---------|--------|-------|---------------------------------------|--|--|
| Stp                      | Fmin   | Fmax    | Mmin   | Mmax  |                                       |  |  |
| 1                        | -29.44 | 149.72  | -51.63 | 27.73 |                                       |  |  |
| 2                        | 94.16  | 645.26  | 0.00   | 0.00  |                                       |  |  |
| 3                        | 247.59 | 915.15  | 0.00   | 0.00  |                                       |  |  |
| 4                        | 283.81 | 1037.32 | 0.00   | 0.00  |                                       |  |  |
| 5                        | 238.34 | 899.34  | 0.00   | 0.00  |                                       |  |  |
| 6                        | 79.10  | 386.40  | 0.00   | 0.00  |                                       |  |  |
| 7                        | 185.19 | 727.56  | 0.00   | 0.00  |                                       |  |  |
| 8                        | 188.72 | 737.97  | 0.00   | 0.00  |                                       |  |  |
| 9                        | 285.94 | 1051.86 | 0.00   | 0.00  |                                       |  |  |
| 10                       | 186.20 | 575.20  | 0.00   | 0.00  |                                       |  |  |

OMHULLENDE VAN DE FUNDAMENTELE COMBINATIES

MOMENTEN Fysisch lineair

Veiden: 1 t/m 6

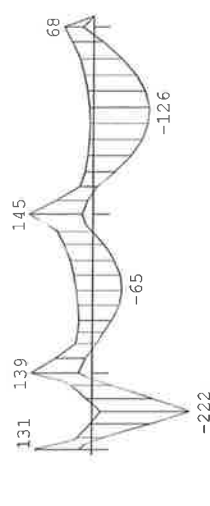
Ligger:deel 2 Fundamentele combinatie



MOMENTEN Fysisch lineair

Veiden: 7 t/m 10

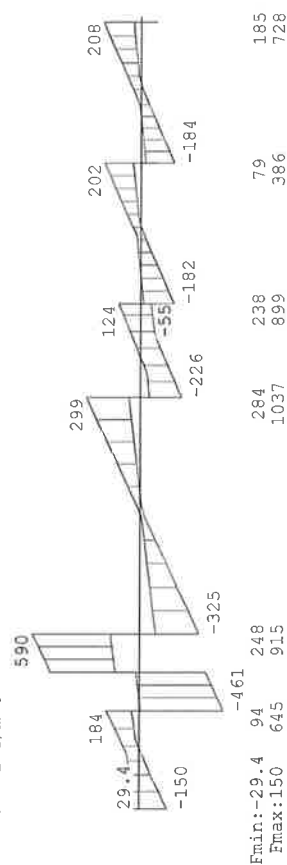
Ligger:deel 2 Fundamentele combinatie



DWARSKRACHTEN Fysisch lineair

Veiden: 1 t/m 6

Ligger:deel 2 Fundamentele combinatie



Technosoft Liggers release 6.25c  
Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as A  
Constructeur.: FBA  
Opdrachtgever:  
Dimensies.....: kN/m/rad  
Datum.....: 31/05/2018  
Bestand.....: n:\rekenk\project\18009\funderingsbalken\balk op as a.dlw

Betrouwbaarheidsklasse : 1 Referentieperiode : 50  
Toevallige inklemmingen begin : geen Toevallige inklemming eind : geen  
Herverdelen van momenten : nee Maximale deellengte : 0.000  
Ouderdom bij belastingen : 28 Relatieve vochtigheid : 50%  
Doorbuigingen(beton) zijn dmv gecorrigeerde stijfheden berekend.

Fysisch lineair : Er is gerekend met de e-modulus uit de materiaaltabel.  
Fys.NIE.kort : Er is gerekend met een gecorrigeerde e-modulus (korte duur).  
Deze e-mod. is berekend mbv de krachten uit de fysisch lineair berekening.

Toegepaste normen volgens Eurocode met Nederlandse NB

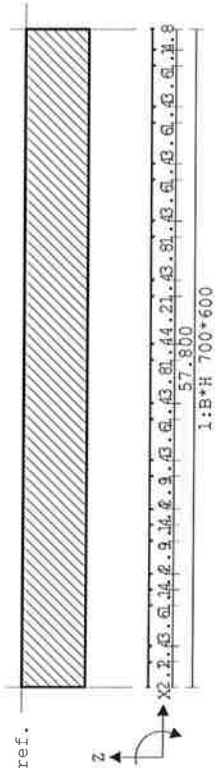
|             |                          |                |             |
|-------------|--------------------------|----------------|-------------|
| Belastingen | NEN-EN 1990:2002         | C2:2010        | NB:2011(nl) |
|             | NEN-EN 1991-1-1:2002     | C1:2009        | NB:2011(nl) |
| Beton       | NEN-EN 1992-1-1:2011(nl) | C2/A1:2015(nl) | NB:2016(nl) |

LIGGER: deel 1

Profiel : B\*H 700\*600

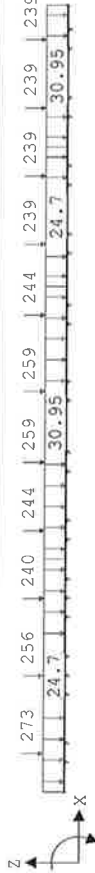
GEOMETRIE

Ligger:deel 1



VELDBELASTINGEN

Ligger:deel 1 B.G:1 Permanent



REACTIES Fysisch lineair

Ligger:deel 1 B.G:1 Permanent

| Stp | F      | M       |
|-----|--------|---------|
| 1   | 108.63 | -146.37 |
| 2   | 131.34 | 0.00    |
| 3   | 205.02 | 0.00    |
| 4   | 177.56 | 0.00    |
| 5   | 171.06 | 0.00    |
| 6   | 139.88 | 0.00    |
| 7   | 135.98 | 0.00    |
| 8   | 159.03 | 0.00    |
| 9   | 152.47 | 0.00    |

Technosoft Liggers release 6.25c  
Project.....: i8009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as A

REACTIES Fysisch lineair

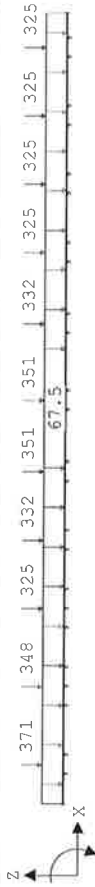
Ligger:deel 1 B.G:1 Permanent

| Stp | F      | M      |
|-----|--------|--------|
| 10  | 199.82 | 0.00   |
| 11  | 224.51 | 0.00   |
| 12  | 236.17 | 0.00   |
| 13  | 236.61 | 0.00   |
| 14  | 238.34 | 0.00   |
| 15  | 246.32 | 0.00   |
| 16  | 239.18 | 0.00   |
| 17  | 225.54 | 0.00   |
| 18  | 211.36 | 0.00   |
| 19  | 206.87 | 0.00   |
| 20  | 206.82 | 0.00   |
| 21  | 210.67 | 0.00   |
| 22  | 224.13 | 0.00   |
| 23  | 235.60 | 0.00   |
| 24  | 202.61 | 0.00   |
| 25  | 107.51 | 0.00   |
| 26  | 122.54 | 161.26 |

4955.56 : (absoluut) grootste som reacties  
-4955.56 : (absoluut) grootste som belastingen

VELDBELASTINGEN

Ligger:deel 1 B.G:2 Veranderlijk



REACTIES Fysisch lineair

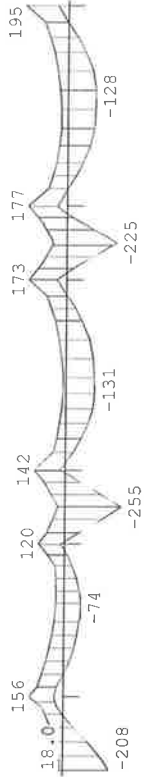
Ligger:deel 1 B.G:2 Veranderlijk

| Stp | Fmin | Fmax   | Mmin    | Mmax |
|-----|------|--------|---------|------|
| 1   | 0.00 | 200.27 | -230.25 | 0.00 |
| 2   | 0.00 | 202.43 | 0.00    | 0.00 |
| 3   | 0.00 | 325.45 | 0.00    | 0.00 |
| 4   | 0.00 | 289.42 | 0.00    | 0.00 |
| 5   | 0.00 | 268.24 | 0.00    | 0.00 |
| 6   | 0.00 | 228.21 | 0.00    | 0.00 |
| 7   | 0.00 | 223.33 | 0.00    | 0.00 |
| 8   | 0.00 | 248.90 | 0.00    | 0.00 |
| 9   | 0.00 | 241.49 | 0.00    | 0.00 |
| 10  | 0.00 | 300.59 | 0.00    | 0.00 |
| 11  | 0.00 | 333.18 | 0.00    | 0.00 |
| 12  | 0.00 | 348.38 | 0.00    | 0.00 |
| 13  | 0.00 | 349.74 | 0.00    | 0.00 |
| 14  | 0.00 | 352.59 | 0.00    | 0.00 |
| 15  | 0.00 | 364.99 | 0.00    | 0.00 |
| 16  | 0.00 | 357.01 | 0.00    | 0.00 |
| 17  | 0.00 | 342.59 | 0.00    | 0.00 |
| 18  | 0.00 | 335.68 | 0.00    | 0.00 |
| 19  | 0.00 | 331.55 | 0.00    | 0.00 |
| 20  | 0.00 | 330.14 | 0.00    | 0.00 |
| 21  | 0.00 | 329.46 | 0.00    | 0.00 |
| 22  | 0.00 | 335.78 | 0.00    | 0.00 |
| 23  | 0.00 | 349.80 | 0.00    | 0.00 |
| 24  | 0.00 | 299.82 | 0.00    | 0.00 |
| 25  | 0.00 | 157.02 | 0.00    | 0.00 |

MOMENTEN Fysisch lineair

Ligger:deel 1 Fundamentele combinatie

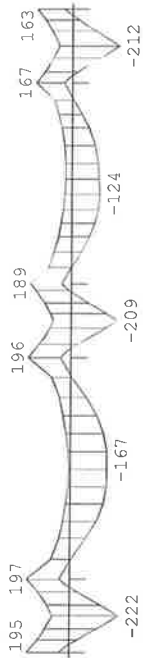
Veliden: 8 t/m 13



MOMENTEN Fysisch lineair

Ligger:deel 1 Fundamentele combinatie

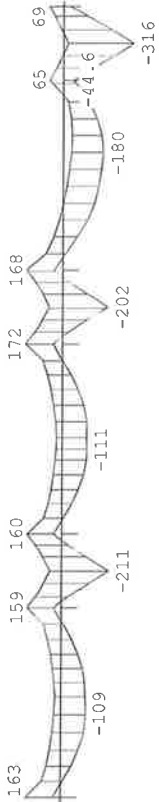
Veliden: 14 t/m 18



MOMENTEN Fysisch lineair

Ligger:deel 1 Fundamentele combinatie

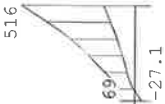
Veliden: 19 t/m 24



MOMENTEN Fysisch lineair

Ligger:deel 1 Fundamentele combinatie

Veliden: 25 t/m 25



| REACTIES |      | Fysisch lineair |      | Ligger:deel 1 B.G.2 Veranderlijk |  |
|----------|------|-----------------|------|----------------------------------|--|
| Stp      | Fmin | Fmax            | Mmin | Mmax                             |  |
| 26       | 0.00 | 196.59          | 0.00 | 237.06                           |  |

BELASTINGCOMBINATIES

| BC Type   | BG Gen. Factor | BG Gen. Factor | BG Gen. Factor | BG Gen. Factor |
|-----------|----------------|----------------|----------------|----------------|
| 1 Fund.   | 1 Perm         | 1.22           |                |                |
| 2 Fund.   | 1 Perm         | 0.90           |                |                |
| 3 Fund.   | 1 Perm         | 1.22           |                |                |
| 4 Fund.   | 1 Perm         | 1.08           | 2 psi0         | 1.35           |
| 5 Fund.   | 1 Perm         | 0.90           | 2 Extr         | 1.35           |
| 6 Fund.   | 1 Perm         | 0.90           | 2 psi0         | 1.35           |
| 7 Kar.    | 1 Perm         | 1.00           | 2 Extr         | 1.00           |
| 8 Quas.   | 1 Perm         | 1.00           |                |                |
| 9 Quas.   | 1 Perm         | 1.00           | 2 psi2         | 1.00           |
| 10 Freq.  | 1 Perm         | 1.00           |                |                |
| 11 Freq.  | 1 Perm         | 1.00           | 2 psil         | 1.00           |
| 12 Blijf. | 1 Perm         | 1.00           |                |                |

GUNSTIGE WERKING PERMANENTE BELASTINGEN

- BC Veliden met gunstige werking
- 1 Geen

2 Alle veliden de factor:0.90

3 Geen

4 Geen

5 Alle veliden de factor:0.90

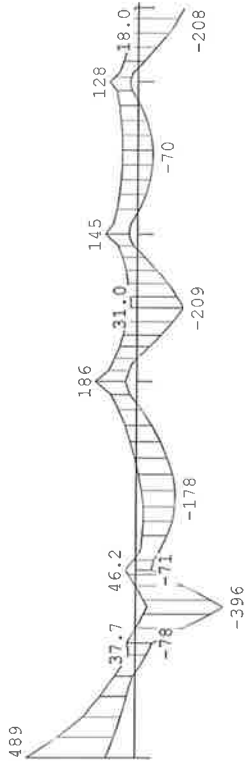
6 Alle veliden de factor:0.90

OMHULLENDE VAN DE FUNDAMENTELE COMBINATIES

MOMENTEN Fysisch lineair

Ligger:deel 1 Fundamentele combinatie

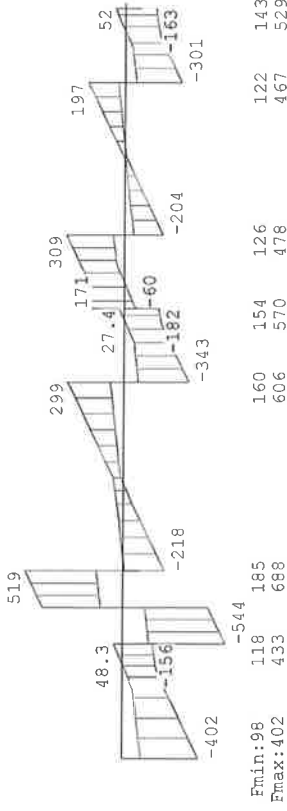
Veliden: 1 t/m 7



Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as A

DWARSKRACHTEN Fysisch lineair Ligger:deel 1 Fundamentele combinatie

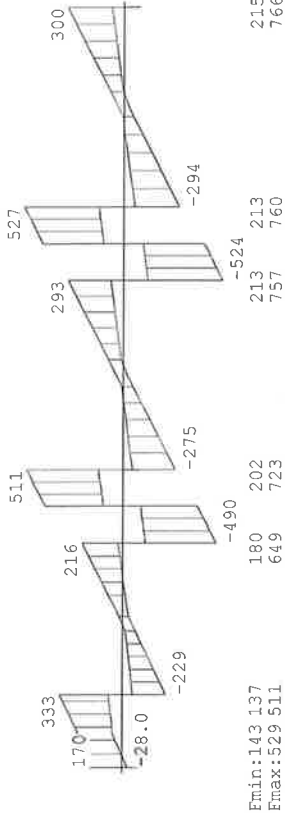
VelDEN: 1 t/m 7



Fmin:98 118 185 160 154 126 122 143  
Fmax:402 433 688 606 570 478 467 529

DWARSKRACHTEN Fysisch lineair Ligger:deel 1 Fundamentele combinatie

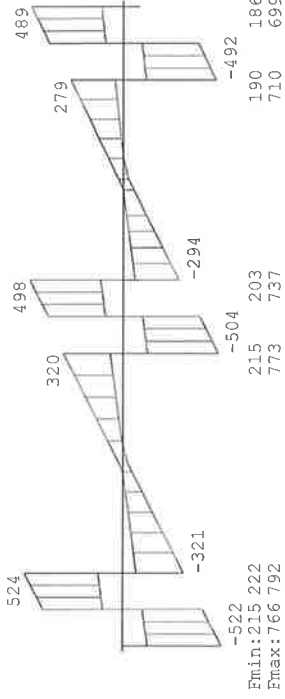
VelDEN: 8 t/m 13



Fmin:143 137 180 202 213 213 215  
Fmax:529 511 649 723 757 760 766

DWARSKRACHTEN Fysisch lineair Ligger:deel 1 Fundamentele combinatie

VelDEN: 14 t/m 18

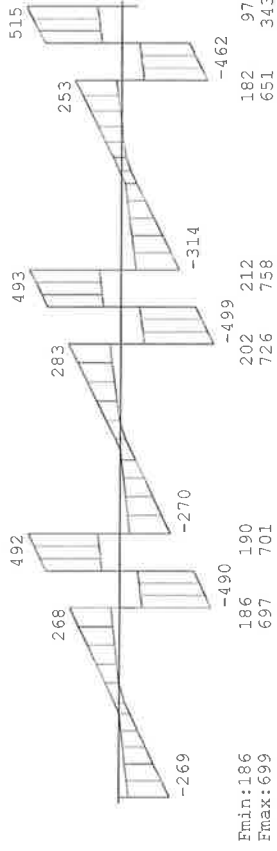


Fmin:215 222 215 203 773 737 190 186  
Fmax:766 792 773 737 710 699

Project.....: i8009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as A

DWARSKRACHTEN Fysisch lineair Ligger:deel 1 Fundamentele combinatie

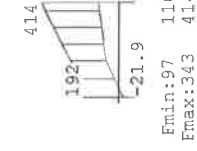
VelDEN: 19 t/m 24



Fmin:186 186 190 202 212 182 97  
Fmax:699 697 701 726 758 651 343

DWARSKRACHTEN Fysisch lineair Ligger:deel 1 Fundamentele combinatie

VelDEN: 25 t/m 25



Fmin:97 110 343 414

REACTIES Fysisch lineair Ligger:deel 1 Fundamentele combinatie

| Stp | Fmin   | Fmax   | Mmin    | Mmax    |
|-----|--------|--------|---------|---------|
| 1   | 97.77  | 402.36 | -488.68 | -131.73 |
| 2   | 118.20 | 432.86 | 0.00    | 0.00    |
| 3   | 184.52 | 688.46 | 0.00    | 0.00    |
| 4   | 159.81 | 606.45 | 0.00    | 0.00    |
| 5   | 153.95 | 569.96 | 0.00    | 0.00    |
| 6   | 125.89 | 478.04 | 0.00    | 0.00    |
| 7   | 122.38 | 466.72 | 0.00    | 0.00    |
| 8   | 143.13 | 529.23 | 0.00    | 0.00    |
| 9   | 137.23 | 511.26 | 0.00    | 0.00    |
| 10  | 179.84 | 648.57 | 0.00    | 0.00    |
| 11  | 202.06 | 722.57 | 0.00    | 0.00    |
| 12  | 212.55 | 757.25 | 0.00    | 0.00    |
| 13  | 212.95 | 759.63 | 0.00    | 0.00    |
| 14  | 214.51 | 765.58 | 0.00    | 0.00    |
| 15  | 221.69 | 792.02 | 0.00    | 0.00    |
| 16  | 215.26 | 772.57 | 0.00    | 0.00    |
| 17  | 202.99 | 736.53 | 0.00    | 0.00    |
| 18  | 190.22 | 709.97 | 0.00    | 0.00    |
| 19  | 186.18 | 698.93 | 0.00    | 0.00    |
| 20  | 186.14 | 696.98 | 0.00    | 0.00    |
| 21  | 189.60 | 700.74 | 0.00    | 0.00    |
| 22  | 201.72 | 725.62 | 0.00    | 0.00    |
| 23  | 212.04 | 758.48 | 0.00    | 0.00    |
| 24  | 182.35 | 650.92 | 0.00    | 0.00    |
| 25  | 96.76  | 342.60 | 0.00    | 0.00    |

**BOUWADVIESBUREAU VAN DER VEN BV**

Technosoft Liggers release 6.25c

Blad: 11

12 jul 2018

Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as A

| <b>REACTIES</b> |  | Fysisch lineair | Ligger:deel 1 Fundamentele combinatie |               |
|-----------------|--|-----------------|---------------------------------------|---------------|
| Stp             |  | Fmin            | Fmax                                  | Mmin Mmax     |
| 26              |  | 110.29          | 414.28                                | 145.14 515.96 |

Technosoft Liggers release 6.25c  
Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as C  
Constructeur.:  
Opdrachtgever:  
Dimensies.....: kN/m/rad  
Datum.....: 31/05/2018  
Bestand.....: n:\rekenk\project\18009\funderingsbalken\balk op as c.dlw

Betrouwbaarheidsklasse : 1 Referentieperiode : 50  
Toevallige inklemmingen begin : 15% Toevallige inklemming eind : geen  
Harverdelen van momenten : nee Maximale deellengte : 0.000  
Ouderdom bij belasten : 28 Relatieve vochtigheid : 50%  
Doorbuigingen(beton) zijn dmv gecorrigeerde stijfheden berekend.

Fysisch lineair : Er is gerekend met de e-modulus uit de materiaaltabel.  
Fys.NLE.kort : Er is gerekend met een gecorrigeerde e-modulus (korte duur).  
Deze e-mod. is berekend mbv de krachten uit de fysisch lineair berekening.

Toegepaste normen volgens Eurocode met Nederlandse NB

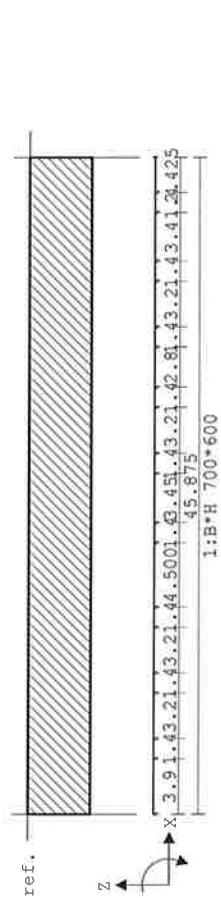
|             |                          |                |             |
|-------------|--------------------------|----------------|-------------|
| Belastingen | NEN-EN 1990:2002         | C2:2010        | NB:2011(nl) |
|             | NEN-EN 1991-1-1:2002     | C1:2009        | NB:2011(nl) |
| Beton       | NEN-EN 1992-1-1:2011(nl) | C2/A1:2015(nl) | NB:2016(nl) |

LIGGER:deel 1

Profiel : B\*H 700\*600

GEOMETRIE

Ligger:deel 1



VELDBELASTINGEN

Ligger:deel 1 B.G:1 Permanent



REACTIES Fysisch lineair

Ligger:deel 1 B.G:1 Permanent

| Stp | F      | M    |
|-----|--------|------|
| 1   | 138.03 | 0.00 |
| 2   | 183.22 | 0.00 |
| 3   | 165.48 | 0.00 |
| 4   | 156.38 | 0.00 |
| 5   | 156.10 | 0.00 |
| 6   | 169.94 | 0.00 |
| 7   | 196.09 | 0.00 |
| 8   | 200.66 | 0.00 |
| 9   | 178.84 | 0.00 |

Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as C

REACTIES Fysisch lineair

Ligger:deel 1 B.G:1 Permanent

| Stp | F      | M      |
|-----|--------|--------|
| 10  | 165.37 | 0.00   |
| 11  | 162.64 | 0.00   |
| 12  | 155.84 | 0.00   |
| 13  | 149.53 | 0.00   |
| 14  | 149.05 | 0.00   |
| 15  | 154.83 | 0.00   |
| 16  | 166.12 | 0.00   |
| 17  | 177.31 | 0.00   |
| 18  | 166.94 | 0.00   |
| 19  | 105.49 | 0.00   |
| 20  | 101.42 | 122.62 |

3199.27 : (absoluut) grootste som reacties  
-3199.27 : (absoluut) grootste som belastingen

VELDBELASTINGEN

Ligger:deel 1 B.G:2 Veranderlijk



REACTIES Fysisch lineair

Ligger:deel 1 B.G:2 Veranderlijk

| Stp | Fmin  | Fmax   | Mmin | Mmax   |
|-----|-------|--------|------|--------|
| 1   | -6.92 | 267.31 | 0.00 | 0.00   |
| 2   | 0.00  | 368.97 | 0.00 | 0.00   |
| 3   | 0.00  | 327.39 | 0.00 | 0.00   |
| 4   | 0.00  | 305.71 | 0.00 | 0.00   |
| 5   | 0.00  | 303.58 | 0.00 | 0.00   |
| 6   | 0.00  | 330.27 | 0.00 | 0.00   |
| 7   | 0.00  | 393.12 | 0.00 | 0.00   |
| 8   | 0.00  | 397.39 | 0.00 | 0.00   |
| 9   | 0.00  | 344.18 | 0.00 | 0.00   |
| 10  | 0.00  | 322.46 | 0.00 | 0.00   |
| 11  | 0.00  | 318.68 | 0.00 | 0.00   |
| 12  | 0.00  | 307.68 | 0.00 | 0.00   |
| 13  | 0.00  | 292.65 | 0.00 | 0.00   |
| 14  | 0.00  | 291.61 | 0.00 | 0.00   |
| 15  | 0.00  | 305.46 | 0.00 | 0.00   |
| 16  | 0.00  | 326.05 | 0.00 | 0.00   |
| 17  | 0.00  | 348.16 | 0.00 | 0.00   |
| 18  | 0.00  | 321.34 | 0.00 | 0.00   |
| 19  | 0.00  | 196.18 | 0.00 | 0.00   |
| 20  | 0.00  | 238.96 | 0.00 | 241.54 |

BELASTINGCOMBINATIES

| BC Type | BG Gen. Factor | BG Gen. Factor | BG Gen. Factor | BG Gen. Factor |
|---------|----------------|----------------|----------------|----------------|
| 1 Fund. | 1 Perm         | 1.22           |                |                |
| 2 Fund. | 1 Perm         | 0.90           |                |                |
| 3 Fund. | 1 Perm         | 1.22           | 2 psi0         | 1.35           |
| 4 Fund. | 1 Perm         | 1.08           | 2 Extr         | 1.35           |
| 5 Fund. | 1 Perm         | 0.90           | 2 Extr         | 1.35           |
| 6 Fund. | 1 Perm         | 0.90           | 2 psi0         | 1.35           |
| 7 Kar.  | 1 Perm         | 1.00           | 2 Extr         | 1.00           |

Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as C

BELASTINGCOMBINATIES

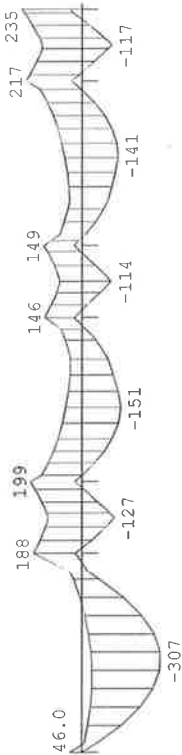
| BC Type  | BG Gen. | Factor | BG Gen. | Factor | BG Gen. | Factor |
|----------|---------|--------|---------|--------|---------|--------|
| 8 Blijf. | 1 Perm  | 1.00   |         |        |         |        |
| 9 Freq.  | 1 Perm  | 1.00   |         |        |         |        |

GUNSTIGE WERKING PERMANENTE BELASTINGEN

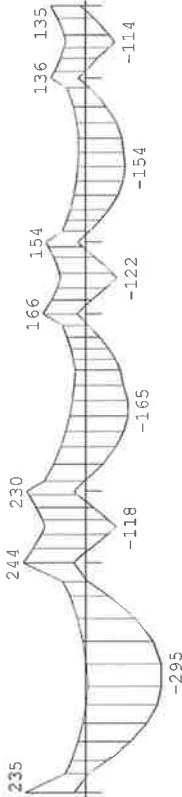
| BC Velden met gunstige werking |                            |  |  |  |  |  |
|--------------------------------|----------------------------|--|--|--|--|--|
| 1                              | Geen                       |  |  |  |  |  |
| 2                              | Alle velden de factor:0.90 |  |  |  |  |  |
| 3                              | Geen                       |  |  |  |  |  |
| 4                              | Geen                       |  |  |  |  |  |
| 5                              | Alle velden de factor:0.90 |  |  |  |  |  |
| 6                              | Alle velden de factor:0.90 |  |  |  |  |  |

OMHULLENDE VAN DE FUNDAMENTELE COMBINATIES

| MOMENTEN  | Fysisch lineair | Ligger:deel 1 | Fundamentele combinatie |
|-----------|-----------------|---------------|-------------------------|
| Velden: 1 | t/m 6           |               |                         |

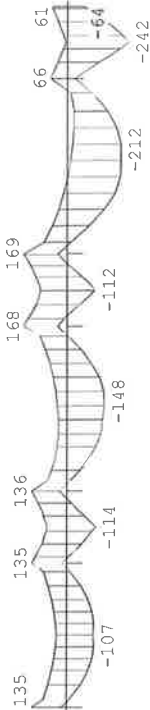


| MOMENTEN  | Fysisch lineair | Ligger:deel 1 | Fundamentele combinatie |
|-----------|-----------------|---------------|-------------------------|
| Velden: 7 | t/m 12          |               |                         |



Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as C

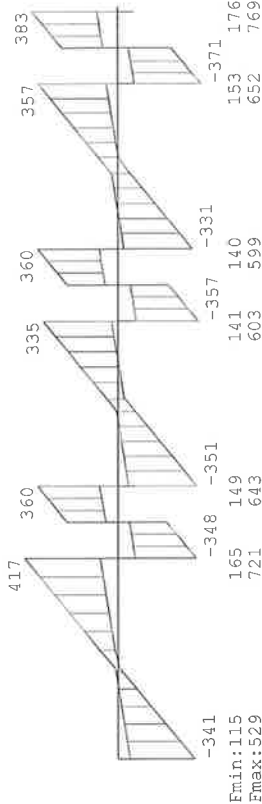
| MOMENTEN   | Fysisch lineair | Ligger:deel 1 | Fundamentele combinatie |
|------------|-----------------|---------------|-------------------------|
| Velden: 13 | t/m 18          |               |                         |



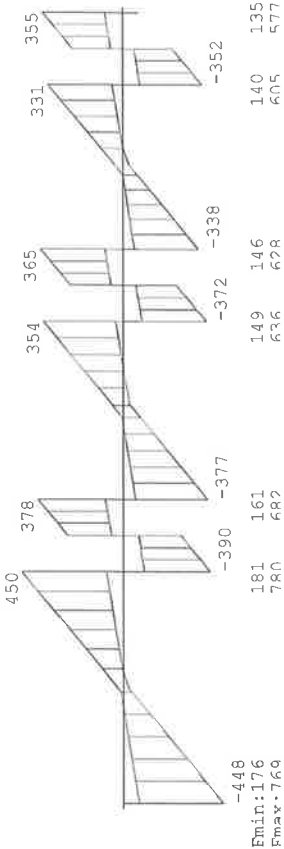
| MOMENTEN   | Fysisch lineair | Ligger:deel 1 | Fundamentele combinatie |
|------------|-----------------|---------------|-------------------------|
| Velden: 19 | t/m 19          |               |                         |



| DWARSKRACHTEN | Fysisch lineair | Ligger:deel 1 | Fundamentele combinatie |
|---------------|-----------------|---------------|-------------------------|
| Velden: 1     | t/m 6           |               |                         |

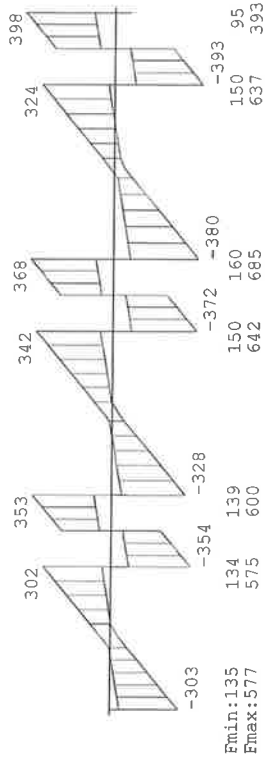


| DWARSKRACHTEN | Fysisch lineair | Ligger:deel 1 | Fundamentele combinatie |
|---------------|-----------------|---------------|-------------------------|
| Velden: 7     | t/m 12          |               |                         |



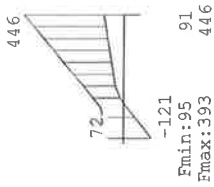
DWARSKRACHTEN Fysisch lineair Ligger:deel 1 Fundamentele combinatie

Velden: 13 t/m 18



DWARSKRACHTEN Fysisch lineair Ligger:deel 1 Fundamentele combinatie

Velden: 19 t/m 19



| REACTIES Fysisch lineair Ligger:deel 1 Fundamentele combinatie |        |        |        |        |
|----------------------------------------------------------------|--------|--------|--------|--------|
| Stp                                                            | Fmin   | Fmax   | Mmin   | Mmax   |
| 1                                                              | 114.88 | 528.57 | 0.00   | 0.00   |
| 2                                                              | 164.90 | 720.72 | 0.00   | 0.00   |
| 3                                                              | 148.93 | 643.03 | 0.00   | 0.00   |
| 4                                                              | 140.74 | 602.71 | 0.00   | 0.00   |
| 5                                                              | 140.49 | 599.50 | 0.00   | 0.00   |
| 6                                                              | 152.95 | 652.35 | 0.00   | 0.00   |
| 7                                                              | 176.48 | 768.95 | 0.00   | 0.00   |
| 8                                                              | 180.59 | 780.28 | 0.00   | 0.00   |
| 9                                                              | 160.96 | 681.93 | 0.00   | 0.00   |
| 10                                                             | 148.83 | 636.24 | 0.00   | 0.00   |
| 11                                                             | 146.37 | 627.82 | 0.00   | 0.00   |
| 12                                                             | 140.26 | 604.71 | 0.00   | 0.00   |
| 13                                                             | 134.58 | 576.76 | 0.00   | 0.00   |
| 14                                                             | 134.14 | 574.77 | 0.00   | 0.00   |
| 15                                                             | 139.35 | 600.49 | 0.00   | 0.00   |
| 16                                                             | 149.51 | 642.01 | 0.00   | 0.00   |
| 17                                                             | 159.58 | 685.46 | 0.00   | 0.00   |
| 18                                                             | 150.25 | 636.65 | 0.00   | 0.00   |
| 19                                                             | 94.94  | 393.01 | 0.00   | 0.00   |
| 20                                                             | 91.28  | 445.82 | 110.36 | 475.06 |

Technosoft Liggers release 6.25c  
Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as C  
Constructeur.:  
Opdrachtgever:  
Dimensies.....: kN/m/rad  
Datum.....: 31/05/2018  
Bestand.....: n:\reken\project\18009\funderingsbalken\balk op as c.dlw

Technosoft Liggers release 6.25c  
Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as C

Betrouwbaarheidsklasse : 1 Referentieperiode : 50  
Tevallige inklemmingen begin : geen Toevallige inklemming eind : geen  
Herverdelen van momenten : nee Maximale deellengte : 0.000  
Ouderdom bij belasten : 28 Relatieve vochtigheid : 50%  
Doorbuigingen(beton) zijn dmv gecorrigeerde stijfheden berekend.

Fysisch lineair : Er is gerekend met de e-modulus uit de materiaaltabel.  
Fys.NLE.kort : Er is gerekend met een gecorrigeerde e-modulus (korte duur).  
Deze e-mod. is berekend mbv de krachten uit de fysisch lineair berekening.

Toegepaste normen volgens Eurocode met Nederlandse NB

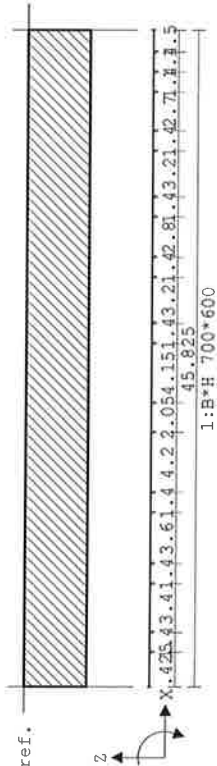
|             |                          |                |             |
|-------------|--------------------------|----------------|-------------|
| Belastingen | NEN-EN 1990:2002         | C2:2010        | NB:2011(nl) |
|             | NEN-EN 1991-1-1:2002     | C1:2009        | NB:2011(nl) |
| Beton       | NEN-EN 1992-1-1:2011(nl) | C2/A1:2015(nl) | NB:2016(nl) |

LIGGER:deel 2

Profiel : B\*H 700\*600

GEOMETRIE

Ligger:deel 2



VELD BELASTINGEN

Ligger:deel 2 B.G:1 Permanent



REACTIES Fysisch lineair

Ligger:deel 2 B.G:1 Permanent

| Stp | F      | M       |
|-----|--------|---------|
| 1   | 101.30 | -122.41 |
| 2   | 105.30 | 0.00    |
| 3   | 166.78 | 0.00    |
| 4   | 181.44 | 0.00    |
| 5   | 174.85 | 0.00    |
| 6   | 176.11 | 0.00    |
| 7   | 194.71 | 0.00    |
| 8   | 227.28 | 0.00    |
| 9   | 226.30 | 0.00    |

BOUWADVIESBUREAU VAN DER VEN BV

Technosoft Liggers release 6.25c  
Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as C

REACTIES Fysisch lineair

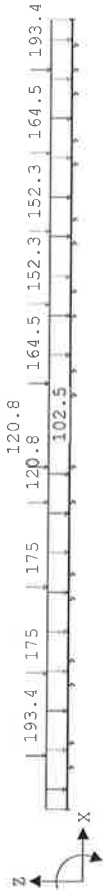
Ligger:deel 2 B.G:1 Permanent

| Stp | F      | M      |
|-----|--------|--------|
| 10  | 189.07 | 0.00   |
| 11  | 165.09 | 0.00   |
| 12  | 152.32 | 0.00   |
| 13  | 148.28 | 0.00   |
| 14  | 150.28 | 0.00   |
| 15  | 157.85 | 0.00   |
| 16  | 162.61 | 0.00   |
| 17  | 154.61 | 0.00   |
| 18  | 133.51 | 0.00   |
| 19  | 111.36 | 0.00   |
| 20  | 48.09  | 0.00   |
| 21  | 94.15  | 112.07 |

3221.28 : (absoluut) grootste som reacties  
-3221.28 : (absoluut) grootste som belastingen

VELD BELASTINGEN

Ligger:deel 2 B.G:2 Veranderlijk



REACTIES Fysisch lineair

Ligger:deel 2 B.G:2 Veranderlijk

| Stp | Fmin | Fmax   | Mmin    | Mmax   |
|-----|------|--------|---------|--------|
| 1   | 0.00 | 238.70 | -241.26 | 0.00   |
| 2   | 0.00 | 195.69 | 0.00    | 0.00   |
| 3   | 0.00 | 320.26 | 0.00    | 0.00   |
| 4   | 0.00 | 353.16 | 0.00    | 0.00   |
| 5   | 0.00 | 341.76 | 0.00    | 0.00   |
| 6   | 0.00 | 345.21 | 0.00    | 0.00   |
| 7   | 0.00 | 383.59 | 0.00    | 0.00   |
| 8   | 0.00 | 436.88 | 0.00    | 0.00   |
| 9   | 0.00 | 435.18 | 0.00    | 0.00   |
| 10  | 0.00 | 375.06 | 0.00    | 0.00   |
| 11  | 0.00 | 324.45 | 0.00    | 0.00   |
| 12  | 0.00 | 300.01 | 0.00    | 0.00   |
| 13  | 0.00 | 289.94 | 0.00    | 0.00   |
| 14  | 0.00 | 294.11 | 0.00    | 0.00   |
| 15  | 0.00 | 311.53 | 0.00    | 0.00   |
| 16  | 0.00 | 319.03 | 0.00    | 0.00   |
| 17  | 0.00 | 302.80 | 0.00    | 0.00   |
| 18  | 0.00 | 263.28 | 0.00    | 0.00   |
| 19  | 0.00 | 205.14 | 0.00    | 0.00   |
| 20  | 0.00 | 88.98  | 0.00    | 0.00   |
| 21  | 0.00 | 202.67 | 0.00    | 216.87 |

Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as C

BELASTINGCOMBINATIES

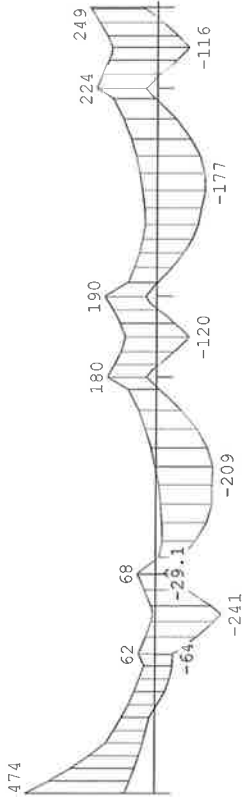
| BC Type | BG Gen. | Factor | BG Gen. | Factor | BG Gen. | Factor | BG Gen. | Factor |
|---------|---------|--------|---------|--------|---------|--------|---------|--------|
| 1 Fund. | 1 Perm  | 1.22   |         |        |         |        |         |        |
| 2 Fund. | 1 Perm  | 0.90   |         |        |         |        |         |        |
| 3 Fund. | 1 Perm  | 1.22   | 2 psi0  | 1.35   |         |        |         |        |
| 4 Fund. | 1 Perm  | 1.08   | 2 Extr  | 1.35   |         |        |         |        |
| 5 Fund. | 1 Perm  | 0.90   | 2 Extr  | 1.35   |         |        |         |        |
| 6 Fund. | 1 Perm  | 0.90   | 2 psi0  | 1.35   |         |        |         |        |
| 7 Kar.  | 1 Perm  | 1.00   | 2 Extr  | 1.00   |         |        |         |        |
| 8 Blij. | 1 Perm  | 1.00   |         |        |         |        |         |        |
| 9 Freq. | 1 Perm  | 1.00   |         |        |         |        |         |        |

GUNSTIGE WERKING PERMANENTE BELASTINGEN

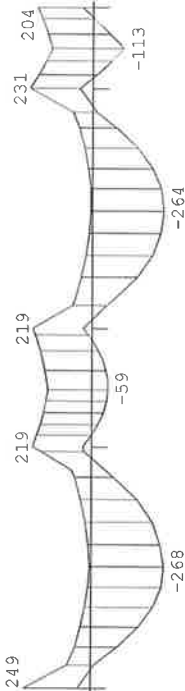
| BC Velden met gunstige werking |                            |
|--------------------------------|----------------------------|
| 1                              | Geen                       |
| 2                              | Alle velden de factor:0.90 |
| 3                              | Geen                       |
| 4                              | Geen                       |
| 5                              | Alle velden de factor:0.90 |
| 6                              | Alle velden de factor:0.90 |

OMHULLENDE VAN DE FUNDAMENTELE COMBINATIES

| MOMENTEN  | Fysisch linear | Ligger:deel 2 | Fundamentele combinatie |
|-----------|----------------|---------------|-------------------------|
| Velden: 1 | t/m 6          |               |                         |



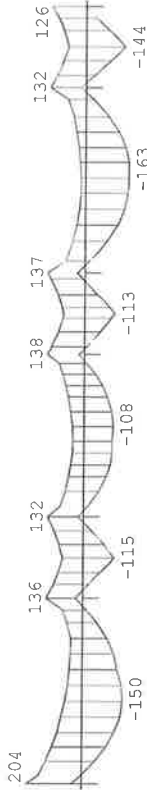
| MOMENTEN  | Fysisch linear | Ligger:deel 2 | Fundamentele combinatie |
|-----------|----------------|---------------|-------------------------|
| Velden: 7 | t/m 10         |               |                         |



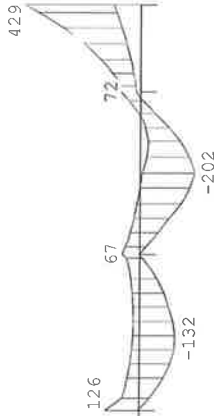
Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as C

MOMENTEN

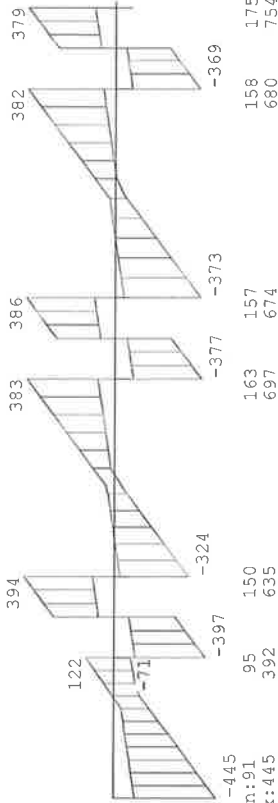
| Fysisch linear | Ligger:deel 2 | Fundamentele combinatie |
|----------------|---------------|-------------------------|
| Velden: 11     | t/m 16        |                         |



| MOMENTEN   | Fysisch linear | Ligger:deel 2 | Fundamentele combinatie |
|------------|----------------|---------------|-------------------------|
| Velden: 17 | t/m 20         |               |                         |

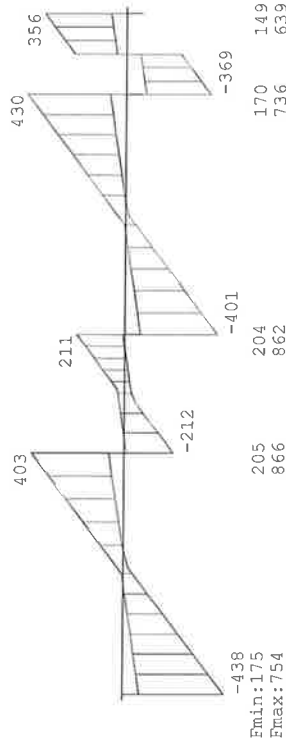


| DWARSKRACHTEN | Fysisch linear | Ligger:deel 2 | Fundamentele combinatie |
|---------------|----------------|---------------|-------------------------|
| Velden: 1     | t/m 6          |               |                         |

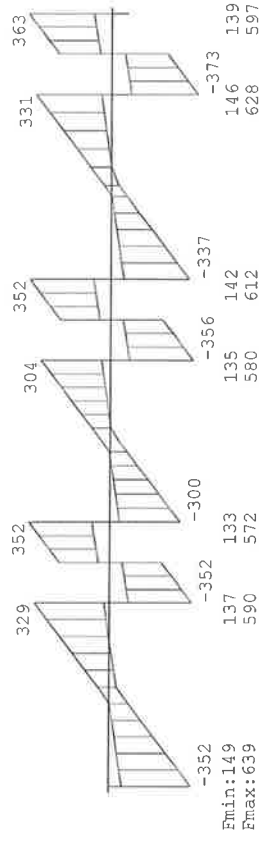


Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as C

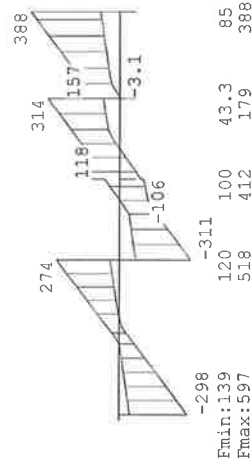
DWARSKRACHTEN Fysisch lineair Ligger:deel 2 Fundamentele combinatie  
Veliden: 7 t/m 10



DWARSKRACHTEN Fysisch lineair Ligger:deel 2 Fundamentele combinatie  
Veliden: 11 t/m 16



DWARSKRACHTEN Fysisch lineair Ligger:deel 2 Fundamentele combinatie  
Veliden: 17 t/m 20



REACTIES Fysisch lineair Ligger:deel 2 Fundamentele combinatie

| Stp | Fmin   | Fmax   | Mmin    | Mmax    |
|-----|--------|--------|---------|---------|
| 1   | 91.17  | 445.32 | -474.43 | -110.17 |
| 2   | 94.77  | 392.13 | 0.00    | 0.00    |
| 3   | 150.10 | 634.99 | 0.00    | 0.00    |
| 4   | 163.29 | 697.22 | 0.00    | 0.00    |
| 5   | 157.37 | 673.83 | 0.00    | 0.00    |

Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as C

REACTIES Fysisch lineair Ligger:deel 2 Fundamentele combinatie

| Stp | Fmin   | Fmax   | Mmin   | Mmax   |
|-----|--------|--------|--------|--------|
| 6   | 158.49 | 680.00 | 0.00   | 0.00   |
| 7   | 175.24 | 754.43 | 0.00   | 0.00   |
| 8   | 204.55 | 865.93 | 0.00   | 0.00   |
| 9   | 203.67 | 862.44 | 0.00   | 0.00   |
| 10  | 170.16 | 736.05 | 0.00   | 0.00   |
| 11  | 148.58 | 638.59 | 0.00   | 0.00   |
| 12  | 137.09 | 590.08 | 0.00   | 0.00   |
| 13  | 133.45 | 571.58 | 0.00   | 0.00   |
| 14  | 135.25 | 579.63 | 0.00   | 0.00   |
| 15  | 142.07 | 612.35 | 0.00   | 0.00   |
| 16  | 146.35 | 628.26 | 0.00   | 0.00   |
| 17  | 139.15 | 596.64 | 0.00   | 0.00   |
| 18  | 120.16 | 517.64 | 0.00   | 0.00   |
| 19  | 100.23 | 412.24 | 0.00   | 0.00   |
| 20  | 43.28  | 178.55 | 0.00   | 0.00   |
| 21  | 84.73  | 387.99 | 100.86 | 428.93 |

Technosoft Liggers release 6.25c  
Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as C  
Constructeur.:  
Opdrachtgever:  
Dimensies.....: kN/m/rad  
Datum.....: 31/05/2018  
Bestand.....: n:\rekenk\project\18009\funderingsbalken\balk op as c.dlw

Betrouwbaarheidsklasse : 1 Referentieperiode : 50  
Toevallige inklemmingen begin : geen Toevallige inklemming eind : 15%  
Herverdelen van momenten : nee Maximale deellengte : 0.000  
Ouderdom bij belasten : 28 Relatieve vochtigheid : 50%  
Doorbuigingen(beton) zijn dmv gecorrigeerde stijfheden berekend.

Fysisch lineair : Er is gerekend met de e-modulus uit de materiaaltabel.  
Fys.NLE.kort : Er is gerekend met een gecorrigeerde e-modulus (korte duur).  
Deze e-mod. is berekend mbv de krachten uit de fysisch lineair berekening.

Toegepaste normen volgens Eurocode met Nederlandse NB

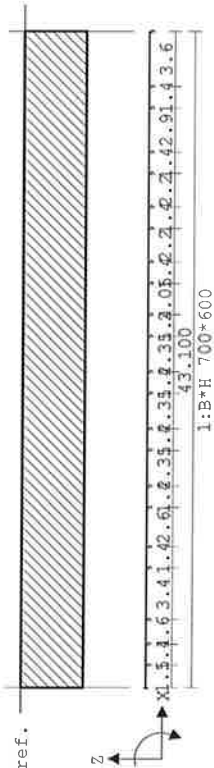
|             |                          |                |             |
|-------------|--------------------------|----------------|-------------|
| Belastingen | NEN-EN 1990:2002         | C2:2010        | NB:2011(nl) |
|             | NEN-EN 1991-1-1:2002     | C1:2009        | NB:2011(nl) |
| Beton       | NEN-EN 1992-1-1:2011(nl) | C2/A1:2015(nl) | NB:2016(nl) |

LIGGER: deel 3

Profiel : B\*H 700\*600

GEOMETRIE

Ligger:deel 3



VELDBELASTINGEN

Ligger:deel 3 B.G:1 Permanent



REACTIES Fysisch lineair

Ligger:deel 3 B.G:1 Permanent

| Stp | F      | M       |
|-----|--------|---------|
| 1   | 87.06  | -104.62 |
| 2   | 52.01  | 0.00    |
| 3   | 124.38 | 0.00    |
| 4   | 155.38 | 0.00    |
| 5   | 168.30 | 0.00    |
| 6   | 158.61 | 0.00    |
| 7   | 136.69 | 0.00    |
| 8   | 135.18 | 0.00    |
| 9   | 133.60 | 0.00    |

Technosoft Liggers release 6.25c  
Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as C

REACTIES Fysisch lineair

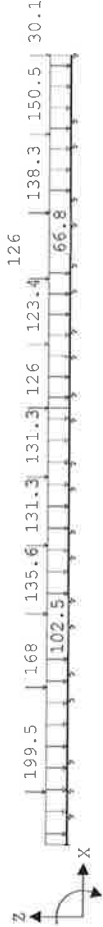
Ligger:deel 3 B.G:1 Permanent

| Stp | F      | M    |
|-----|--------|------|
| 10  | 134.81 | 0.00 |
| 11  | 135.18 | 0.00 |
| 12  | 136.36 | 0.00 |
| 13  | 140.02 | 0.00 |
| 14  | 138.37 | 0.00 |
| 15  | 138.00 | 0.00 |
| 16  | 140.20 | 0.00 |
| 17  | 143.89 | 0.00 |
| 18  | 144.67 | 0.00 |
| 19  | 146.73 | 0.00 |
| 20  | 151.65 | 0.00 |
| 21  | 165.44 | 0.00 |
| 22  | 197.84 | 0.00 |
| 23  | 285.38 | 0.00 |

3349.75 : (absoluut) grootste som reacties  
-3349.75 : (absoluut) grootste som belastingen

VELDBELASTINGEN

Ligger:deel 3 B.G:2 Veranderlijk



REACTIES Fysisch lineair

Ligger:deel 3 B.G:2 Veranderlijk

| Stp | Fmin  | Fmax   | Mmin    | Mmax |
|-----|-------|--------|---------|------|
| 1   | 0.00  | 190.13 | -203.24 | 0.00 |
| 2   | 0.00  | 96.14  | 0.00    | 0.00 |
| 3   | 0.00  | 228.00 | 0.00    | 0.00 |
| 4   | 0.00  | 314.92 | 0.00    | 0.00 |
| 5   | 0.00  | 332.98 | 0.00    | 0.00 |
| 6   | 0.00  | 303.26 | 0.00    | 0.00 |
| 7   | 0.00  | 261.53 | 0.00    | 0.00 |
| 8   | 0.00  | 259.70 | 0.00    | 0.00 |
| 9   | 0.00  | 258.17 | 0.00    | 0.00 |
| 10  | 0.00  | 258.76 | 0.00    | 0.00 |
| 11  | 0.00  | 260.38 | 0.00    | 0.00 |
| 12  | 0.00  | 258.26 | 0.00    | 0.00 |
| 13  | 0.00  | 232.82 | 0.00    | 0.00 |
| 14  | 0.00  | 200.19 | 0.00    | 0.00 |
| 15  | 0.00  | 178.11 | 0.00    | 0.00 |
| 16  | 0.00  | 177.70 | 0.00    | 0.00 |
| 17  | 0.00  | 180.61 | 0.00    | 0.00 |
| 18  | 0.00  | 182.46 | 0.00    | 0.00 |
| 19  | 0.00  | 192.33 | 0.00    | 0.00 |
| 20  | 0.00  | 207.65 | 0.00    | 0.00 |
| 21  | 0.00  | 230.23 | 0.00    | 0.00 |
| 22  | 0.00  | 247.67 | 0.00    | 0.00 |
| 23  | -2.40 | 146.02 | 0.00    | 0.00 |

BELASTINGCOMBINATIES

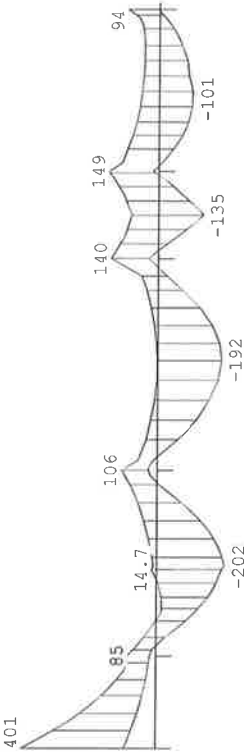
| BC Type | BG Gen. | Factor | BG Gen. | Factor | BG Gen. | Factor |
|---------|---------|--------|---------|--------|---------|--------|
| 1 Fund. | 1 Perm  | 1.22   |         |        |         |        |
| 2 Fund. | 1 Perm  | 0.90   |         |        |         |        |
| 3 Fund. | 1 Perm  | 1.22   | 2 psi0  | 1.35   |         |        |
| 4 Fund. | 1 Perm  | 1.08   | 2 Extr  | 1.35   |         |        |
| 5 Fund. | 1 Perm  | 0.90   | 2 psi0  | 1.35   |         |        |
| 6 Fund. | 1 Perm  | 0.90   | 2 Extr  | 1.35   |         |        |
| 7 Kar.  | 1 Perm  | 1.00   | 2 psi0  | 1.35   |         |        |
| 8 Blij. | 1 Perm  | 1.00   | 2 Extr  | 1.00   |         |        |
| 9 Freq. | 1 Perm  | 1.00   |         |        |         |        |

GUNSTIGE WERKING PERMANENTE BELASTINGEN

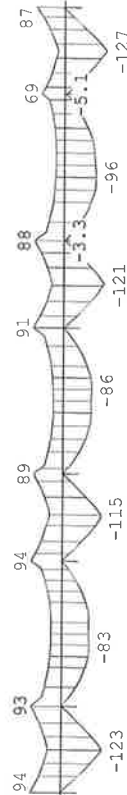
| BC Velden met gunstige werking |                            |
|--------------------------------|----------------------------|
| 1                              | Geen                       |
| 2                              | Alle velden de factor:0.90 |
| 3                              | Geen                       |
| 4                              | Geen                       |
| 5                              | Alle velden de factor:0.90 |
| 6                              | Alle velden de factor:0.90 |

OMHULLENDE VAN DE FUNDAMENTELE COMBINATIES

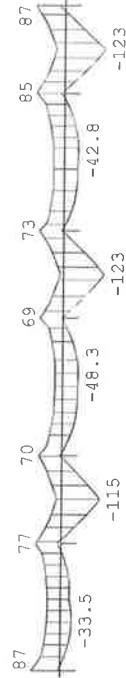
| MOMENTEN        | Fysisch lineair | Ligger:deel 3 Fundamentele combinatie |
|-----------------|-----------------|---------------------------------------|
| Velden: 1 t/m 6 |                 |                                       |



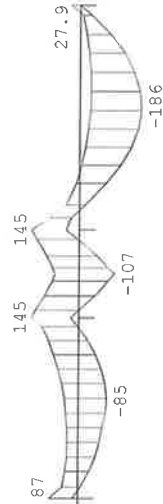
| MOMENTEN         | Fysisch lineair | Ligger:deel 3 Fundamentele combinatie |
|------------------|-----------------|---------------------------------------|
| Velden: 7 t/m 13 |                 |                                       |



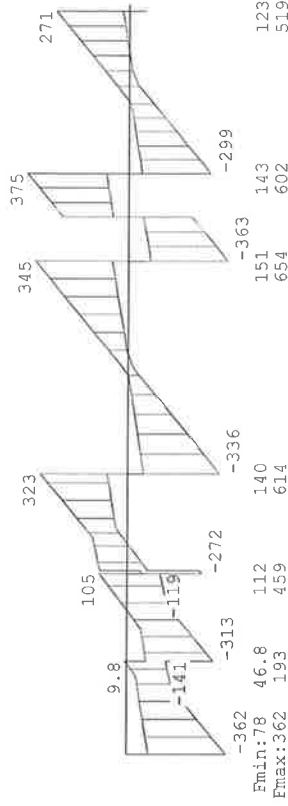
| MOMENTEN          | Fysisch lineair | Ligger:deel 3 Fundamentele combinatie |
|-------------------|-----------------|---------------------------------------|
| Velden: 14 t/m 19 |                 |                                       |



| MOMENTEN          | Fysisch lineair | Ligger:deel 3 Fundamentele combinatie |
|-------------------|-----------------|---------------------------------------|
| Velden: 20 t/m 22 |                 |                                       |



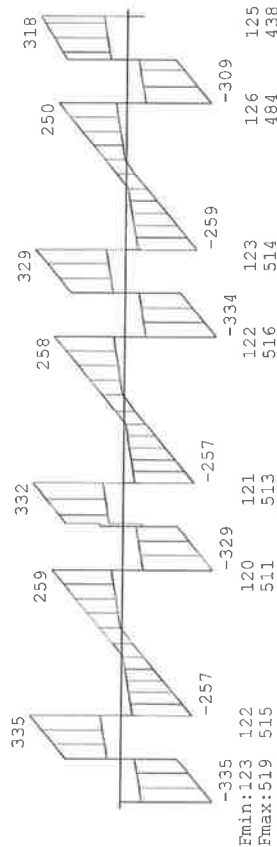
| DWARSKRACHTEN   | Fysisch lineair | Ligger:deel 3 Fundamentele combinatie |
|-----------------|-----------------|---------------------------------------|
| Velden: 1 t/m 6 |                 |                                       |



Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as C

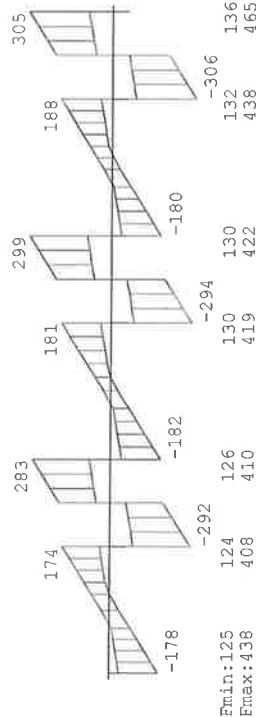
DWARSKRACHTEN  
Velden: 7 t/m 13

Fysisch lineair Ligger:deel 3 Fundamentele combinatie



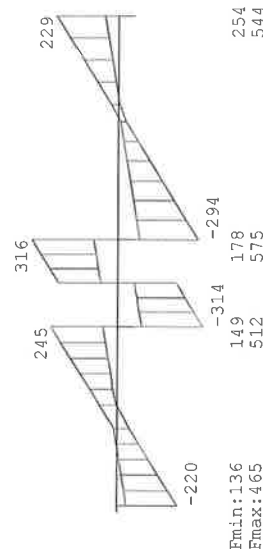
DWARSKRACHTEN  
Velden: 14 t/m 19

Fysisch lineair Ligger:deel 3 Fundamentele combinatie



DWARSKRACHTEN  
Velden: 20 t/m 22

Fysisch lineair Ligger:deel 3 Fundamentele combinatie



Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as C

REACTIES  
Fysisch lineair Ligger:deel 3 Fundamentele combinatie

| Stp | Fmin   | Fmax   | Mmin    | Mmax   |
|-----|--------|--------|---------|--------|
| 1   | 78.36  | 362.46 | -401.49 | -94.16 |
| 2   | 46.81  | 192.99 | 0.00    | 0.00   |
| 3   | 111.94 | 458.92 | 0.00    | 0.00   |
| 4   | 139.84 | 613.92 | 0.00    | 0.00   |
| 5   | 151.47 | 654.01 | 0.00    | 0.00   |
| 6   | 142.75 | 602.11 | 0.00    | 0.00   |
| 7   | 123.02 | 519.15 | 0.00    | 0.00   |
| 8   | 121.66 | 514.84 | 0.00    | 0.00   |
| 9   | 120.24 | 510.86 | 0.00    | 0.00   |
| 10  | 121.33 | 513.12 | 0.00    | 0.00   |
| 11  | 121.66 | 515.76 | 0.00    | 0.00   |
| 12  | 122.72 | 514.32 | 0.00    | 0.00   |
| 13  | 126.01 | 484.42 | 0.00    | 0.00   |
| 14  | 124.53 | 438.38 | 0.00    | 0.00   |
| 15  | 124.20 | 408.11 | 0.00    | 0.00   |
| 16  | 126.18 | 410.23 | 0.00    | 0.00   |
| 17  | 129.50 | 418.66 | 0.00    | 0.00   |
| 18  | 130.21 | 422.10 | 0.00    | 0.00   |
| 19  | 132.06 | 437.92 | 0.00    | 0.00   |
| 20  | 136.49 | 464.59 | 0.00    | 0.00   |
| 21  | 148.90 | 511.83 | 0.00    | 0.00   |
| 22  | 178.06 | 574.73 | 0.00    | 0.00   |
| 23  | 253.60 | 543.86 | 0.00    | 0.00   |

Technosoft Liggers release 6.25c

12 jul 2018

Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen

Onderdeel.....: Balk op as A kantoor

Constructeur..:

Opdrachtgever:

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

Datum.....: 31/05/2018

Bestand.....: n:\rekenk\project\18009\funderingsbalken\balk op as a kantoor.dlw

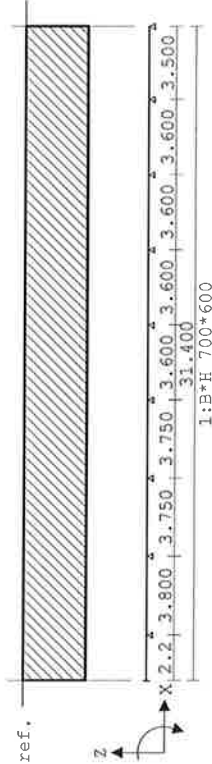
Betrouwbaarheidsklasse : 2 Referentieperiode : 50  
Toevallige inklemmingen begin : geen Toevallige inklemming eind : geen  
Herveldelen van momenten : nee Maximale deellengte : 0.000  
Ouderdom bij belasten : 28 Relatieve vochtigheid : 50%  
Doorbuigingen(beton) zijn dmv gecorrigeerde stijfheden berekend.

Fysisch lineair : Er is gerekend met de e-modulus uit de materiaaltabel.  
Fys.NLE.kort : Er is gerekend met een gecorrigeerde e-modulus (korte duur).  
Deze e-mod. is berekend mbv de krachten uit de fysisch lineair berekening.

Toegepaste normen volgens Eurocode met Nederlandse NB

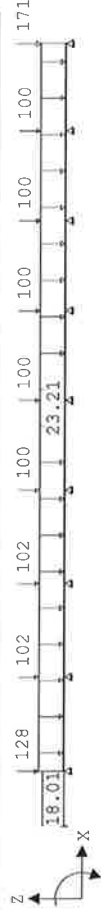
|             |                          |                 |             |
|-------------|--------------------------|-----------------|-------------|
| Belastingen | NEN-EN 1990:2002         | C2:2010         | NB:2011(nl) |
| Beton       | NEN-EN 1991-1-1:2002     | C1:2009         | NB:2011(nl) |
|             | NEN-EN 1992-1-1:2011(nl) | C2/A1:2015 (nl) | NB:2016(nl) |

GEOMETRIE



VELDBELASTINGEN

B.G:1 Permanent



REACTIES Fysisch lineair

B.G:1 Permanent

| Stp | F      | M     |
|-----|--------|-------|
| 1   | 18.01  | -1.71 |
| 2   | 233.74 | 0.00  |
| 3   | 233.20 | 0.00  |
| 4   | 227.70 | 0.00  |
| 5   | 224.36 | 0.00  |
| 6   | 220.29 | 0.00  |
| 7   | 222.54 | 0.00  |
| 8   | 217.71 | 0.00  |
| 9   | 235.22 | 0.00  |
| 10  | 217.29 | 0.00  |

2050.05 : (absoluut) grootste som reacties  
-2050.05 : (absoluut) grootste som belastingen

Technosoft Liggers release 6.25c

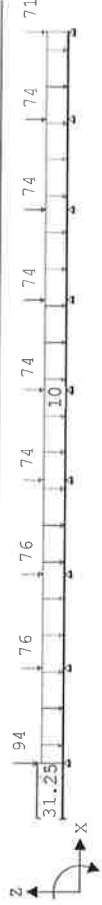
12 jul 2018

Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen

Onderdeel.....: Balk op as A kantoor

VELDBELASTINGEN

B.G:2 Veranderlijk



REACTIES Fysisch lineair

B.G:2 Veranderlijk

| Stp | Fmin  | Fmax   | Mmin   | Mmax |
|-----|-------|--------|--------|------|
| 1   | -7.43 | 42.02  | -18.21 | 5.45 |
| 2   | 0.00  | 152.08 | 0.00   | 0.00 |
| 3   | 0.00  | 118.85 | 0.00   | 0.00 |
| 4   | 0.00  | 119.75 | 0.00   | 0.00 |
| 5   | 0.00  | 117.38 | 0.00   | 0.00 |
| 6   | 0.00  | 116.64 | 0.00   | 0.00 |
| 7   | 0.00  | 116.77 | 0.00   | 0.00 |
| 8   | 0.00  | 115.84 | 0.00   | 0.00 |
| 9   | 0.00  | 117.20 | 0.00   | 0.00 |
| 10  | -1.99 | 86.72  | 0.00   | 0.00 |

BELASTINGCOMBINATIES

| BC Type  | BG Gen. | Factor | BG Gen. | Factor | BG Gen. | Factor |
|----------|---------|--------|---------|--------|---------|--------|
| 1 Fund.  | 1 Perm  | 1.35   |         |        |         |        |
| 2 Fund.  | 1 Perm  | 0.90   |         |        |         |        |
| 3 Fund.  | 1 Perm  | 1.35   | 2 psi0  | 1.50   |         |        |
| 4 Fund.  | 1 Perm  | 1.20   | 2 Extr  | 1.50   |         |        |
| 5 Fund.  | 1 Perm  | 0.90   | 2 Extr  | 1.50   |         |        |
| 6 Fund.  | 1 Perm  | 0.90   | 2 psi0  | 1.50   |         |        |
| 7 Kar.   | 1 Perm  | 1.00   | 2 Extr  | 1.00   |         |        |
| 8 Quas.  | 1 Perm  | 1.00   |         |        |         |        |
| 9 Quas.  | 1 Perm  | 1.00   | 2 psi2  | 1.00   |         |        |
| 10 Freq. | 1 Perm  | 1.00   |         |        |         |        |
| 11 Freq. | 1 Perm  | 1.00   | 2 psi1  | 1.00   |         |        |
| 12 Blij. | 1 Perm  | 1.00   |         |        |         |        |

GUNSTIGE WERKING PERMANENTE BELASTINGEN

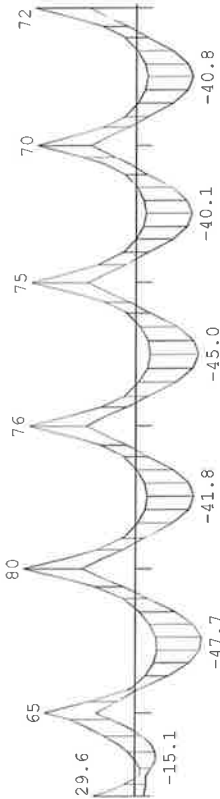
BC Velden met gunstige werking

- 1 Geen
- 2 Alle velden de factor:0.90
- 3 Geen
- 4 Geen
- 5 Alle velden de factor:0.90
- 6 Alle velden de factor:0.90

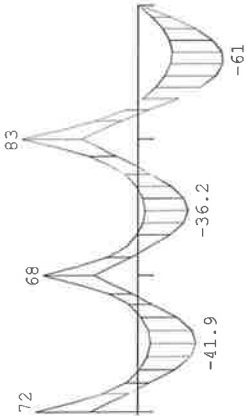
Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as A kantoor

OMHULLENDE VAN DE FUNDAMENTELE COMBINATIES

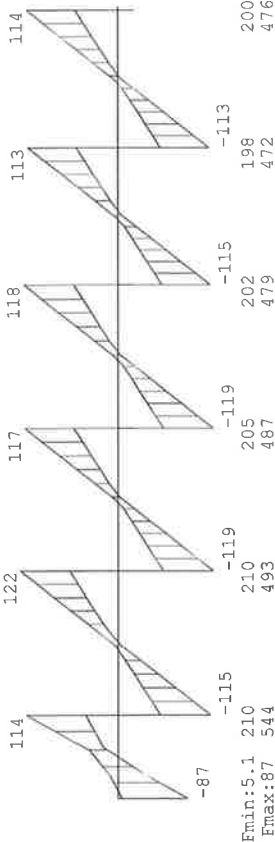
MOMENTEN Fysisch lineair Fundamentele combinatie  
Velden: 1 t/m 6



MOMENTEN Fysisch lineair Fundamentele combinatie  
Velden: 7 t/m 9

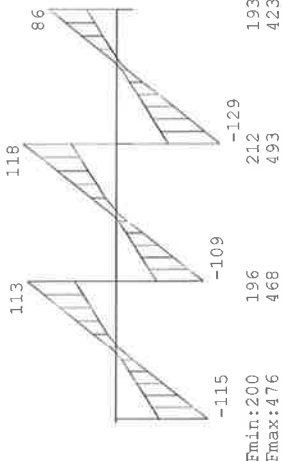


DWARSKRACHTEN Fysisch lineair Fundamentele combinatie  
Velden: 1 t/m 6



Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as A kantoor

DWARSKRACHTEN Fysisch lineair Fundamentele combinatie  
Velden: 7 t/m 9



REACTIES Fysisch lineair Fundamentele combinatie

| Stp | Fmin   | Fmax   | Mmin   | Mmax |
|-----|--------|--------|--------|------|
| 1   | 5.07   | 87.34  | -29.62 | 6.63 |
| 2   | 210.37 | 543.68 | 0.00   | 0.00 |
| 3   | 209.88 | 493.10 | 0.00   | 0.00 |
| 4   | 204.93 | 487.02 | 0.00   | 0.00 |
| 5   | 201.93 | 478.96 | 0.00   | 0.00 |
| 6   | 198.26 | 472.35 | 0.00   | 0.00 |
| 7   | 200.28 | 475.58 | 0.00   | 0.00 |
| 8   | 195.93 | 467.66 | 0.00   | 0.00 |
| 9   | 211.70 | 493.35 | 0.00   | 0.00 |
| 10  | 192.58 | 423.42 | 0.00   | 0.00 |

Technosoft Liggers release 6.25c  
Project.....: 18009 – Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk tussen as A-B kantoor  
Construteur.:  
Opdrachtgever:  
Dimensies.....: kN/m/rad  
Datum.....: 31/05/2018  
Bestand.....: n:\rekenk\project\18009\funderingsbalken\balk tussen as a-b kantoor.dlw

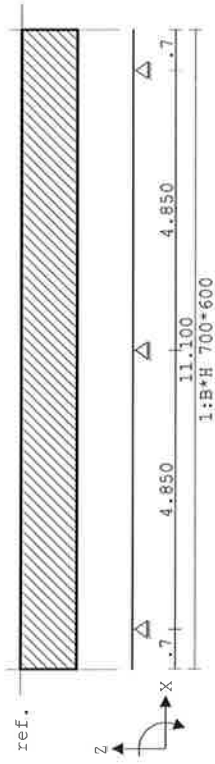
Betrouwbaarheidsklasse : 2 Referentieperiode : 50  
Toevallige inklemmingen begin : geen Toevallige inklemming eind : geen  
Herverdelen van momenten : nee Maximale deellengte : 0.000  
Ouderdom bij belasten : 28 Relatieve vochtigheid : 50%  
Doorbuigingen(beton) zijn dmv gecorrigeerde stijfheden berekend.

Fysisch lineair : Er is gerekend met de e-modulus uit de materiaaltabel.  
Fys.NLE.kort : Er is gerekend met een gecorrigeerde e-modulus (korte duur).  
Deze e-mod. is berekend mbv de krachten uit de fysisch lineair berekening.

Toegepaste normen volgens Eurocode met Nederlandse NB

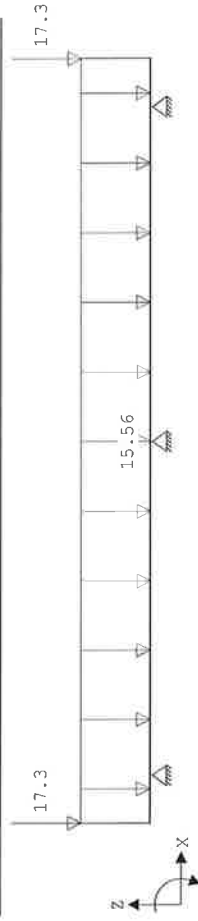
|             |                          |                |             |
|-------------|--------------------------|----------------|-------------|
| Belastingen | NEN-EN 1990:2002         | C2:2010        | NB:2011(nl) |
| Beton       | NEN-EN 1991-1-1:2002     | C1:2009        | NB:2011(nl) |
|             | NEN-EN 1992-1-1:2011(nl) | C2/A1:2015(nl) | NB:2016(nl) |

GEOMETRIE



VELDBELASTINGEN

B.G:1 Permanent



REACTIES Fysisch lineair

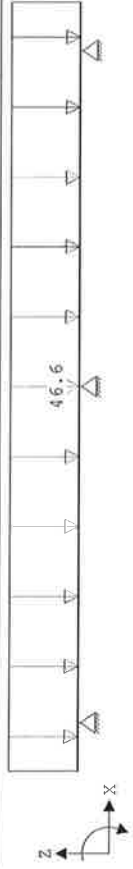
B.G:1 Permanent

| Stp     | F                                   | M    |
|---------|-------------------------------------|------|
| 1       | 88.66                               | 0.00 |
| 2       | 146.55                              | 0.00 |
| 3       | 88.66                               | 0.00 |
| 323.87  | (absoluut) grootste som reacties    |      |
| -323.87 | (absoluut) grootste som belastingen |      |

Technosoft Liggers release 6.25c  
Project.....: 18009 – Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk tussen as A-B kantoor

VELDBELASTINGEN

B.G:2 Veranderlijk



REACTIES Fysisch lineair

B.G:2 Veranderlijk

| Stp | Fmin | Fmax   | Mmin | Mmax |
|-----|------|--------|------|------|
| 1   | 0.00 | 135.03 | 0.00 | 0.00 |
| 2   | 0.00 | 282.51 | 0.00 | 0.00 |
| 3   | 0.00 | 135.03 | 0.00 | 0.00 |

BELASTINGCOMBINATIES

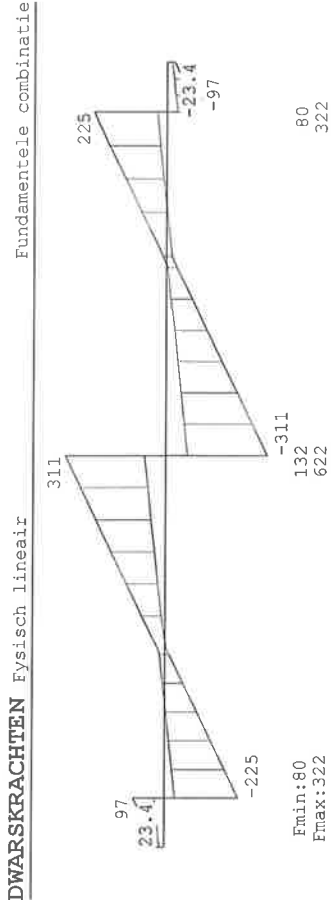
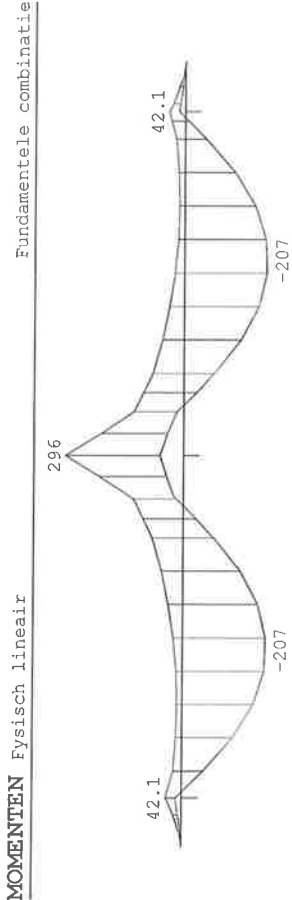
| BC Type  | BG Gen. | Factor | BG Gen. | Factor | BG Gen. | Factor |
|----------|---------|--------|---------|--------|---------|--------|
| 1 Fund.  | 1 Perm  | 1.35   |         |        |         |        |
| 2 Fund.  | 1 Perm  | 0.90   |         |        |         |        |
| 3 Fund.  | 1 Perm  | 1.35   | 2 psi0  | 1.50   |         |        |
| 4 Fund.  | 1 Perm  | 1.20   | 2 Extr  | 1.50   |         |        |
| 5 Fund.  | 1 Perm  | 0.90   | 2 Extr  | 1.50   |         |        |
| 6 Fund.  | 1 Perm  | 0.90   | 2 psi0  | 1.50   |         |        |
| 7 Kar.   | 1 Perm  | 1.00   | 2 Extr  | 1.00   |         |        |
| 8 Quas.  | 1 Perm  | 1.00   |         |        |         |        |
| 9 Quas.  | 1 Perm  | 1.00   | 2 psi2  | 1.00   |         |        |
| 10 Freq. | 1 Perm  | 1.00   |         |        |         |        |
| 11 Freq. | 1 Perm  | 1.00   | 2 psil  | 1.00   |         |        |
| 12 Bijl. | 1 Perm  | 1.00   |         |        |         |        |

GUNSTIGE WERKING PERMANENTE BELASTINGEN

BC Velden met gunstige werking

- 1 Geen
- 2 Alle velden de factor:0.90
- 3 Geen
- 4 Geen
- 5 Alle velden de factor:0.90
- 6 Alle velden de factor:0.90

OMHULLENDE VAN DE FUNDAMENTELE COMBINATIES



| REACTIES |  |                 |        |      | Fundamentele combinatie |  |  |
|----------|--|-----------------|--------|------|-------------------------|--|--|
| Stp      |  | Fysisch lineair |        |      |                         |  |  |
|          |  | Fmin            | Fmax   | Mmin | Mmax                    |  |  |
| 1        |  | 79.79           | 322.23 | 0.00 | 0.00                    |  |  |
| 2        |  | 131.89          | 621.61 | 0.00 | 0.00                    |  |  |
| 3        |  | 79.79           | 322.23 | 0.00 | 0.00                    |  |  |

BOUWADVIESBUREAU VAN DER VEN BV

Blad: 36  
12 jul 2018

Technosoft Liggers release 6.25c  
Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk // as A kantoor  
Constructeur.:  
Opdrachtgever:  
Dimensies.....: kN/m/rad  
Datum.....: 31/05/2018  
Bestand.....: n:\reken\project\18009\funderingsbalken\balk evenwijdig as a kantoor.dlw

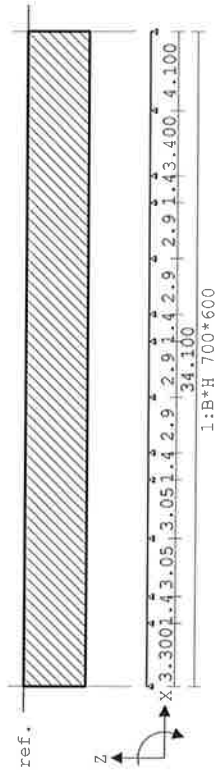
Betrouwbaarheidsklasse : 2 Referentieperiode : 50  
Toevallige inklemmingen begin : geen  
Herverdelen van momenten : nee  
Ouderdom bij belastingen : 28  
Doorbuigingen(beton) zijn dmv gecorrigeerde stijfheden berekend.

Fysisch lineair : Er is gerekend met de e-modulus uit de materiaaltabel.  
Fys.NLE.kort : Er is gerekend met een gecorrigeerde e-modulus (korte duur).  
Deze e-mod. is berekend mbv de krachten uit de fysisch lineair berekening.

Toegepaste normen volgens Eurocode met Nederlandse NB

|             |                          |                |             |
|-------------|--------------------------|----------------|-------------|
| Belastingen | NEN-EN 1990:2002         | C2:2010        | NB:2011(nl) |
|             | NEN-EN 1991-1-1:2002     | C1:2009        | NB:2011(nl) |
| Beton       | NEN-EN 1992-1-1:2011(nl) | C2/A1:2015(nl) | NB:2016(nl) |

GEOMETRIE



VELDBELASTINGEN

B.G:1 Permanent



REACTIES Fysisch lineair

B.G:1 Permanent

| Stp | F      | M    |
|-----|--------|------|
| 1   | 43.99  | 0.00 |
| 2   | 392.53 | 0.00 |
| 3   | 388.69 | 0.00 |
| 4   | 55.79  | 0.00 |
| 5   | 350.11 | 0.00 |
| 6   | 343.17 | 0.00 |
| 7   | 66.68  | 0.00 |
| 8   | 362.61 | 0.00 |
| 9   | 359.69 | 0.00 |
| 10  | 78.17  | 0.00 |
| 11  | 387.89 | 0.00 |
| 12  | 361.38 | 0.00 |

BOUWADVIESBUREAU VAN DER VEN BV

Blad: 37  
12 jul 2018

Technosoft Liggers release 6.25c

Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk // as A kantoor

REACTIES Fysisch lineair

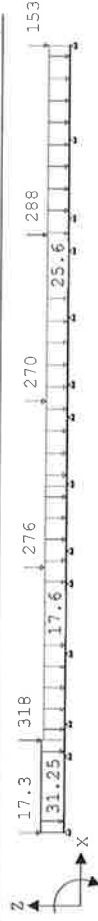
B.G:1 Permanent

| Stp | F      | M    |
|-----|--------|------|
| 13  | 165.02 | 0.00 |
| 14  | 389.14 | 0.00 |

3744.86 : (absoluut) grootste som reacties  
-3744.86 : (absoluut) grootste som belastingen

VELDBELASTINGEN

B.G:2 Veranderlijk



REACTIES Fysisch lineair

B.G:2 Veranderlijk

| Stp | Fmin  | Fmax   | Mmin | Mmax |
|-----|-------|--------|------|------|
| 1   | -7.01 | 60.19  | 0.00 | 0.00 |
| 2   | 0.00  | 271.42 | 0.00 | 0.00 |
| 3   | 0.00  | 230.24 | 0.00 | 0.00 |
| 4   | 0.00  | 62.56  | 0.00 | 0.00 |
| 5   | 0.00  | 206.00 | 0.00 | 0.00 |
| 6   | 0.00  | 204.59 | 0.00 | 0.00 |
| 7   | 0.00  | 72.46  | 0.00 | 0.00 |
| 8   | 0.00  | 223.25 | 0.00 | 0.00 |
| 9   | 0.00  | 222.77 | 0.00 | 0.00 |
| 10  | 0.00  | 85.18  | 0.00 | 0.00 |
| 11  | 0.00  | 242.23 | 0.00 | 0.00 |
| 12  | 0.00  | 236.72 | 0.00 | 0.00 |
| 13  | 0.00  | 117.39 | 0.00 | 0.00 |
| 14  | -2.99 | 198.91 | 0.00 | 0.00 |

BELASTINGCOMBINATIES

| BC Type  | BG Gen. | Factor | BG Gen. | Factor | BG Gen. | Factor |
|----------|---------|--------|---------|--------|---------|--------|
| 1 Fund.  | 1 Perm  | 1.35   |         |        |         |        |
| 2 Fund.  | 1 Perm  | 0.90   |         |        |         |        |
| 3 Fund.  | 1 Perm  | 1.20   | 2 Extr  | 1.50   |         |        |
| 4 Fund.  | 1 Perm  | 0.90   | 2 Extr  | 1.50   |         |        |
| 5 Kar.   | 1 Perm  | 1.00   |         |        |         |        |
| 6 Kar.   | 1 Perm  | 1.00   | 2 Extr  | 1.00   |         |        |
| 7 Blijv. | 1 Perm  | 1.00   |         |        |         |        |

GUNSTIGE WERKING PERMANENTE BELASTINGEN

BC Velden met gunstige werking

- 1 Geen
- 2 Alle velden de factor:0.90
- 3 Geen
- 4 Alle velden de factor:0.90

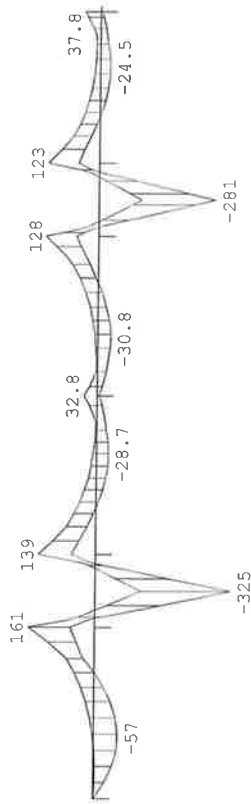
Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk // as A kantoor

OMHULLENDE VAN DE FUNDAMENTELE COMBINATIES

MOMENTEN Fysisch lineair

Velden: 1 t/m 6

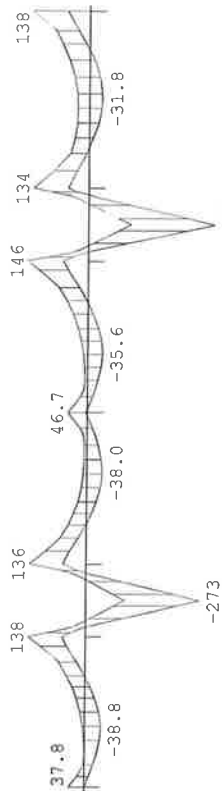
Fundamentele combinatie



MOMENTEN Fysisch lineair

Velden: 7 t/m 12

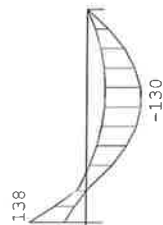
Fundamentele combinatie



MOMENTEN Fysisch lineair

Velden: 13 t/m 13

Fundamentele combinatie

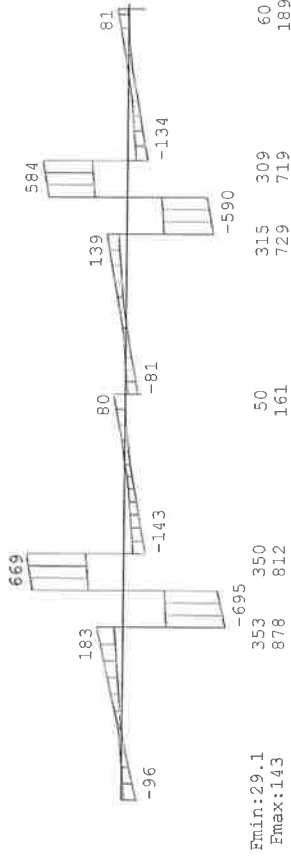


Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk // as A kantoor

DWARSKRACHTEN Fysisch lineair

Velden: 1 t/m 6

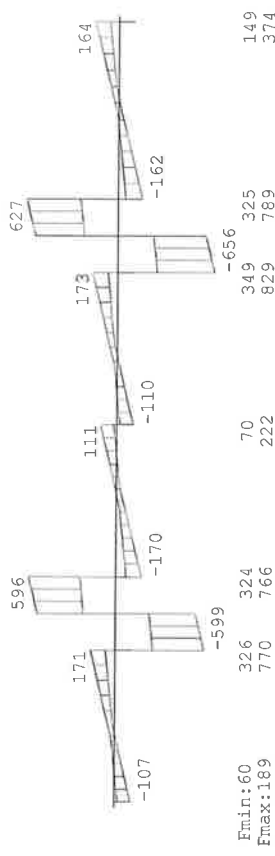
Fundamentele combinatie



DWARSKRACHTEN Fysisch lineair

Velden: 7 t/m 12

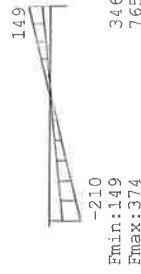
Fundamentele combinatie



DWARSKRACHTEN Fysisch lineair

Velden: 13 t/m 13

Fundamentele combinatie



REACTIES Fysisch lineair

Stp Fmin Fmax Mmin Mmax

|   |        |        |      |      |
|---|--------|--------|------|------|
| 1 | 29.08  | 143.08 | 0.00 | 0.00 |
| 2 | 353.28 | 878.17 | 0.00 | 0.00 |
| 3 | 349.82 | 811.79 | 0.00 | 0.00 |
| 4 | 50.21  | 160.78 | 0.00 | 0.00 |
| 5 | 315.10 | 729.14 | 0.00 | 0.00 |
| 6 | 308.86 | 718.69 | 0.00 | 0.00 |

Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk // as A kantoor

| REACTIES |  | Fysisch lineair |        | Fundamentele combinatie |      |
|----------|--|-----------------|--------|-------------------------|------|
| Stp      |  | Fmin            | Fmax   | Mmin                    | Mmax |
| 7        |  | 60.01           | 188.71 | 0.00                    | 0.00 |
| 8        |  | 326.35          | 770.01 | 0.00                    | 0.00 |
| 9        |  | 323.72          | 765.78 | 0.00                    | 0.00 |
| 10       |  | 70.35           | 221.58 | 0.00                    | 0.00 |
| 11       |  | 349.10          | 828.80 | 0.00                    | 0.00 |
| 12       |  | 325.24          | 788.73 | 0.00                    | 0.00 |
| 13       |  | 148.52          | 374.11 | 0.00                    | 0.00 |
| 14       |  | 345.74          | 765.33 | 0.00                    | 0.00 |

Opdrachtgever:  
Dimensies.....: kN/m/rad  
Datum.....: 31/05/2018  
Bestand.....: n:\rekenk\project\18009\funderingsbalken\balk op as b kantoor.dlw

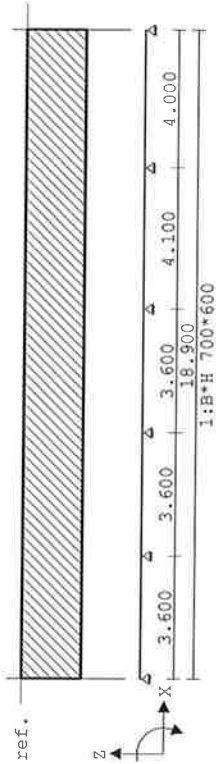
Betrouwbaarheidsklasse : 2 Referentieperiode : 50  
Toevallige inklemmingen begin : geen Toevallige inklemming eind : geen  
Herveldelen van momenten : nee Maximale deellengte : 0.000  
Onderdom bij belasten : 28 Relatieve vochtigheid : 50%  
Doorbuigingen(beton) zijn dmv gecorrigeerde stijfheden berekend.

Fysisch lineair : Er is gerekend met de e-modulus uit de materiaaltabel.  
Fys.NLE.kort : Er is gerekend met een gecorrigeerde e-modulus (korte duur).  
Deze e-mod. is berekend mbv de krachten uit de fysisch lineair berekening.

Toegepaste normen volgens Eurocode met Nederlandse NB

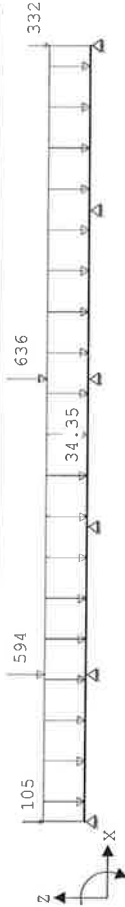
|             |                          |                |             |
|-------------|--------------------------|----------------|-------------|
| Belastingen | NEN-EN 1990:2002         | C2:2010        | NB:2011(nl) |
| Beton       | NEN-EN 1991-1-1:2002     | C1:2009        | NB:2011(nl) |
|             | NEN-EN 1992-1-1:2011(nl) | C2/A1:2015(nl) | NB:2016(nl) |

GEOMETRIE



VELDBELASTINGEN

B.G:1 Permanent



REACTIES Fysisch lineair

B.G:1 Permanent

| Stp | F      | M    |
|-----|--------|------|
| 1   | 168.60 | 0.00 |
| 2   | 777.49 | 0.00 |
| 3   | 154.08 | 0.00 |
| 4   | 804.89 | 0.00 |
| 5   | 207.55 | 0.00 |
| 6   | 402.05 | 0.00 |

(absoluut) grootste som reacties  
(absoluut) grootste som belastingen

VELDBELASTINGEN

B.G:2 Veranderlijk



REACTIES Fysisch lineair

B.G:2 Veranderlijk

| Stp | Fmin  | Fmax   | Mmin | Mmax |
|-----|-------|--------|------|------|
| 1   | -5.84 | 282.38 | 0.00 | 0.00 |
| 2   | 0.00  | 456.41 | 0.00 | 0.00 |
| 3   | 0.00  | 127.44 | 0.00 | 0.00 |
| 4   | 0.00  | 481.99 | 0.00 | 0.00 |
| 5   | 0.00  | 146.54 | 0.00 | 0.00 |
| 6   | -6.48 | 269.34 | 0.00 | 0.00 |

BELASTINGCOMBINATIES

| BC Type  | BG Gen. Factor | BG Gen. Factor | BG Gen. Factor | BG Gen. Factor |
|----------|----------------|----------------|----------------|----------------|
| 1 Fund.  | 1 Perm         | 1.35           |                |                |
| 2 Fund.  | 1 Perm         | 0.90           |                |                |
| 3 Fund.  | 1 Perm         | 1.20           | 2 Extr         | 1.50           |
| 4 Fund.  | 1 Perm         | 0.90           | 2 Extr         | 1.50           |
| 5 Kar.   | 1 Perm         | 1.00           |                |                |
| 6 Kar.   | 1 Perm         | 1.00           | 2 Extr         | 1.00           |
| 7 Blijf. | 1 Perm         | 1.00           |                |                |

GUNSTIGE WERKING PERMANENTE BELASTINGEN

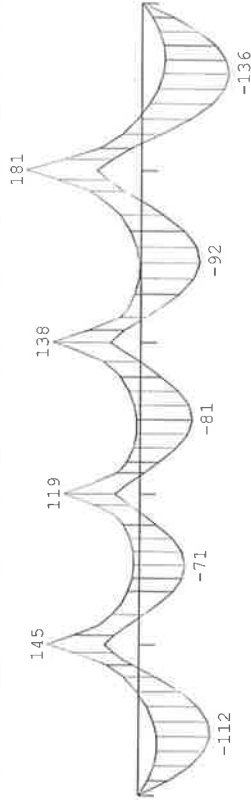
BC Velden met gunstige werking

- 1 Geen
- 2 Alle velden de factor:0.90
- 3 Geen
- 4 Alle velden de factor:0.90

OMHULLENDE VAN DE FUNDAMENTELE COMBINATIES

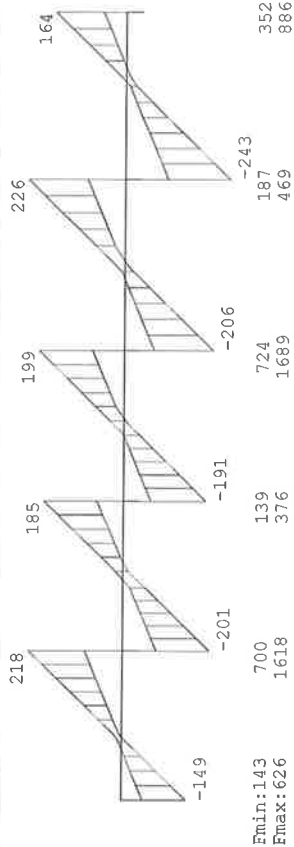
MOMENTEN Fysisch lineair

Fundamentele combinatie



Project.....: 18009 - Nieuwbouw Boskalis Vlaardingen  
Onderdeel.....: Balk op as B kantoor

DWARSKRACHTEN Fysisch lineair Fundamentele combinatie



REACTIES Fysisch lineair Fundamentele combinatie

| Stp | Fmin   | Fmax    | Mmin | Mmax |
|-----|--------|---------|------|------|
| 1   | 142.99 | 625.90  | 0.00 | 0.00 |
| 2   | 699.74 | 1617.61 | 0.00 | 0.00 |
| 3   | 138.67 | 376.05  | 0.00 | 0.00 |
| 4   | 724.40 | 1688.86 | 0.00 | 0.00 |
| 5   | 186.80 | 468.87  | 0.00 | 0.00 |
| 6   | 352.12 | 886.47  | 0.00 | 0.00 |