

STATISCHE BEREKENING (bovenbouw)

Werknummer : **14811**

Datum : 30 mei 2023

Werk : Loods 18 x 35 m

Opdrachtgever :



Bouwplaats : Lakerveld 252
4128 LM Lexmond

Constructeur :



Pagina's : 1 t/m 94



Inhoudsopgave

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Statische berekening

Van toepassing zijnde voorschriften

| | | |
|-------------|------------|---|
| NEN-EN 1990 | Eurocode | Grondslagen van het constructief ontwerp |
| NEN-EN 1991 | Eurocode 1 | Belastingen op constructies |
| NEN-EN 1992 | Eurocode 2 | Ontwerp en berekening van betonconstructies |
| NEN-EN 1993 | Eurocode 3 | Ontwerp en berekening van staalconstructies |
| NEN-EN 1994 | Eurocode 4 | Ontwerp en berekening van staal-betonconstructies |
| NEN-EN 1995 | Eurocode 5 | Ontwerp en berekening van houtconstructies |
| NEN-EN 1996 | Eurocode 6 | Ontwerp en berekening van constructies van metselwerk |
| NEN-EN 1997 | Eurocode 7 | Geotechnisch ontwerp |
| NEN-EN 1998 | Eurocode 8 | Seismisch ontwerp |
| NEN-EN 1999 | Eurocode 9 | Ontwerp en berekening van aluminiumconstructies |

inclusief de daarbij behorende Nationale Bijlagen

Materialen

| | | |
|-------------|--------------------------|----------|
| Beton: | C 20/25 (i.h.w. gestort) | |
| | C 40/45 (prefab) | |
| Betonstaal: | B500A (netten) | |
| | B500B (staven) | |
| Staal: | profielstaal | S 235 JR |
| | kokers (w.v.b.) | S 275 JR |
| | rondstaal | S 235 JR |
| | bouten | 8.8 |
| | ankers | 4.6 |
| Hout: | kwaliteit | C 24 |
| | klimaatklasse | 2 |

Gebouwgegevens

| | |
|--------------------------------------|--|
| Gebouwtype | E: Ruimten voor opslag- en industrieel gebruik |
| Gevolgklasse | CC1 |
| Betrouwbaarheidsklasse | RC1 ($K_{fi} = 0,9$) |
| Uitvoeringsklasse | EXC2 |
| Ontwerplevensduurklasse | 15 |
| locatie i.v.m. windbelasting | gebied III |
| omgeving i.v.m. windbelasting | onbebouwd |
| reductiefactor Ψ_t (bij sneeuw) | 0,70 |
| reductiefactor Ψ_t (bij wind) | 0,85 |
| partitiele factor γ_q | 1,35 |
| dakbedekking: sandwichpanelen | 0,15 kN/m ² (incl. gordingen) |
| zonnepanelen gehele dakvlak | 0,15 kN/m ² |
| dakhelling | 20 graden |
| Stalen spanten h.o.h. | 4,84 m / 5x 5,00 m. / 4,84 m. |

Project.....: 14811
 Onderdeel.....: spant as 2 t/m 7
 Dimensies.....: kN;m;rad (tenzij anders aangegeven)
 Datum.....: 22/05/2023
 Bestand.....: F:\Tekenkamer\Constructeur\Projecten Raamwerken
 \Ateko\spant as 2 tm 7 met HEA
 kolommen.rww

Belastingbreedte.: 5.000
 Rekenmodel.....: 1e-orde-elastisch.
 Theorie voor de bepaling van de krachtsverdeling:
 Geometrisch lineair.
 Fysisch lineair.

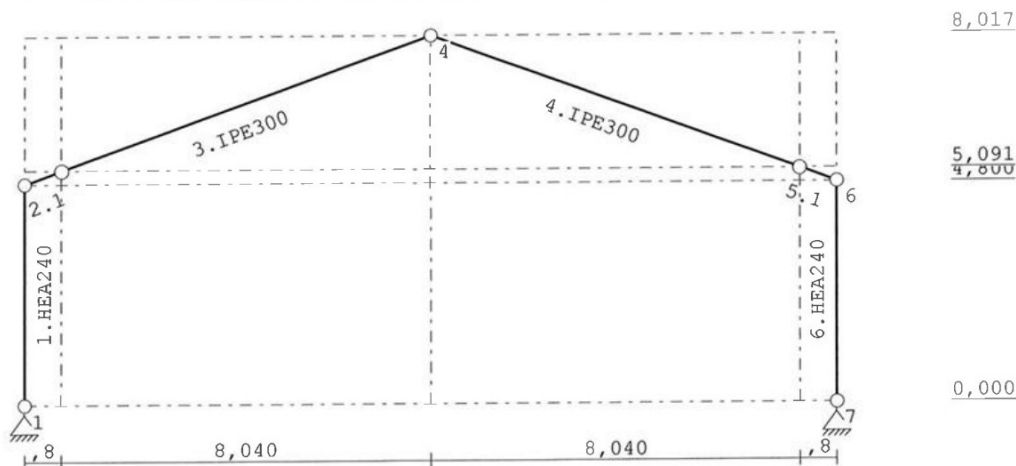
Gunstige werking van de permanente belasting wordt automatisch verwerkt.

Toegepaste normen volgens Eurocode met Nederlandse NB

AS 2 t/m 7

| | | | |
|-------------|----------------------|------------------|-------------|
| Belastingen | NEN-EN 1990:2002 | C2:2010 | NB:2011(nl) |
| | NEN-EN 1991-1-1:2002 | C1:2009 | NB:2011(nl) |
| | NEN-EN 1991-1-3:2003 | C1:2009 | NB:2011(nl) |
| | NEN-EN 1991-1-4:2005 | C2:2011 | NB:2011(nl) |
| Staal | NEN-EN 1993-1-1:2006 | C2:2011, A1:2016 | NB:2016(nl) |

GEOMETRIE Bel. breedte = 5,00 m'



STRAMIENLIJNEN

| Nr. | Naam | X | Z-min | Z-max |
|-----|------|--------|-------|-------|
| 1 | | 0.000 | 0.000 | 8.017 |
| 2 | | 0.800 | 0.000 | 8.017 |
| 3 | | 8.840 | 0.000 | 8.017 |
| 4 | | 16.880 | 0.000 | 8.017 |
| 5 | | 17.680 | 0.000 | 8.017 |

NIVEAUS

| Nr. | Z | X-min | X-max |
|-----|-------|-------|--------|
| 1 | 0.000 | 0.000 | 17.680 |
| 2 | 4.800 | 0.000 | 17.680 |
| 3 | 5.091 | 0.000 | 17.680 |
| 4 | 8.017 | 0.000 | 17.680 |

MATERIALEN

| Mt | Omschrijving | E-modulus[N/mm2] | S.G. | Pois. | Uitz. coëff |
|----|--------------|------------------|------|-------|-------------|
| 1 | S235 | 210000 | 78.5 | 0.30 | 1.2000e-05 |

PROFIELEN [mm]

| Prof. | Omschrijving | Materiaal | Oppervlak | Traagheid | Vormf. |
|-------|--------------|-----------|------------|------------|--------|
| 1 | IPE330 | 1:S235 | 6.2600e+03 | 1.1770e+08 | 0.00 |
| 2 | IPE300 | 1:S235 | 5.3800e+03 | 8.3560e+07 | 0.00 |
| 3 | HEA240 | 1:S235 | 7.6800e+03 | 7.7630e+07 | 0.00 |

Project.....: 14811

Onderdeel....: spant as 2 t/m 7

PROFIELEN vervolg [mm]

| Prof. | Staaftype | Breedte | Hoogte | e | Type | b1 | h1 | b2 | h2 |
|-------|-----------|---------|--------|-------|------|----|----|----|----|
| 1 | 0:Normaal | 160 | 330 | 165.0 | | | | | |
| 2 | 0:Normaal | 150 | 300 | 150.0 | | | | | |
| 3 | 0:Normaal | 240 | 230 | 115.0 | | | | | |

KNOPEN

| Knoop | X | Z | Knoop | X | Z |
|-------|--------|-------|-------|--------|-------|
| 1 | 0.000 | 0.000 | 6 | 17.680 | 4.800 |
| 2 | 0.000 | 4.800 | 7 | 17.680 | 0.000 |
| 3 | 0.800 | 5.091 | | | |
| 4 | 8.840 | 8.017 | | | |
| 5 | 16.880 | 5.091 | | | |

STAVEN

| St. | ki | kj | Profiel | Aansl.i | Aansl.j | Lengte Opm. |
|-----|----|----|----------|---------|---------|-------------|
| 1 | 1 | 2 | 3:HEA240 | NDM | NDM | 4.800 |
| 2 | 2 | 3 | 1:IPE330 | NDM | NDM | 0.851 |
| 3 | 3 | 4 | 2:IPE300 | NDM | NDM | 8.556 |
| 4 | 4 | 5 | 2:IPE300 | NDM | NDM | 8.556 |
| 5 | 5 | 6 | 1:IPE330 | NDM | NDM | 0.851 |
| 6 | 6 | 7 | 3:HEA240 | NDM | NDM | 4.800 |

VASTE STEUNPUNTEN

| Nr. | knoop | Kode | XZR 1=vast 0=vrij | Hoek |
|-----|-------|------|-------------------|------|
| 1 | 1 | 110 | | 0.00 |
| 2 | 7 | 110 | | 0.00 |

BELASTINGGENERATIE ALGEMEEN.

Betrouwbaarheidsklasse.....: 1 Referentieperiode.....: 15
 Gebouwdiepte.....: 35.00 Gebouwhoogte.....: 8.02
 Niveau aansl.terrein.....: 0.00 E.g. scheid.w. [kN/m2]: 1.20

WIND

Terrein categorie ...[4.3.2]...: Onbebouwd
 Windgebied: 3 Vb,0 ..[4.2].....: 24.500
 Referentie periode wind.....: 15.00 Vb(p) ..[4.2].....: 22.397
 K[4.2].....: 0.280 n[4.2].....: 0.500
 Positie spant in het gebouw....: 5.000 Kr[4.3.2].....: 0.209
 z0[4.3.2].....: 0.200 Zmin ..[4.3.2].....: 4.000
 Co wind van links ..[4.3.3]...: 1.000 Co wind van rechts....: 1.000
 Co wind loodrecht ..[4.3.3]...: 1.000
 Cpi wind van links ..[7.2.9]...: 0.200 -0.300
 Cpi windloodrecht ...[7.2.9]...: 0.200 -0.300
 Cpi wind van rechts ..[7.2.9]...: 0.200 -0.300
 Cfr windwrijving[7.5].....: 0.040

SNEEUW

Sneeuwbelasting (sk) 50 jaar : 0.70
 Sneeuwbelasting (sn) n jaar : 0.53

STAFTYPEN

| Type | staven |
|------------------|--------|
| 5:Linker gevel. | : 1 |
| 6:Rechter gevel. | : 6 |
| 7:Dak. | : 2-5 |

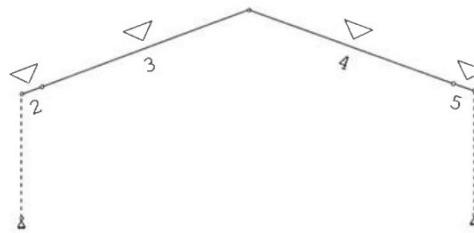
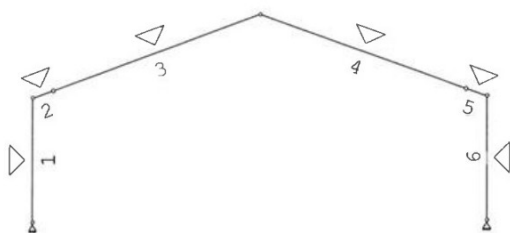
Project.....: 14811

Onderdeel....: spant as 2 t/m 7

LASTVELDEN

Wind staven

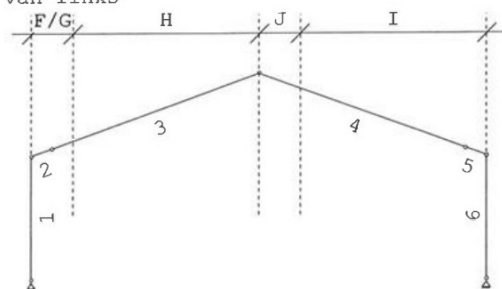
Sneeuw staven

**WIND DAKTYPES**

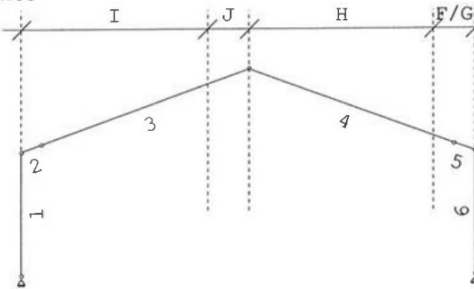
| Nr. | Staaft Type | reductie bij wind van links | reductie bij wind van rechts | Cpe volgens art: |
|-----|---------------|--------------------------------|---------------------------------|------------------|
| 1 | 1 Gevel | 1.000 | 1.000 | 7.2.2 |
| 2 | 2-3 Zadel dak | 1.000 | 1.000 | 7.2.5 |
| 3 | 4-5 Zadel dak | 1.000 | 1.000 | 7.2.5 |
| 4 | 6 Gevel | 1.000 | 1.000 | 7.2.2 |

WIND ZONES

Wind van links



Wind van rechts

**WIND VAN LINKS ZONES**

| Nr. | Staaft | Positie | Lengte | Zone |
|-----|--------|---------|--------|------|
| 1 | 1 | 0.000 | 4.800 | D |
| 2 | 2-3 | 0.000 | 1.603 | F/G |
| 3 | 2-3 | 1.603 | 7.237 | H |
| 4 | 4-5 | 0.000 | 1.603 | J |
| 5 | 4-5 | 1.603 | 7.237 | I |
| 6 | 6 | 0.000 | 4.800 | E |

WIND VAN RECHTS ZONES

| Nr. | Staaft | Positie | Lengte | Zone |
|-----|--------|---------|--------|------|
| 1 | 6 | 0.000 | 4.800 | D |
| 2 | 4-5 | 0.000 | 1.603 | F/G |
| 3 | 4-5 | 1.603 | 7.237 | H |
| 4 | 2-3 | 0.000 | 1.603 | J |
| 5 | 2-3 | 1.603 | 7.237 | I |
| 6 | 1 | 0.000 | 4.800 | E |

Wind indexen

| Index | CsCd | Cpe/Cpi | qp | breedte | reductie | Qw Zone | Hoek(en) |
|-------|------|---------|-------|---------|----------|-----------|----------|
| Qw1 | | 0.300 | 0.540 | 5.000 | | -0.811 -i | |
| Qw2 | 1.00 | 0.800 | 0.540 | 5.000 | | -2.162 D | |
| Qw3 | 1.00 | 0.367 | 0.540 | 1.509 | | -0.299 F | 20.0 |
| Qw4 | 1.00 | 0.367 | 0.540 | 3.491 | | -0.692 G | 20.0 |
| Qw5 | 1.00 | 0.267 | 0.540 | 5.000 | | -0.721 H | 20.0 |
| Qw6 | 1.00 | -0.833 | 0.540 | 5.000 | | 2.252 J | 20.0 |
| Qw7 | 1.00 | -0.400 | 0.540 | 5.000 | | 1.081 I | 20.0 |
| Qw8 | 1.00 | -0.500 | 0.540 | 5.000 | | 1.351 E | |
| Qw9 | | -0.200 | 0.540 | 5.000 | | 0.540 +i | |
| Qw10 | 1.00 | -0.767 | 0.540 | 1.509 | | 0.625 F | 20.0 |
| Qw11 | 1.00 | -0.700 | 0.540 | 3.491 | | 1.321 G | 20.0 |
| Qw12 | 1.00 | -0.267 | 0.540 | 5.000 | | 0.721 H | 20.0 |
| Qw13 | 1.00 | -1.200 | 0.540 | 0.707 | | 0.458 A | |
| Qw14 | 1.00 | -0.800 | 0.540 | 4.293 | | 1.856 B | |
| Qw15 | 1.00 | -0.667 | 0.540 | 5.000 | | 1.801 H | 20.0 |
| Qw16 | 1.00 | -0.500 | 0.540 | 5.000 | | 1.351 C | |
| Qw17 | 1.00 | -0.500 | 0.540 | 5.000 | | 1.351 I | 20.0 |

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Onderdeel....: spant as 2 t/m 7

SNEEUW DAKTYPEN

Staaft artikel

2-3 5.3.3 Zadeldak

4-5 5.3.3 Zadeldak

Sneeuw indexen

| Index | art | μ | s_k | red. posfac | breedte | Q_s | hoek |
|-------|-------|-------|-------|-------------|---------|-------|------|
| Qs1 | 5.3.3 | 0.800 | 0.53 | 1.00 | 5.000 | 2.102 | 20.0 |
| Qs2 | 5.3.3 | 0.800 | 0.53 | 1.00 | 5.000 | 2.102 | 20.0 |
| Qs3 | 5.3.3 | 0.400 | 0.53 | 1.00 | 5.000 | 1.051 | 20.0 |
| Qs4 | 5.3.3 | 0.400 | 0.53 | 1.00 | 5.000 | 1.051 | 20.0 |

 $\alpha = 20^\circ$ **BELASTINGGEVALLEN**

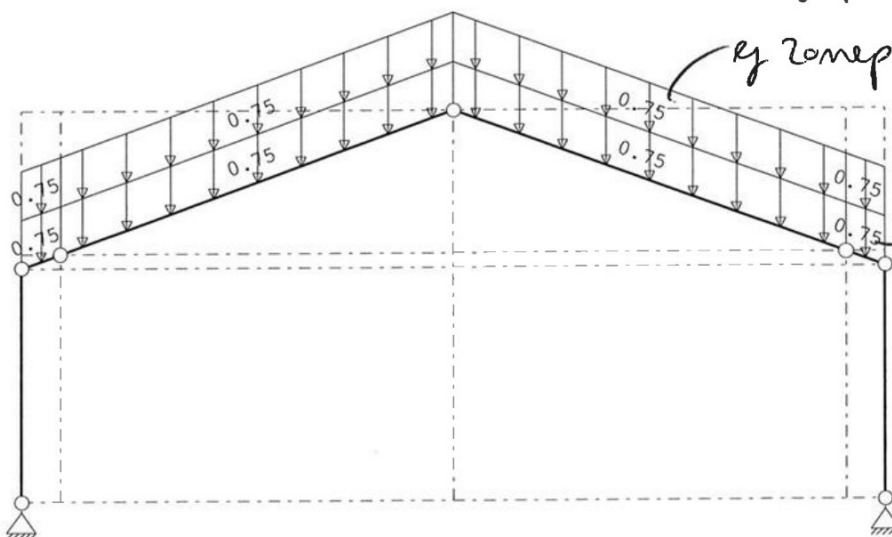
| B.G. | Omschrijving | Type |
|------|----------------------------------|------------|
| | 1 Permanente belasting EGZ=-1.00 | 1 |
| g | 2 Wind van links onderdruk A | 7 |
| g | 3 Wind van links overdruk A | 8 |
| g | 4 Wind van links onderdruk B | 9 |
| g | 5 Wind van links overdruk B | 10 |
| g | 6 Wind van links onderdruk C | 37 |
| g | 7 Wind van links overdruk C | 38 |
| g | 8 Wind van links onderdruk D | 39 |
| g | 9 Wind van links overdruk D | 40 |
| g | 10 Wind van rechts onderdruk A | 11 |
| g | 11 Wind van rechts overdruk A | 12 |
| g | 12 Wind van rechts onderdruk B | 13 |
| g | 13 Wind van rechts overdruk B | 14 |
| g | 14 Wind van rechts onderdruk C | 41 |
| g | 15 Wind van rechts overdruk C | 42 |
| g | 16 Wind van rechts onderdruk D | 43 |
| g | 17 Wind van rechts overdruk D | 44 |
| g | 18 Wind loodrecht onderdruk A | 15 |
| g | 19 Wind loodrecht overdruk A | 16 |
| g | 20 Wind loodrecht onderdruk B | 45 |
| g | 21 Wind loodrecht overdruk B | 46 |
| g | 22 Sneeuw A | 22 |
| g | 23 Sneeuw B | 23 |
| g | 24 Sneeuw C | 33 |
| | 25 Knik | 0 Onbekend |

g = gegenereerd belastinggeval

BELASTINGEN

B.G:1 Permanente belasting

Eigen gewicht van alle staven is meegenomen in berekening. Richting: ↓ -f spant



$$q_{\text{zonepanel}} = 5,00 \times 0,15 = 0,75 \text{ kN/m}^2$$

$$q_{\text{dak}} = 5,00 \times 0,15 = 0,75 \text{ kN/m}^2$$

Project.....: 14811

Onderdeel.....: spant as 2 t/m 7

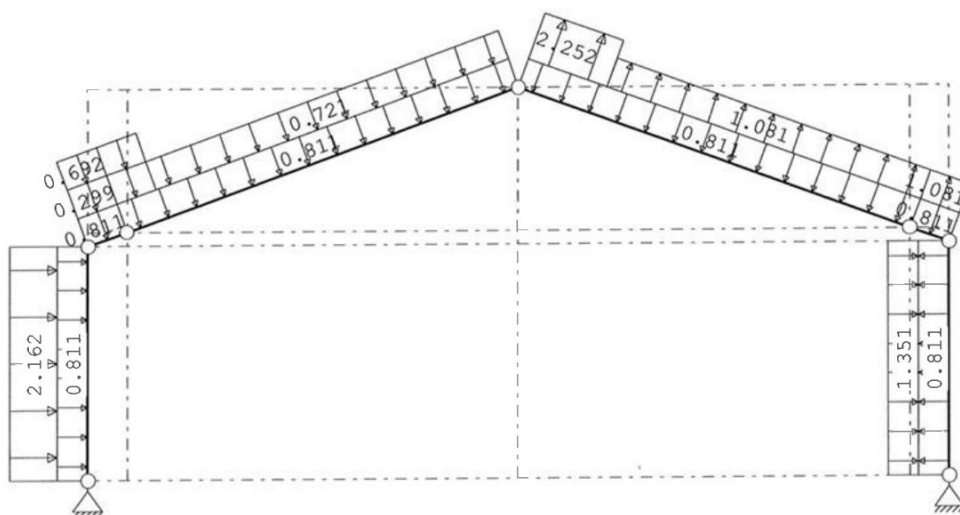
STAAFBELASTINGEN

B.G:1 Permanente belasting

| Staat | Type | q1/p/m | q2 | A | B | Ψ_0 | Ψ_1 | Ψ_2 |
|-------|------------|--------|-------|-------|-------|----------|----------|----------|
| 2 | 5:QZGloaal | -0.75 | -0.75 | 0.000 | 0.000 | | | |
| 3 | 5:QZGloaal | -0.75 | -0.75 | 0.000 | 0.000 | | | |
| 4 | 5:QZGloaal | -0.75 | -0.75 | 0.000 | 0.000 | | | |
| 5 | 5:QZGloaal | -0.75 | -0.75 | 0.000 | 0.000 | | | |
| 2 | 5:QZGloaal | -0.75 | -0.75 | 0.000 | 0.000 | | | |
| 3 | 5:QZGloaal | -0.75 | -0.75 | 0.000 | 0.000 | | | |
| 4 | 5:QZGloaal | -0.75 | -0.75 | 0.000 | 0.000 | | | |
| 5 | 5:QZGloaal | -0.75 | -0.75 | 0.000 | 0.000 | | | |

BELASTINGEN

B.G:2 Wind van links onderdruk A

**STAAFBELASTINGEN**

B.G:2 Wind van links onderdruk A

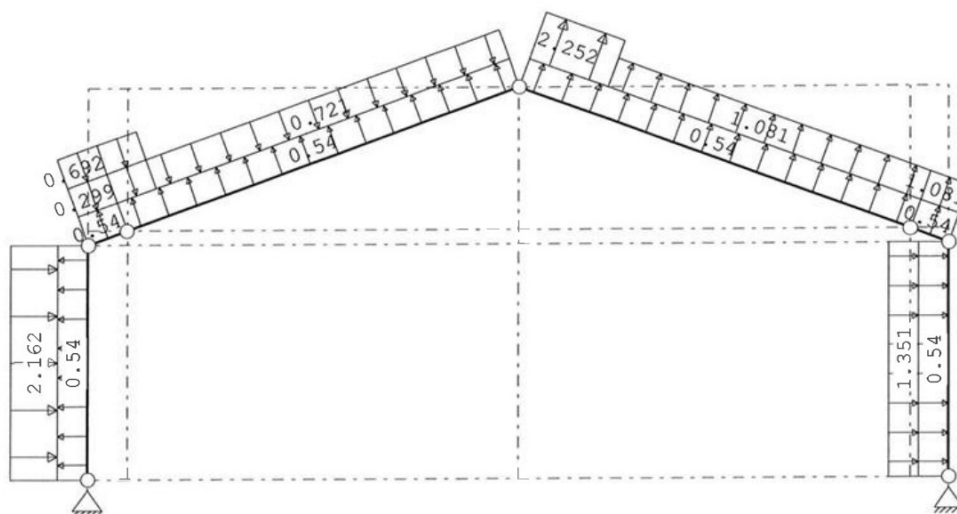
| Staat | Type | Index | q1/p/m | q2 | A | B | Ψ_0 | Ψ_1 | Ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -2.16 | -2.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw3 | -0.30 | -0.30 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw4 | -0.69 | -0.69 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw3 | -0.30 | -0.30 | 0.000 | 7.701 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw4 | -0.69 | -0.69 | 0.000 | 7.701 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw5 | -0.72 | -0.72 | 0.855 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw6 | 2.25 | 2.25 | 0.000 | 6.850 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw7 | 1.08 | 1.08 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw7 | 1.08 | 1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 2 t/m 7

BELASTINGEN

B.G:3 Wind van links overdruk A

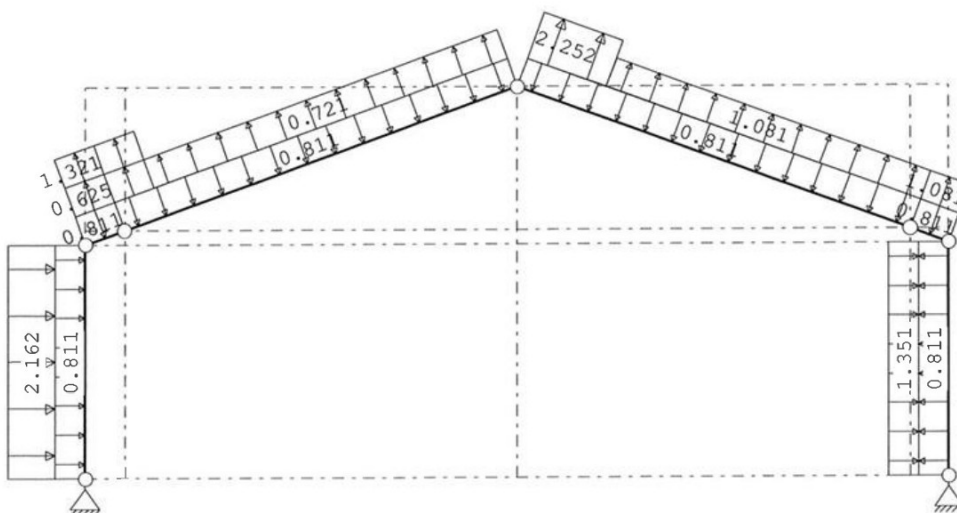
**STAAFBELASTINGEN**

B.G:3 Wind van links overdruk A

| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -2.16 | -2.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw3 | -0.30 | -0.30 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw4 | -0.69 | -0.69 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw3 | -0.30 | -0.30 | 0.000 | 7.701 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw4 | -0.69 | -0.69 | 0.000 | 7.701 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw5 | -0.72 | -0.72 | 0.855 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw6 | 2.25 | 2.25 | 0.000 | 6.850 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw7 | 1.08 | 1.08 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw7 | 1.08 | 1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:4 Wind van links onderdruk B



Project.....: 14811

Onderdeel.....: spant as 2 t/m 7

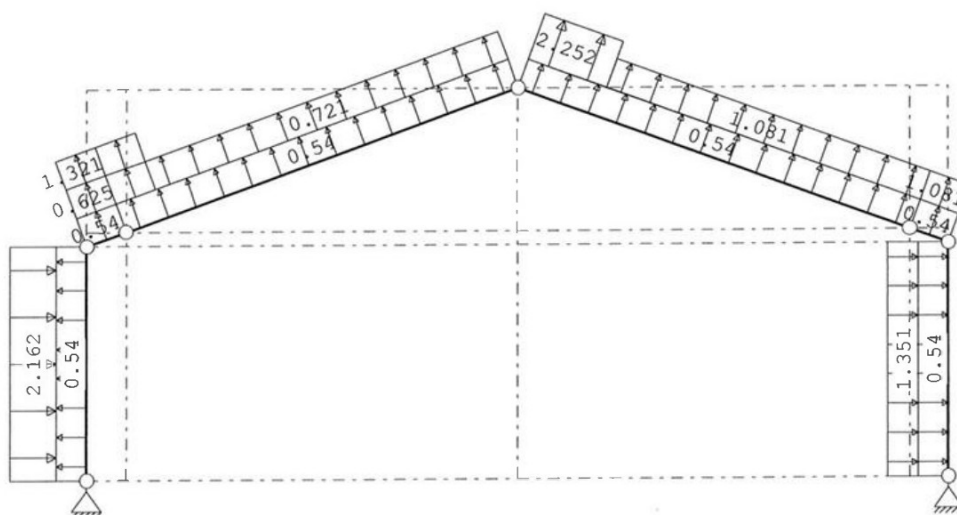
STAAFBELASTINGEN

B.G:4 Wind van links onderdruk B

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -2.16 | -2.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw10 | 0.62 | 0.62 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw11 | 1.32 | 1.32 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw10 | 0.62 | 0.62 | 0.000 | 7.701 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw11 | 1.32 | 1.32 | 0.000 | 7.701 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw12 | 0.72 | 0.72 | 0.855 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw6 | 2.25 | 2.25 | 0.000 | 6.850 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw7 | 1.08 | 1.08 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw7 | 1.08 | 1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:5 Wind van links overdruk B

**STAAFBELASTINGEN**

B.G:5 Wind van links overdruk B

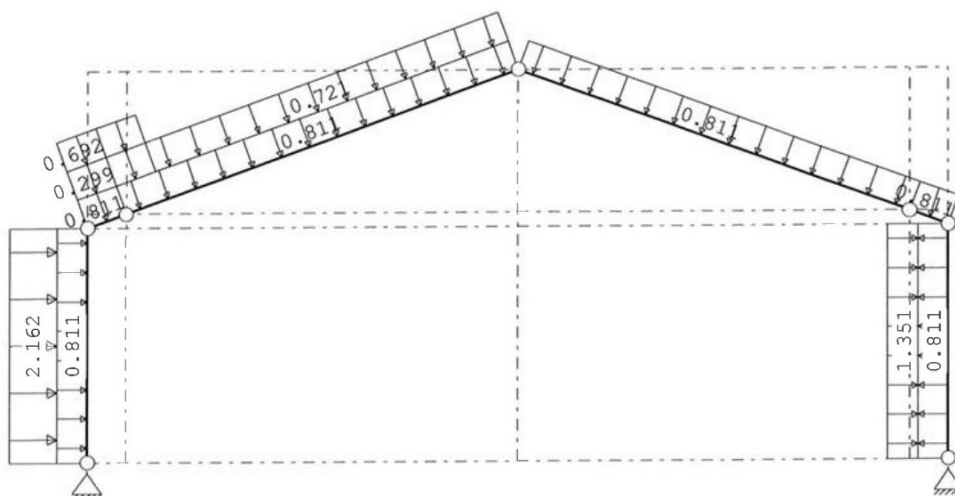
| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -2.16 | -2.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw10 | 0.62 | 0.62 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw11 | 1.32 | 1.32 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw10 | 0.62 | 0.62 | 0.000 | 7.701 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw11 | 1.32 | 1.32 | 0.000 | 7.701 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw12 | 0.72 | 0.72 | 0.855 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw6 | 2.25 | 2.25 | 0.000 | 6.850 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw7 | 1.08 | 1.08 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw7 | 1.08 | 1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 2 t/m 7

BELASTINGEN

B.G:6 Wind van links onderdruk C

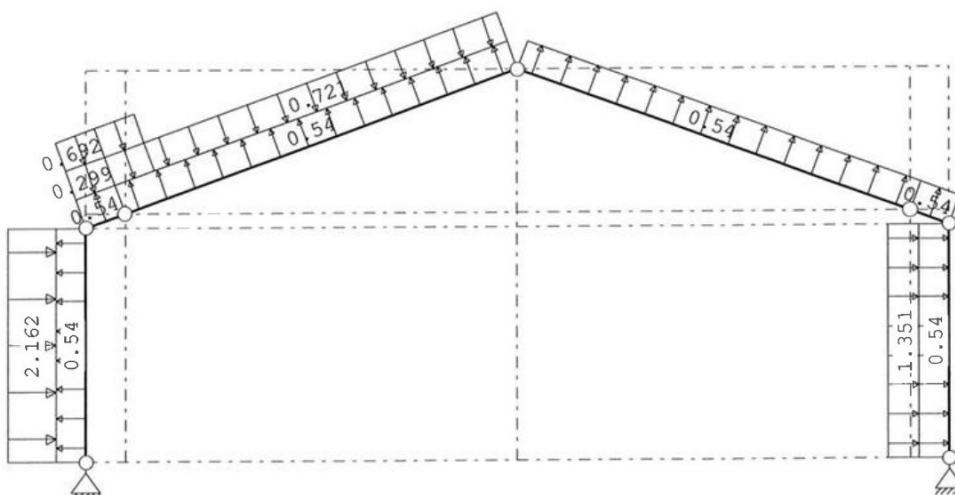
**STAAFBELASTINGEN**

B.G:6 Wind van links onderdruk C

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -2.16 | -2.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw3 | -0.30 | -0.30 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw4 | -0.69 | -0.69 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw3 | -0.30 | -0.30 | 0.000 | 7.701 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw4 | -0.69 | -0.69 | 0.000 | 7.701 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw5 | -0.72 | -0.72 | 0.855 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:7 Wind van links overdruk C

**STAAFBELASTINGEN**

B.G:7 Wind van links overdruk C

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -2.16 | -2.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel.....: spant as 2 t/m 7

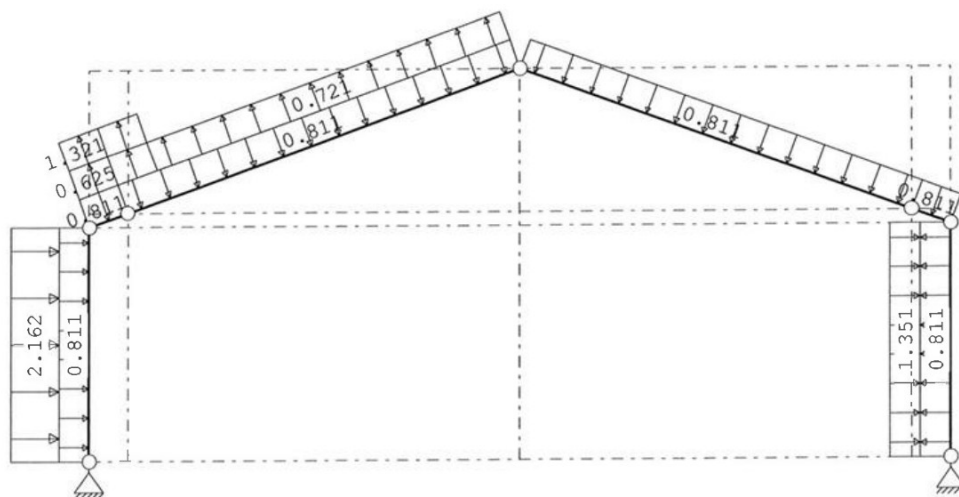
STAAFBELASTINGEN

B.G:7 Wind van links overdruk C

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 2 | 1:QZLokaal | Qw3 | -0.30 | -0.30 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw4 | -0.69 | -0.69 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw3 | -0.30 | -0.30 | 0.000 | 7.701 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw4 | -0.69 | -0.69 | 0.000 | 7.701 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw5 | -0.72 | -0.72 | 0.855 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:8 Wind van links onderdruk D

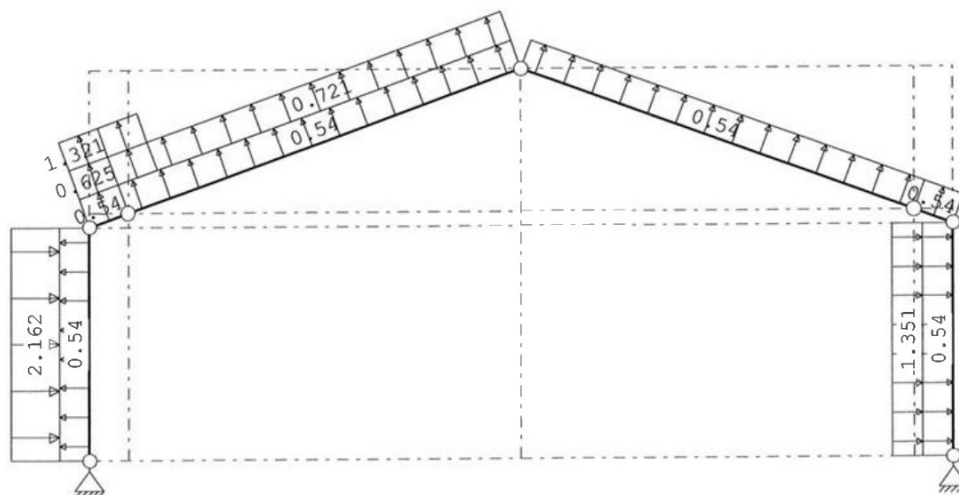
**STAAFBELASTINGEN**

B.G:8 Wind van links onderdruk D

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -2.16 | -2.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw10 | 0.62 | 0.62 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw11 | 1.32 | 1.32 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw10 | 0.62 | 0.62 | 0.000 | 7.701 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw11 | 1.32 | 1.32 | 0.000 | 7.701 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw12 | 0.72 | 0.72 | 0.855 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:9 Wind van links overdruk D



Project.....: 14811

Onderdeel....: spant as 2 t/m 7

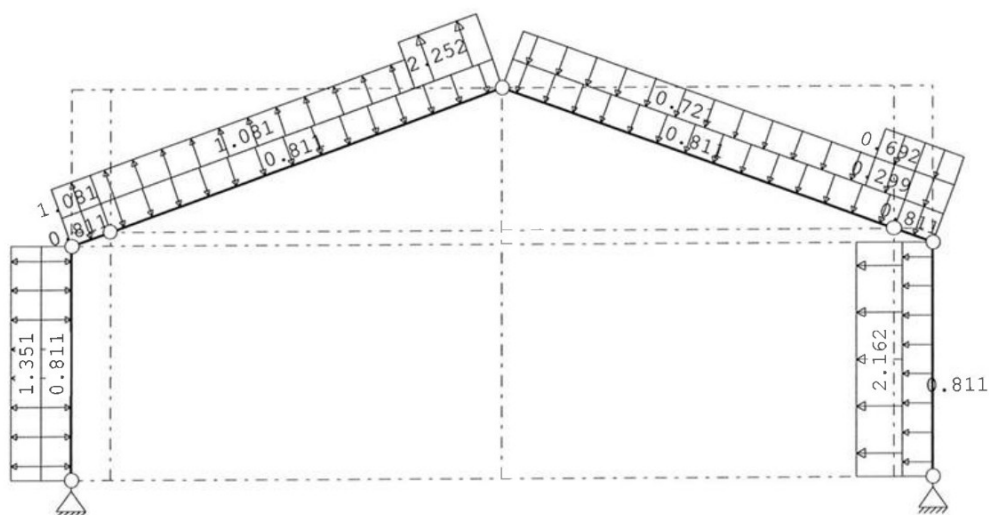
STAAFBELASTINGEN

B.G:9 Wind van links overdruk D

| Staaf | Type | Index | q1/p/m | q2 | A | B | Ψ_0 | Ψ_1 | Ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -2.16 | -2.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw10 | 0.62 | 0.62 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw11 | 1.32 | 1.32 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw10 | 0.62 | 0.62 | 0.000 | 7.701 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw11 | 1.32 | 1.32 | 0.000 | 7.701 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw12 | 0.72 | 0.72 | 0.855 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:10 Wind van rechts onderdruk A

**STAAFBELASTINGEN**

B.G:10 Wind van rechts onderdruk A

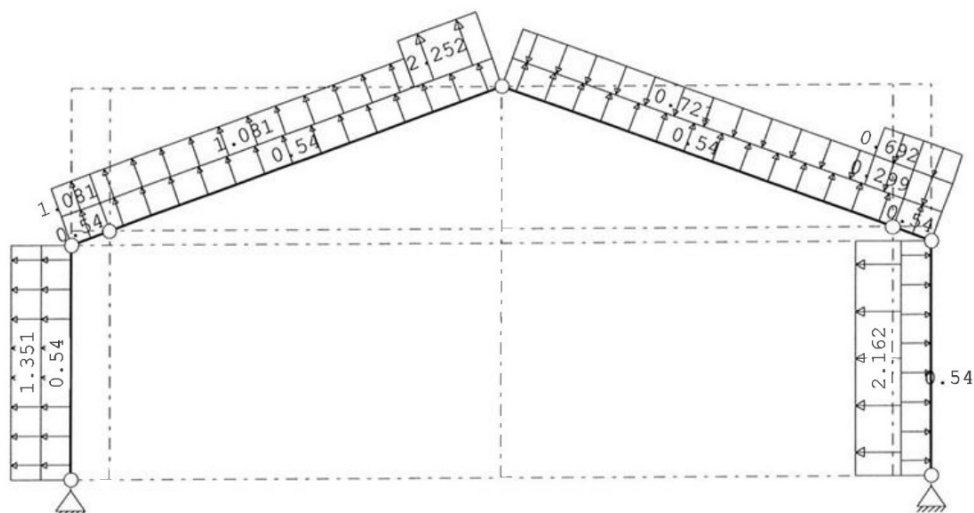
| Staaf | Type | Index | q1/p/m | q2 | A | B | Ψ_0 | Ψ_1 | Ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw2 | -2.16 | -2.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw3 | -0.30 | -0.30 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw4 | -0.69 | -0.69 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw3 | -0.30 | -0.30 | 7.701 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw4 | -0.69 | -0.69 | 7.701 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw5 | -0.72 | -0.72 | 0.000 | 0.855 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw6 | 2.25 | 2.25 | 6.850 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw7 | 1.08 | 1.08 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw7 | 1.08 | 1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw8 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel.....: spant as 2 t/m 7

BELASTINGEN

B.G:11 Wind van rechts overdruk A

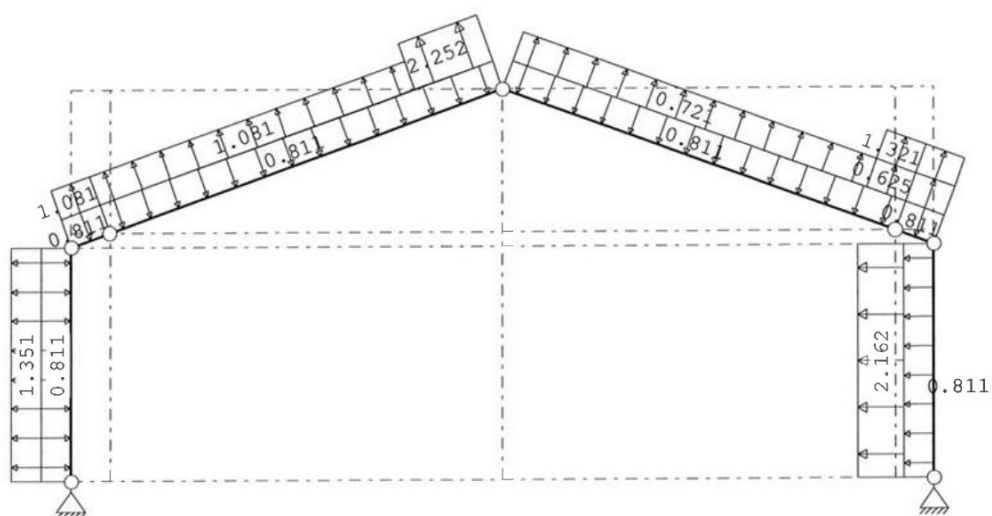
**STAAFBELASTINGEN**

B.G:11 Wind van rechts overdruk A

| Staal Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|--------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 1:QZLokaal | Qw2 | -2.16 | -2.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 1:QZLokaal | Qw3 | -0.30 | -0.30 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 1:QZLokaal | Qw4 | -0.69 | -0.69 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 1:QZLokaal | Qw3 | -0.30 | -0.30 | 7.701 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 1:QZLokaal | Qw4 | -0.69 | -0.69 | 7.701 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 1:QZLokaal | Qw5 | -0.72 | -0.72 | 0.000 | 0.855 | 0.0 | 0.2 | 0.0 |
| 3 1:QZLokaal | Qw6 | 2.25 | 2.25 | 6.850 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 1:QZLokaal | Qw7 | 1.08 | 1.08 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 2 1:QZLokaal | Qw7 | 1.08 | 1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 1:QZLokaal | Qw8 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:12 Wind van rechts onderdruk B



Project.....: 14811

Onderdeel....: spant as 2 t/m 7

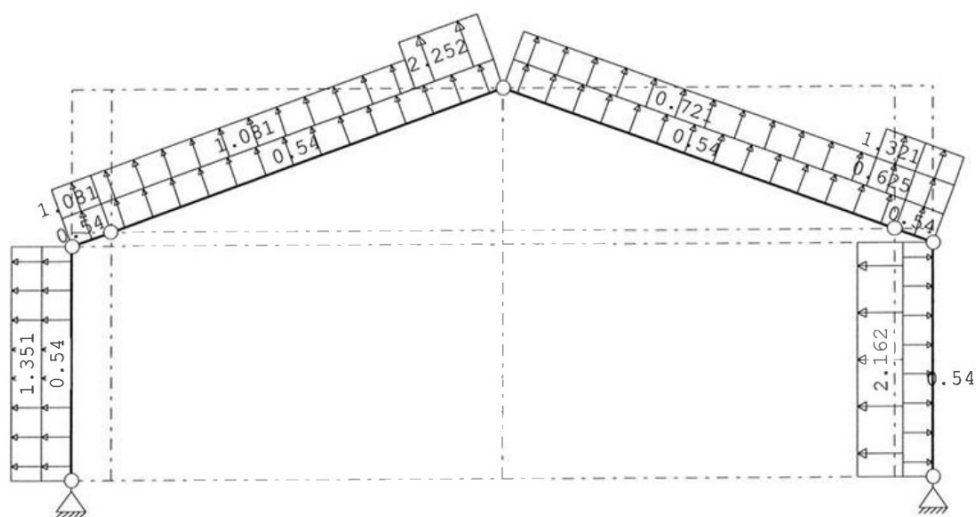
STAAFBELASTINGEN

B.G:12 Wind van rechts onderdruk B

| Staat | Type | Index | q1/p/m | q2 | A | B | Ψ_0 | Ψ_1 | Ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw2 | -2.16 | -2.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw10 | 0.62 | 0.62 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw11 | 1.32 | 1.32 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw10 | 0.62 | 0.62 | 7.701 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw11 | 1.32 | 1.32 | 7.701 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw12 | 0.72 | 0.72 | 0.000 | 0.855 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw6 | 2.25 | 2.25 | 6.850 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw7 | 1.08 | 1.08 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw7 | 1.08 | 1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw8 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:13 Wind van rechts overdruk B

**STAAFBELASTINGEN**

B.G:13 Wind van rechts overdruk B

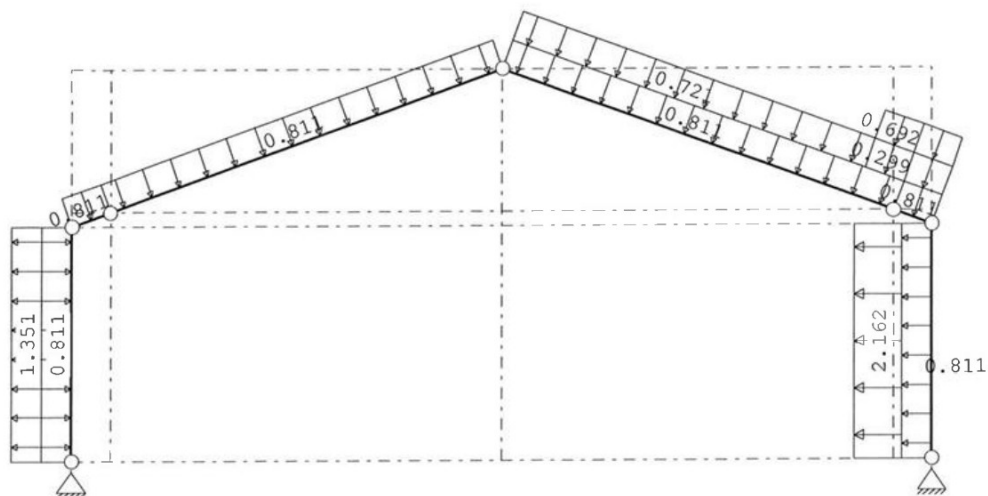
| Staat | Type | Index | q1/p/m | q2 | A | B | Ψ_0 | Ψ_1 | Ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw2 | -2.16 | -2.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw10 | 0.62 | 0.62 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw11 | 1.32 | 1.32 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw10 | 0.62 | 0.62 | 7.701 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw11 | 1.32 | 1.32 | 7.701 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw12 | 0.72 | 0.72 | 0.000 | 0.855 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw6 | 2.25 | 2.25 | 6.850 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw7 | 1.08 | 1.08 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw7 | 1.08 | 1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw8 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 2 t/m 7

BELASTINGEN

B.G:14 Wind van rechts onderdruk C

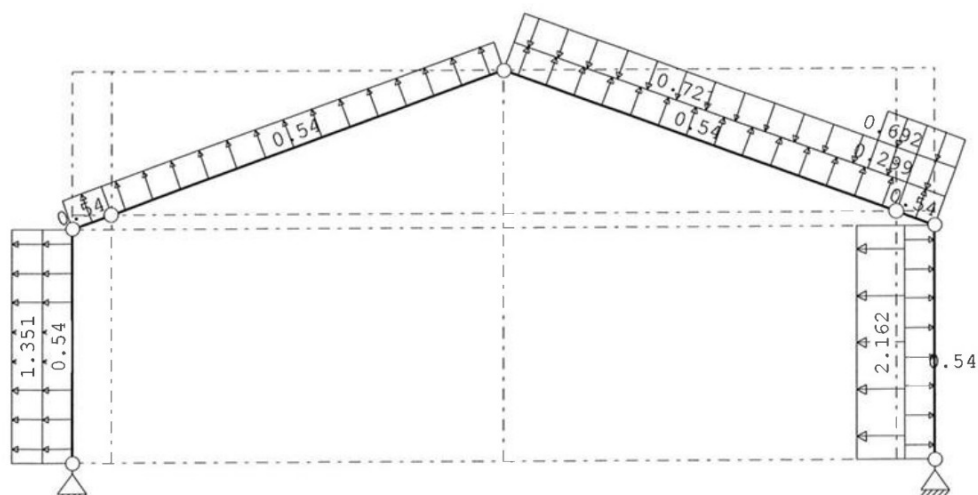
**STAAFBELASTINGEN**

B.G:14 Wind van rechts onderdruk C

| Staal Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|--------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 1:QZLokaal | Qw2 | -2.16 | -2.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 1:QZLokaal | Qw3 | -0.30 | -0.30 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 1:QZLokaal | Qw4 | -0.69 | -0.69 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 1:QZLokaal | Qw3 | -0.30 | -0.30 | 7.701 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 1:QZLokaal | Qw4 | -0.69 | -0.69 | 7.701 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 1:QZLokaal | Qw5 | -0.72 | -0.72 | 0.000 | 0.855 | 0.0 | 0.2 | 0.0 |
| 1 1:QZLokaal | Qw8 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:15 Wind van rechts overdruk C

**STAAFBELASTINGEN**

B.G:15 Wind van rechts overdruk C

| Staal Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|--------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 1:QZLokaal | Qw2 | -2.16 | -2.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 2 t/m 7

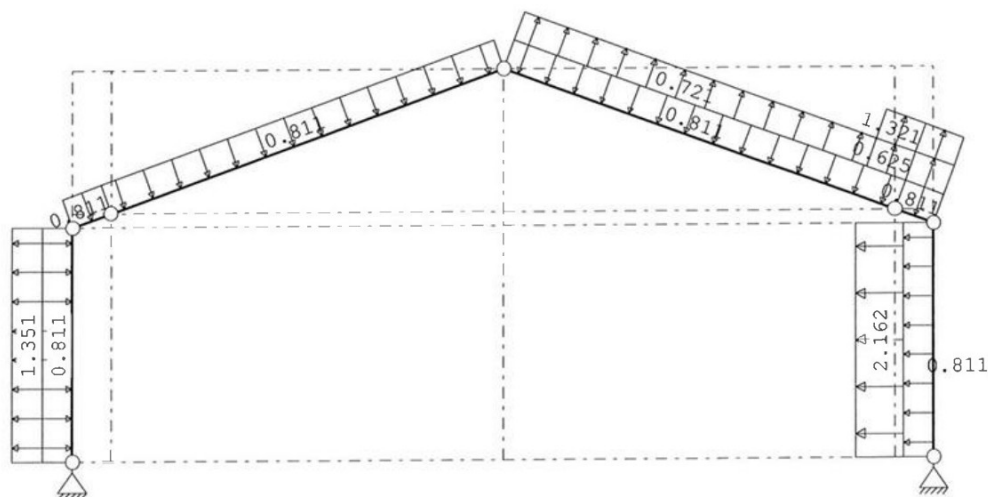
STAAFBELASTINGEN

B.G:15 Wind van rechts overdruk C

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 5 | 1:QZLokaal | Qw3 | -0.30 | -0.30 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw4 | -0.69 | -0.69 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw3 | -0.30 | -0.30 | 7.701 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw4 | -0.69 | -0.69 | 7.701 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw5 | -0.72 | -0.72 | 0.000 | 0.855 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw8 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:16 Wind van rechts onderdruk D

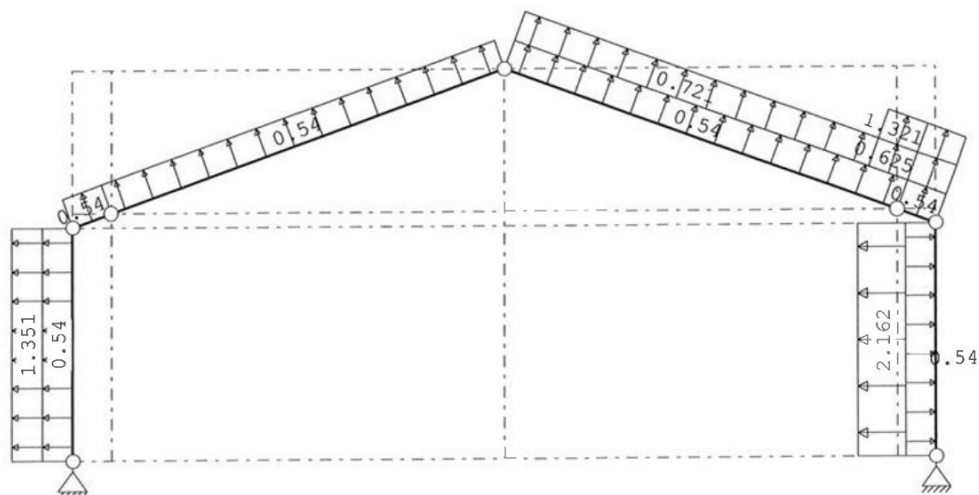
**STAAFBELASTINGEN**

B.G:16 Wind van rechts onderdruk D

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw2 | -2.16 | -2.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw10 | 0.62 | 0.62 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw11 | 1.32 | 1.32 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw10 | 0.62 | 0.62 | 7.701 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw11 | 1.32 | 1.32 | 7.701 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw12 | 0.72 | 0.72 | 0.000 | 0.855 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw8 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:17 Wind van rechts overdruk D



Project.....: 14811

Onderdeel....: spant as 2 t/m 7

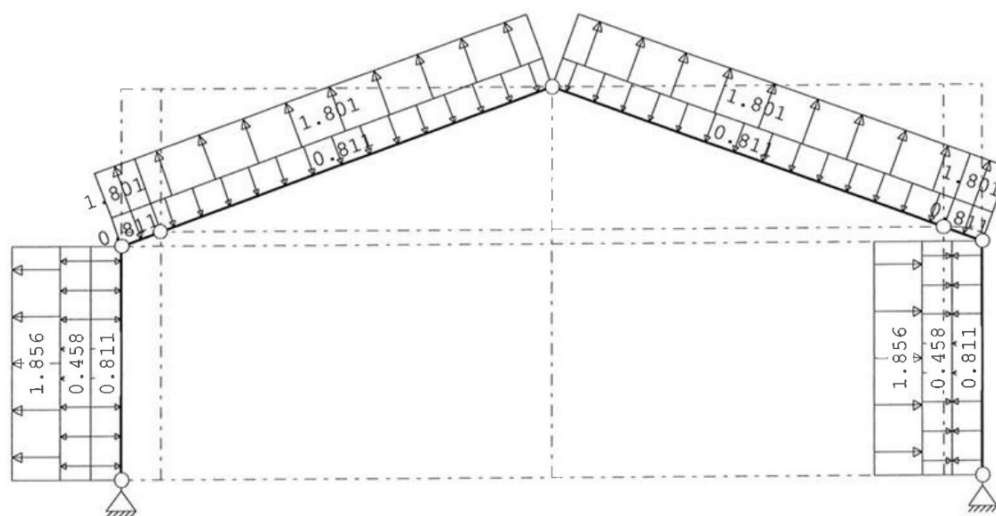
STAAFBELASTINGEN

B.G:17 Wind van rechts overdruk D

| Staaf | Type | Index | q1/p/m | q2 | A | B | Ψ_0 | Ψ_1 | Ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw2 | -2.16 | -2.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw10 | 0.62 | 0.62 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw11 | 1.32 | 1.32 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw10 | 0.62 | 0.62 | 7.701 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw11 | 1.32 | 1.32 | 7.701 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw12 | 0.72 | 0.72 | 0.000 | 0.855 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw8 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:18 Wind loodrecht onderdruk A

**STAAFBELASTINGEN**

B.G:18 Wind loodrecht onderdruk A

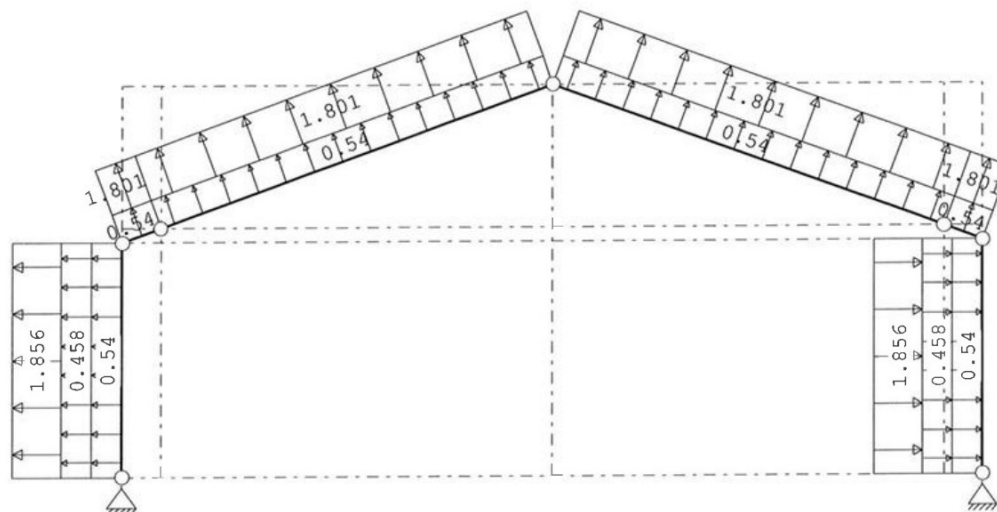
| Staaf | Type | Index | q1/p/m | q2 | A | B | Ψ_0 | Ψ_1 | Ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw13 | 0.46 | 0.46 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw14 | 1.86 | 1.86 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw13 | 0.46 | 0.46 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw14 | 1.86 | 1.86 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw15 | 1.80 | 1.80 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw15 | 1.80 | 1.80 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw15 | 1.80 | 1.80 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw15 | 1.80 | 1.80 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel.....: spant as 2 t/m 7

BELASTINGEN

B.G:19 Wind loodrecht overdruk A

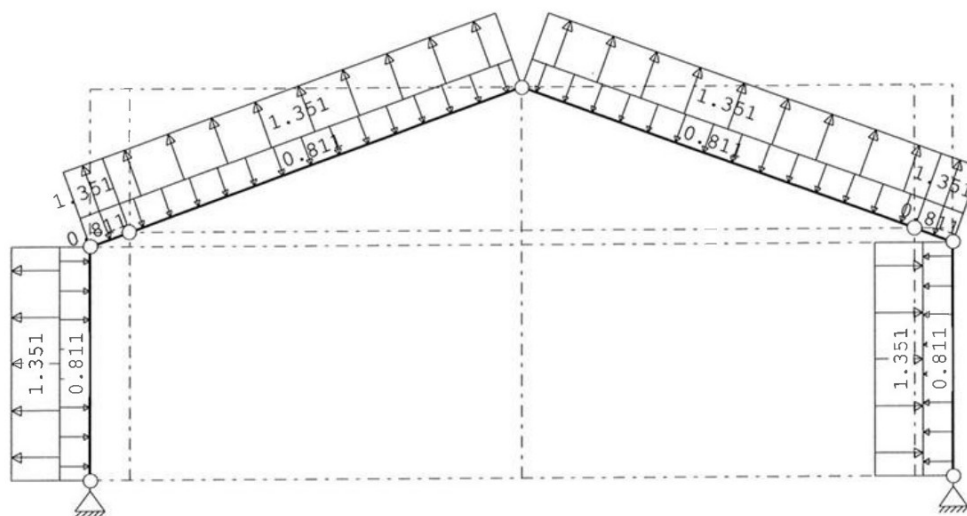
**STAAFBELASTINGEN**

B.G:19 Wind loodrecht overdruk A

| Staal Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|--------------|-------|--------|------|-------|-------|----------|----------|----------|
| 1 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 1:QZLokaal | Qw13 | 0.46 | 0.46 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 1:QZLokaal | Qw14 | 1.86 | 1.86 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 1:QZLokaal | Qw13 | 0.46 | 0.46 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 1:QZLokaal | Qw14 | 1.86 | 1.86 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 1:QZLokaal | Qw15 | 1.80 | 1.80 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 1:QZLokaal | Qw15 | 1.80 | 1.80 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 1:QZLokaal | Qw15 | 1.80 | 1.80 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 1:QZLokaal | Qw15 | 1.80 | 1.80 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:20 Wind loodrecht onderdruk B

**STAAFBELASTINGEN**

B.G:20 Wind loodrecht onderdruk B

| Staal Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|--------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 2 t/m 7

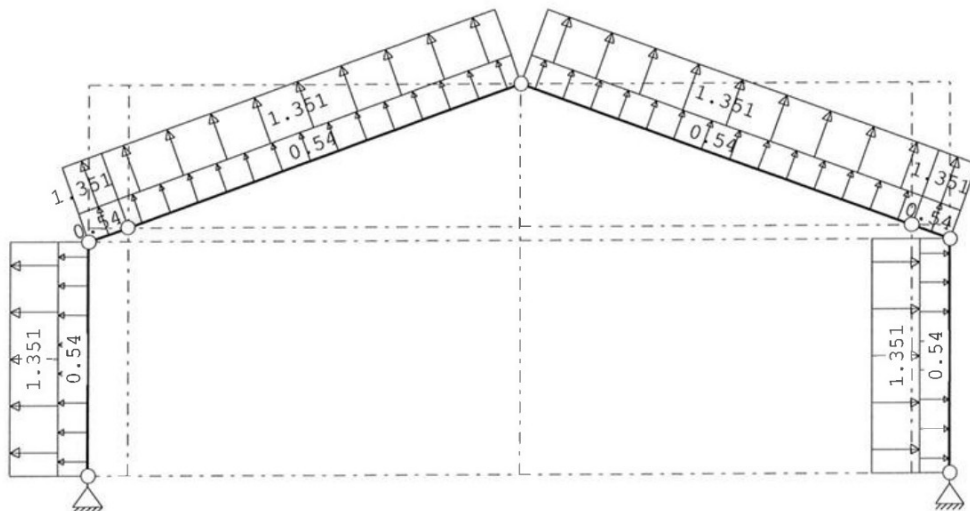
STAAFBELASTINGEN

B.G:20 Wind loodrecht onderdruk B

| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 6 | 1:QZLokaal | Qw1 | -0.81 | -0.81 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw16 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw16 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw17 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw17 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw17 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw17 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:21 Wind loodrecht overdruk B

**STAAFBELASTINGEN**

B.G:21 Wind loodrecht overdruk B

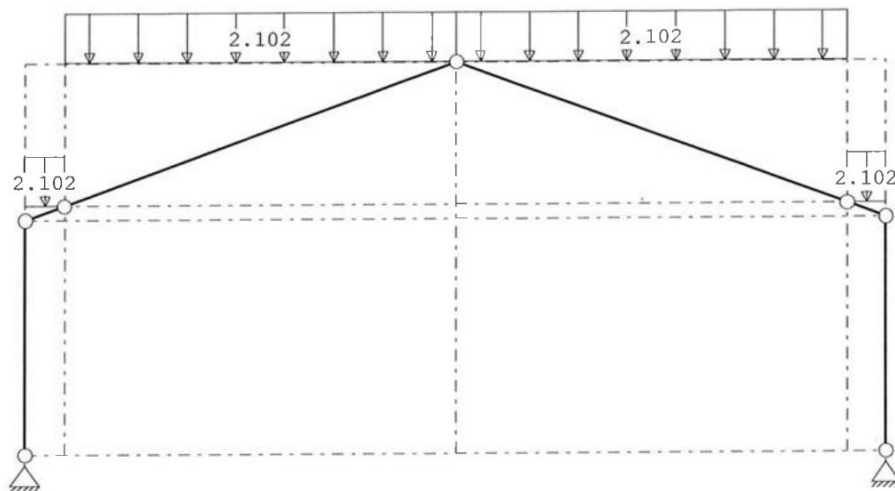
| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw9 | 0.54 | 0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw16 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw16 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw17 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw17 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw17 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw17 | 1.35 | 1.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 2 t/m 7

BELASTINGEN

B.G:22 Sneeuw A

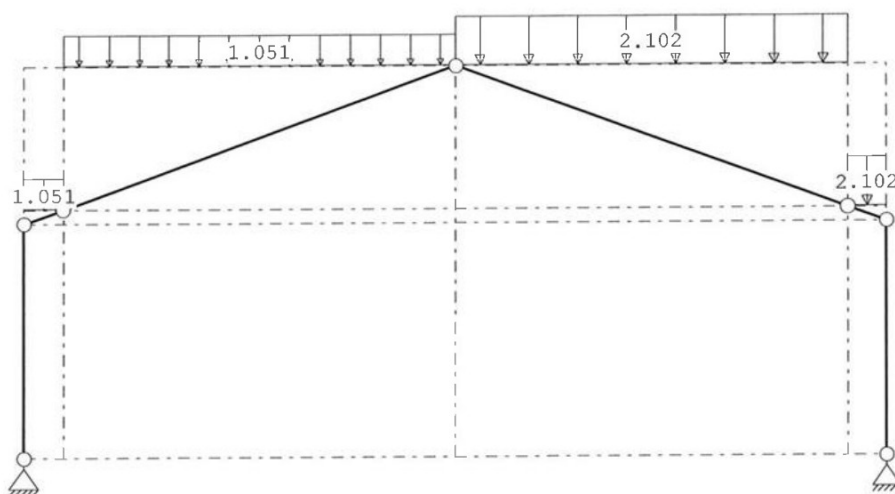
**STAAFBELASTINGEN**

B.G:22 Sneeuw A

| Staat | Type | Index | q1/p/m | q2 | A | B | Ψ_0 | Ψ_1 | Ψ_2 |
|-------|-------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 2 | 3:QZgeProj. | Qs1 | -2.10 | -2.10 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 3:QZgeProj. | Qs2 | -2.10 | -2.10 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 3:QZgeProj. | Qs2 | -2.10 | -2.10 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 3:QZgeProj. | Qs1 | -2.10 | -2.10 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:23 Sneeuw B

**STAAFBELASTINGEN**

B.G:23 Sneeuw B

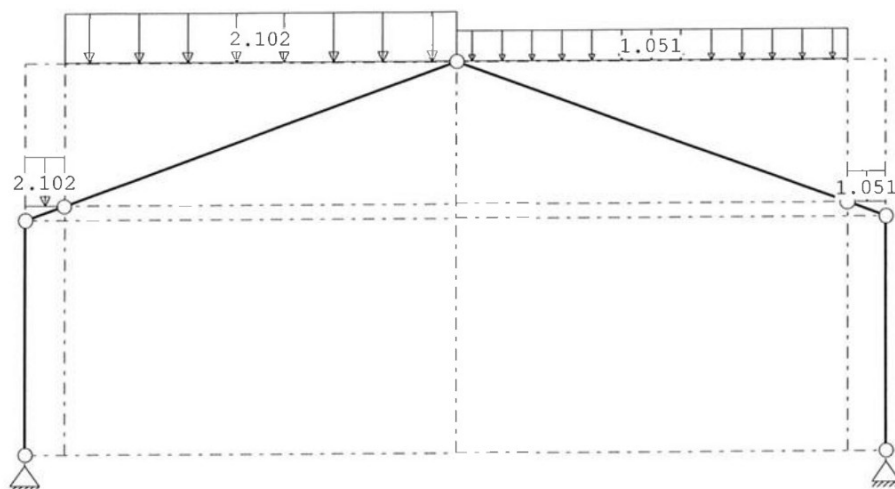
| Staat | Type | Index | q1/p/m | q2 | A | B | Ψ_0 | Ψ_1 | Ψ_2 |
|-------|-------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 2 | 3:QZgeProj. | Qs3 | -1.05 | -1.05 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 3:QZgeProj. | Qs4 | -1.05 | -1.05 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 3:QZgeProj. | Qs2 | -2.10 | -2.10 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 3:QZgeProj. | Qs1 | -2.10 | -2.10 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel.....: spant as 2 t/m 7

BELASTINGEN

B.G:24 Sneeuw C

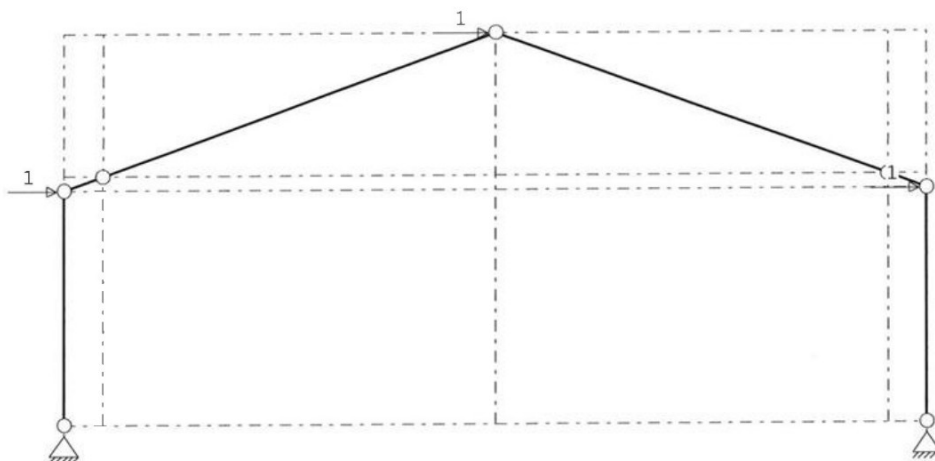
**STAAFBELASTINGEN**

B.G:24 Sneeuw C

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|-------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 2 | 3:QZgeProj. | Qs1 | -2.10 | -2.10 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 3:QZgeProj. | Qs2 | -2.10 | -2.10 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 3:QZgeProj. | Qs4 | -1.05 | -1.05 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 3:QZgeProj. | Qs3 | -1.05 | -1.05 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:25 Knik

**KNOOPBELASTINGEN**

B.G:25 Knik

| Last | Knoop | Richting | waarde | ψ_0 | ψ_1 | ψ_2 |
|------|-------|----------|--------|----------|----------|----------|
| 1 | 2 | X | 1.000 | | | |
| 2 | 4 | X | 1.000 | | | |
| 3 | 6 | X | 1.000 | | | |

BELASTINGCOMBINATIES

| BC | Type | | | |
|----|-------|------|-----------|-----------|
| 1 | Fund. | 1.22 | $G_{k,1}$ | |
| 2 | Fund. | 0.90 | $G_{k,1}$ | |
| 3 | Fund. | 1.08 | $G_{k,1}$ | $Q_{k,2}$ |
| 4 | Fund. | 1.08 | $G_{k,1}$ | $Q_{k,3}$ |
| 5 | Fund. | 1.08 | $G_{k,1}$ | $Q_{k,4}$ |
| 6 | Fund. | 1.08 | $G_{k,1}$ | $Q_{k,5}$ |
| 7 | Fund. | 1.08 | $G_{k,1}$ | $Q_{k,6}$ |
| 8 | Fund. | 1.08 | $G_{k,1}$ | $Q_{k,7}$ |
| 9 | Fund. | 1.08 | $G_{k,1}$ | $Q_{k,8}$ |
| 10 | Fund. | 1.08 | $G_{k,1}$ | $Q_{k,9}$ |

Project.....: 14811

Onderdeel....: spant as 2 t/m 7

BELASTINGCOMBINATIES

BC Type

| | | | | | |
|----------|------|-----------|---|------|------------------|
| 11 Fund. | 1.08 | $G_{k,1}$ | + | 1.35 | $Q_{k,10}$ |
| 12 Fund. | 1.08 | $G_{k,1}$ | + | 1.35 | $Q_{k,11}$ |
| 13 Fund. | 1.08 | $G_{k,1}$ | + | 1.35 | $Q_{k,12}$ |
| 14 Fund. | 1.08 | $G_{k,1}$ | + | 1.35 | $Q_{k,13}$ |
| 15 Fund. | 1.08 | $G_{k,1}$ | + | 1.35 | $Q_{k,14}$ |
| 16 Fund. | 1.08 | $G_{k,1}$ | + | 1.35 | $Q_{k,15}$ |
| 17 Fund. | 1.08 | $G_{k,1}$ | + | 1.35 | $Q_{k,16}$ |
| 18 Fund. | 1.08 | $G_{k,1}$ | + | 1.35 | $Q_{k,17}$ |
| 19 Fund. | 1.08 | $G_{k,1}$ | + | 1.35 | $Q_{k,18}$ |
| 20 Fund. | 1.08 | $G_{k,1}$ | + | 1.35 | $Q_{k,19}$ |
| 21 Fund. | 1.08 | $G_{k,1}$ | + | 1.35 | $Q_{k,20}$ |
| 22 Fund. | 1.08 | $G_{k,1}$ | + | 1.35 | $Q_{k,21}$ |
| 23 Fund. | 1.08 | $G_{k,1}$ | + | 1.35 | $Q_{k,22}$ |
| 24 Fund. | 1.08 | $G_{k,1}$ | + | 1.35 | $Q_{k,23}$ |
| 25 Fund. | 1.08 | $G_{k,1}$ | + | 1.35 | $Q_{k,24}$ |
| 26 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,2}$ |
| 27 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,3}$ |
| 28 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,4}$ |
| 29 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,5}$ |
| 30 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,6}$ |
| 31 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,7}$ |
| 32 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,8}$ |
| 33 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,9}$ |
| 34 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,10}$ |
| 35 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,11}$ |
| 36 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,12}$ |
| 37 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,13}$ |
| 38 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,14}$ |
| 39 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,15}$ |
| 40 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,16}$ |
| 41 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,17}$ |
| 42 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,18}$ |
| 43 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,19}$ |
| 44 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,20}$ |
| 45 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,21}$ |
| 46 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,22}$ |
| 47 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,23}$ |
| 48 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 | $Q_{k,24}$ |
| 49 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,2}$ |
| 50 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,3}$ |
| 51 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,4}$ |
| 52 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,5}$ |
| 53 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,6}$ |
| 54 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,7}$ |
| 55 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,8}$ |
| 56 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,9}$ |
| 57 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,10}$ |
| 58 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,11}$ |
| 59 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,12}$ |
| 60 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,13}$ |
| 61 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,14}$ |
| 62 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,15}$ |
| 63 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,16}$ |
| 64 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,17}$ |
| 65 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,18}$ |
| 66 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,19}$ |
| 67 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,20}$ |
| 68 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,21}$ |
| 69 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,22}$ |
| 70 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,23}$ |
| 71 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,24}$ |
| 72 Quas. | 1.00 | $G_{k,1}$ | | | |
| 73 Freq. | 1.00 | $G_{k,1}$ | | | |
| 74 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,2}$ |
| 75 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,3}$ |
| 76 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,4}$ |
| 77 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,5}$ |
| 78 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,6}$ |
| 79 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,7}$ |

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Onderdeel....: spant as 2 t/m 7

BELASTINGCOMBINATIES

| BC Type | | | | |
|----------|------|-----------|---|------------------------|
| 80 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,8}$ |
| 81 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,9}$ |
| 82 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,10}$ |
| 83 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,11}$ |
| 84 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,12}$ |
| 85 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,13}$ |
| 86 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,14}$ |
| 87 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,15}$ |
| 88 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,16}$ |
| 89 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,17}$ |
| 90 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,18}$ |
| 91 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,19}$ |
| 92 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,20}$ |
| 93 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,21}$ |
| 94 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,22}$ |
| 95 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,23}$ |
| 96 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,24}$ |
| 97 Blij. | 1.00 | $G_{k,1}$ | | |

GUNSTIGE WERKING PERMANENTE BELASTINGEN

| BC Staven met gunstige werking | |
|--|--|
| 1 Geen | |
| 2 Alle staven de factor:0.90 | |
| 3 Geen | |
| 4 Geen | |
| 5 Geen | |
| 6 Geen | |
| 7 Geen | |
| 8 Geen | |
| 9 Geen | |
| 10 Geen | |
| 11 Geen | |
| 12 Geen | |
| 13 Geen | |
| 14 Geen | |
| 15 Geen | |
| 16 Geen | |
| 17 Geen | |
| 18 Geen | |
| 19 Geen | |
| 20 Geen | |
| 21 Geen | |
| 22 Geen | |
| 23 Geen | |
| 24 Geen | |
| 25 Geen | |
| 26 Alle staven de factor:0.90 | |
| 27 Alle staven de factor:0.90 | |
| 28 Alle staven de factor:0.90 | |
| 29 Alle staven de factor:0.90 | |
| 30 Alle staven de factor:0.90 | |
| 31 Alle staven de factor:0.90 | |
| 32 Alle staven de factor:0.90 | |
| 33 Alle staven de factor:0.90 | |
| 34 Alle staven de factor:0.90 | |
| 35 Alle staven de factor:0.90 | |
| 36 Alle staven de factor:0.90 | |
| 37 Alle staven de factor:0.90 | |
| 38 Alle staven de factor:0.90 | |
| 39 XXXXXXXXXX de factor:0.90 | |
| 40 XXXXXXXXXX de factor:0.90 | |
| 41 Alle staven de factor:0.90 | |
| 42 Alle staven de factor:0.90 | |
| 43 Alle staven de factor:0.90 | |
| 44 Alle staven de factor:0.90 | |
| 45 Alle staven de factor:0.90 | |
| 46 Alle staven de factor:0.90 | |

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Onderdeel....: spant as 2 t/m 7

GUNSTIGE WERKING PERMANENTE BELASTINGEN

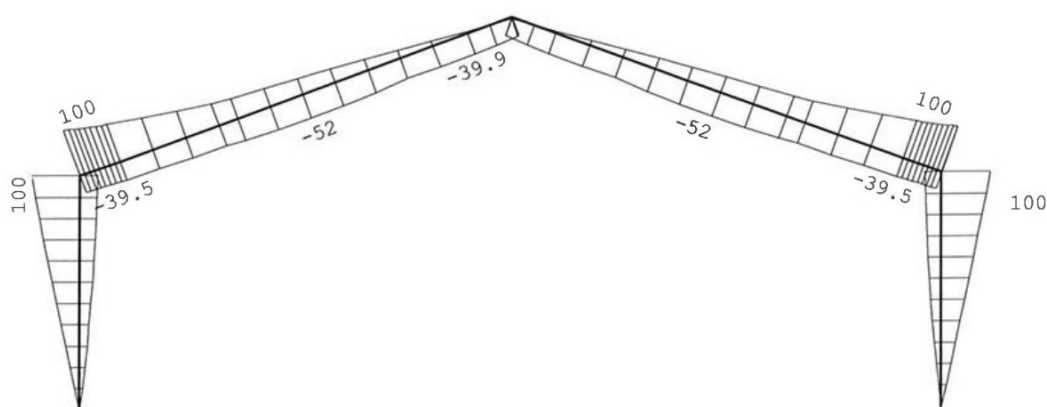
BC Staven met gunstige werking

47 Alle staven de factor:0.90

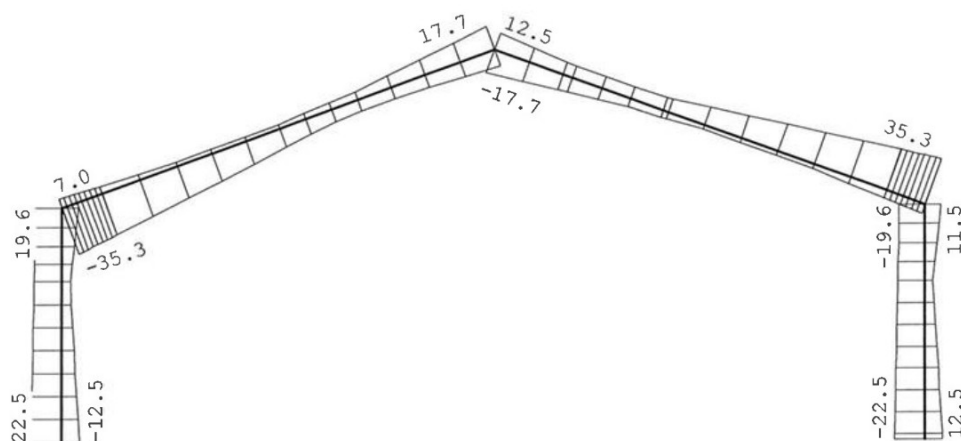
48 Alle staven de factor:0.90

OMHULLENDE VAN DE FUNDAMENTELE COMBINATIES**MOMENTEN**

Fundamentele combinatie

**DWARSKRACHTEN**

Fundamentele combinatie

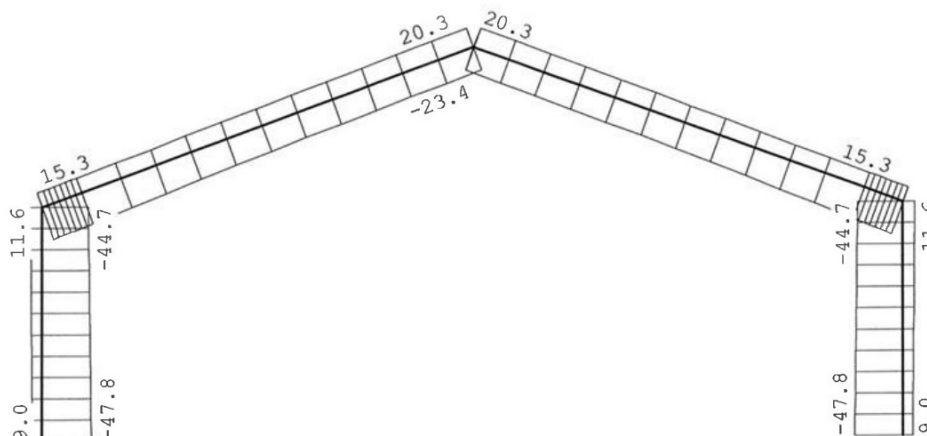


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NORMAALKRACHTEN

Fundamentele combinatie



STAALPROFIELEN - ALGEMENE GEGEVENS

| | | |
|--------------|-----------------------------------|-------------|
| Stabiliteit: | Classificatie gehele constructie: | Ongeschoord |
|--------------|-----------------------------------|-------------|

Belastinggeval m.b.t. bepaling kniklengte: 25=Knik

Aanpassing inkl. parameter C : Steunpunten

Tweede-orde-effect:

Aan te houden verhouding $n/(n-1)$

voor steunmomenten en verplaatsingen: 1.10

Doorbuiging en verplaatsing:

Aantal bouwlagen:

Gebouwtype: Industrieel

Toel. horiz. verplaatsing gehele gebouw: $h/150$

Kleinste gevelhoogte [m]: 4.8

MATERIAAL

| Mat nr. | Profielnaam | Vloeis p. [N/mm ²] | Productie methode | Min. drsn. klasse |
|------------|-------------|-----------------------------------|----------------------|----------------------|
| 1 | IPE330 | 235 | Gewalst | 1 |
| 2 | IPE300 | 235 | Gewalst | 1 |
| 3 | HEA240 | 235 | Gewalst | 1 |

Partiële veiligheidsfactoren:

| | | | | | |
|-----------|---|------|-----------|---|------|
| Gamma M;0 | : | 1.00 | Gamma M;1 | : | 1.00 |
|-----------|---|------|-----------|---|------|

KNIKSTABILITEIT

| KNIKSTABILITEIT | | | | Extra | | Extra | |
|-----------------|------------------|-------------------------|---------------------|-----------------|-------------------------|---------------------|-----------------|
| Staafl | l_{sys} [m] | Classif. y sterke as | $l_{knik,y}$ [m] | aanp. y [kN] | Classif. z zwakke as | $l_{knik,z}$ [m] | aanp. z [kN] |
| 1 | 4.800 | Ongeschoord | 12.981 | 0.0 | Geschoord | 4.800 | 0.0 |
| 2 | 0.851 | Ongeschoord | 4.093 | 0.0 | Geschoord | 0.851 | 0.0 |
| 3 | 8.556 | Ongeschoord | 21.918 | 0.0 | Geschoord | 4.790* | 0.0 |
| 4 | 8.556 | Ongeschoord | 21.918 | 0.0 | Geschoord | 4.790* | 0.0 |
| 5 | 0.851 | Ongeschoord | 4.093 | 0.0 | Geschoord | 0.851 | 0.0 |
| 6 | 4.800 | Ongeschoord | 12.981 | 0.0 | Geschoord | 4.800 | 0.0 |

* Door gebruiker gedefinieerde kniklengte

KIPSTABILITEIT

| Staaft | Plts. aangr. | | l gaffel [m] | Kipsteunafstanden [m] |
|--------|-----------------|--------|-----------------|--------------------------|
| 1 | 1.0*h | boven: | 4.80 | 4.800 |
| | | onder: | 4.80 | 4.800 |
| 2 | 1.0*h | boven: | 0.85 | 0,851 |
| | | onder: | 0.85 | 0,851 |
| 3 | 1.0*h | boven: | 8.56 | 3,766;4,79 |
| | | onder: | 8.56 | 8,556 |
| 4 | 1.0*h | boven: | 8.56 | 4,79;3,766 |
| | | onder: | 8.56 | 8,5559 |
| 5 | 1.0*h | boven: | 0.85 | 0,851 |
| | | onder: | 0.85 | 0,851 |

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KIPSTABILITEIT

| Staaf | Plts. aanr. | l gaffel | Kipsteunafstanden | |
|-------|----------------|----------|-------------------|-------|
| | | | [m] | [m] |
| 6 | 1.0*h | boven: | 4.80 | 4.800 |
| | | onder: | 4.80 | 4.800 |

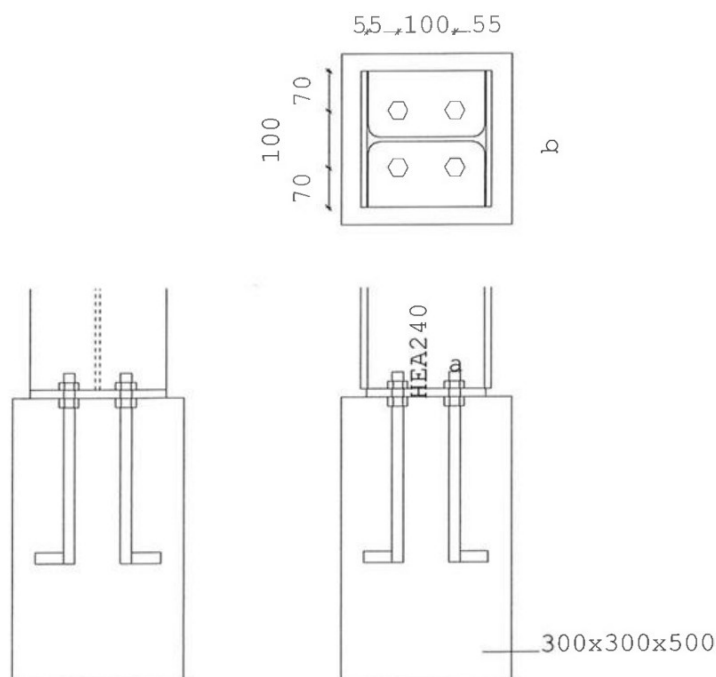
TOETSING SPANNINGEN

| Staaf | Mat | BC | Sit | Kl | Plaats | Norm | Artikel | Formule | Hoogste toetsing | Opm. |
|-------|-----|----|-----|----|--------|---------|---------|---------|---------------------------|------|
| nr. | | | | | | | | | U.C. [N/mm ²] | |
| 1 | 3 | 15 | 1 | 1 | Einde | EN3-1-1 | 6.2.10 | (6.31) | 0.628 | 148 |
| 2 | 1 | 15 | 1 | 1 | Staaf | EN3-1-1 | 6.3.1.1 | T(6.46) | 0.618 | 145 |
| 3 | 2 | 15 | 1 | 1 | Staaf | EN3-1-1 | 6.3.3 | (6.61) | 0.935 | 220 |
| 4 | 2 | 7 | 1 | 1 | Staaf | EN3-1-1 | 6.3.3 | (6.61) | 0.935 | 220 |
| 5 | 1 | 7 | 1 | 1 | Staaf | EN3-1-1 | 6.3.1.1 | T(6.46) | 0.618 | 145 |
| 6 | 3 | 7 | 1 | 1 | Begin | EN3-1-1 | 6.2.10 | (6.31) | 0.628 | 148 |

→ profielen voldoen!

VERBINDINGEN - BASISGEGEVENS**Naamloos**

| | |
|---|--------------------|
| Verbindingstype | Voetplaat |
| Rekenwaarde vloeispanning $f_{y;d}$ platen | 235 |
| Hoek basis doorgaand profiel t.o.v. globale as (linksom positief) | 0 |
| Classificatie constructie | Ongeschoord |
| Rekenmodel gebruikt bij de mechanicaresultaten | 1e orde elastisch |
| Statisch systeem | Statisch onbepaald |
| Verbinding t.p.v. plastisch scharnier | Nee |
| Alternatieve methode T-stuk volgens EN 1993-1-8 tabel 6.2 | Ja |
| Is poer gewapend? | Ja |

**LEGENDA**

| Onderdeel | Afmetingen | Aantal Lassen (d=dubb. hoeklas) |
|-------------|------------|---|
| a Voetplaat | 240x210-15 | 1 $a_w=4d$ $a_f=6d$ |
| b Anker | 4*M20 4.6 | 1 $Lb1=320$ $r=50.0$ $Lb2=100$ $Lb_{tot}=480$ |

PROFIELEN

| | Naam | Lengte | Prod.meth. | Exc | Hoek | $f_{y;d}$ |
|-------------|--------|--------|------------|-----|------|-----------|
| Kolom boven | HEA240 | 4800 | Gewalst | 0 | 0 | 235 |

PROFIELGEGEVENS [mm]

| PROFIELGEGEVENEN [mm] | | | | | Gewalst | Klasse 1 | HEA240 | | |
|-----------------------|-------|------------------|-------|-----|---------|-------------------|---------|------------------|------------|
| h : | 230.0 | i _y : | 100.5 | A : | 7680.0 | W _{ey} : | 675.0E3 | I _y : | 7763.0E4 |
| b : | 240.0 | i _z : | 60.0 | | | W _{ez} : | 230.7E3 | I _z : | 2769.0E4 |
| t _w : | 7.5 | r : | 21.0 | | | W _{py} : | 744.0E3 | I _t : | 42.1E4 |
| t _f : | 12.0 | | | | | W _{pz} : | 351.6E3 | I _w : | 328485.9E6 |

PLATEN

| | Plaats | h | b | t | Exc | a_w | a_f | a_e | Hoek | Las | $f_{y;d}$ |
|-----------|--------|-----|-----|------|-----|------------------|------------------|-------|------|-----|-----------|
| Voetplaat | Rechts | 210 | 240 | 15.0 | 0 | $\Delta\Delta 4$ | $\Delta\Delta 6$ | | | | 235 |

Δ = Enkele stompe of hoeklas of dubbele hoeklas met slechts 1 las effectief
 $\Delta\Delta$ = Dubbele hoeklas

| KRACHTEN | Normaalkr. | Dwarskr. | Moment | MSteun | DSteun | Kn:1 | BC:1 | Sit:1 |
|----------|------------|----------|--------|--------|--------|------|------|-------|
| Boven | 25.49 | -10.51 | 0.00 | 0.00 | 0.00 | | | |

RESULTATEN DRUKZONE

Kn:1 BC:1 Sit:1

| | | | | | | | | |
|-------------------------------|-----------------|---|----------|--|--|----------|--|--|
| Vergrotingsfactor | k_c | : | 1.34 | | | | | |
| Rekenwaarde druksterkte | $f_{c,Rd}$ | : | 13.33 | | | | | |
| Rekenwaarde druksterkte | f_{jd} | : | 11.88 | | | | | |
| Vorm van de indrukkingsprent | | : | I-vormig | | | 40 * 240 | | |
| | | : | | | | 128 * 84 | | |
| | | : | | | | 40 * 240 | | |
| | | : | | | | 30351 | | |
| Max. drukoppervlakte | | : | | | | | | |
| Spreidingsmaat // flenzen | l_s | : | 38.52 | | | | | |
| Spreidingsmaat // lijf | $l_{s, lijf}$ | : | 38.52 | | | | | |
| Rek meest gedrukte zijde | ϵ_{sc} | : | 0.00007 | | | | | |
| Spanning meest gedrukte zijde | σ_{sc} | : | 0.84 | | | | | |
| Rek minst gedrukte zijde | ϵ_{st} | : | 0.00007 | | | | | N.B. Er is niet gerekend op druk in de ankers. |
| Spanning minst gedrukte zijde | σ_{st} | : | 0.84 | | | | | |
| Momentcapaciteit | | : | 17.19 | | | | | |
| Moment tbv. lassen | | : | 139.87 | | | | | gebaseerd op 0.8*Mpld |
| Max. opneembare dwarskracht | | : | 120.41 | | | | | Crit.: Afsch.cap.ankers |
| Trekcapaciteit ankerrij | | : | 119.85 | | | | | |

RESULTATEN VERANKERINGSLENGTE

$$l_{b,tot} = l_{b,aanw} + t_{moer} + t_{pl} + t_{voeg} = 270 + 16 + 15 + 0 = 301 \text{ mm (druk)}$$

$$\eta_1 = 1.00 \quad f_{aanh.} = 2.0 \text{ (aanhechttingsfactor)}$$

$$\eta_2 = 1.00 \quad f_{vergr.} = 1.7 \text{ (vergrotingsfactor)}$$

$$\sigma_{sd} = 0.0 \text{ N/mm}^2$$

$$l_{bd} = f_{aanh.} * \alpha_1 * \alpha_2 * \alpha_3 * \alpha_4 * l_{b,rgd}$$

$$= 2.0 * 1.00 * 1.000 * 1.0 * 1.0 * 0 = 0 \text{ mm}$$

$$l_{b,min} = 200 \text{ mm}$$

TUSSENRESULTATEN STIJFHEID

Kn:1 BC:1 Sit:1

| bij $M_{v,Rd}$ voor boutrij binnen trekflens (h_1) | | | | Boven |
|--|------------------------|-------|---------|----------|
| i | Onderdeel | k_i | μ_i | Bijdrage |
| 13 | Drukzone beton | 2.759 | 2.988 | 37% |
| 15 | Buiging/trek voetplaat | 7.305 | 2.988 | 14% |
| 16 | Trekzone ankerbout | 2.140 | 2.988 | 48% |

STIJFHEID

Kn:1 BC:1 Sit:1

Maatgevend criterium: Trekzone ankerbout

Boven

| Verh. | $M_{v,Rd}/\text{Verh.}$ | Arm | S_j | ϕ |
|-------|-------------------------|-----|-------------|---------|
| 1.0 | 17.19 | 122 | 1126 | 0.01527 |
| 1.2 | 14.33 | 122 | 1842 | 0.00778 |
| 1.5 | 11.46 | 122 | 3365 | 0.00341 |

Bij een moment $M_{v,Ed}=0.00$ geldt een stijfheid $S_j=3365$.

De in mechanica gebruikte stijfheid is oneindig (als in NDM).

TOETSING VOETPLAAT-VERBINDING

Kn:1 BC:1 Sit:1

| Artikel | | | | Toetsing |
|-----------|------------------------|---|---------|--------------|
| 6.2.6.5 | $m_{Ed} / m_{pl,Rd}$ | = | 623 / | 13219 = 0.05 |
| 6.2.6.5 | σ_{Ed} / f_{jd} | = | 0.84 / | 11.88 = 0.07 |
| EN2 8.4.4 | $L_{bd} / L_{b,aanw}$ | = | 200.0 / | 270.0 = 0.74 |

TOETSING PROFIELEN EN AFSCHUIVING

| Plaats | Profiel | Artikel | Formule | Kn:1 BC:1 Sit:1 Toetsing |
|--------|---------|---------|----------------|--------------------------|
| Boven | HEA240 | EN3-1-1 | 6.2.4 (6.9) | 0.01 |
| | | EN3-1-1 | 6.2.6 (6.17) | 0.03 |
| | | EN3-1-1 | 6.2.1 N+D | 0.04 |
| | | EN3-1-8 | 6.2.2(7) (6.2) | 0.09 |

MOMENTCLASSIFICATIE EN3-1-8 art.5.2.3

Kn:1 BC:1 Sit:1

| Plaats | $M_{v,Rd}$ | $M_{v,Rd,kolom}$ | Classificatie |
|--------|------------|------------------|---------------|
| Boven | 17.19 | 174.84 | Scharnierend |

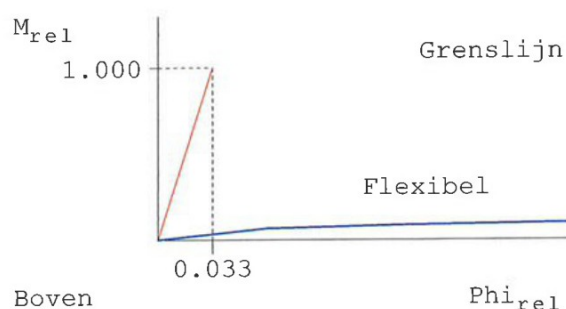
STIJFHEIDSClassificatie EN3-1-8 art.5.2.2

Kn:1 BC:1 Sit:1

| Plaats | Punt | Grenswaarden | | Actuele waarden | | Classificatie |
|--------|------|--------------|-----------|-----------------|-----------|---------------|
| | | Φ_{rel} | m_{rel} | Φ_{rel} | m_{rel} | |
| Boven | 1 | 0.000 | 0.000 | 0.000 | 0.000 | Flexibel |
| | 2 | 0.033 | 1.000 | 0.066 | 0.066 | |
| | 3 | 0.033 | 1.000 | 0.151 | 0.082 | |
| | 4 | 0.033 | 1.000 | 0.297 | 0.098 | |

M-PHI DIAGRAM EN3-1-8 fig. 5.4 Ongeschoord

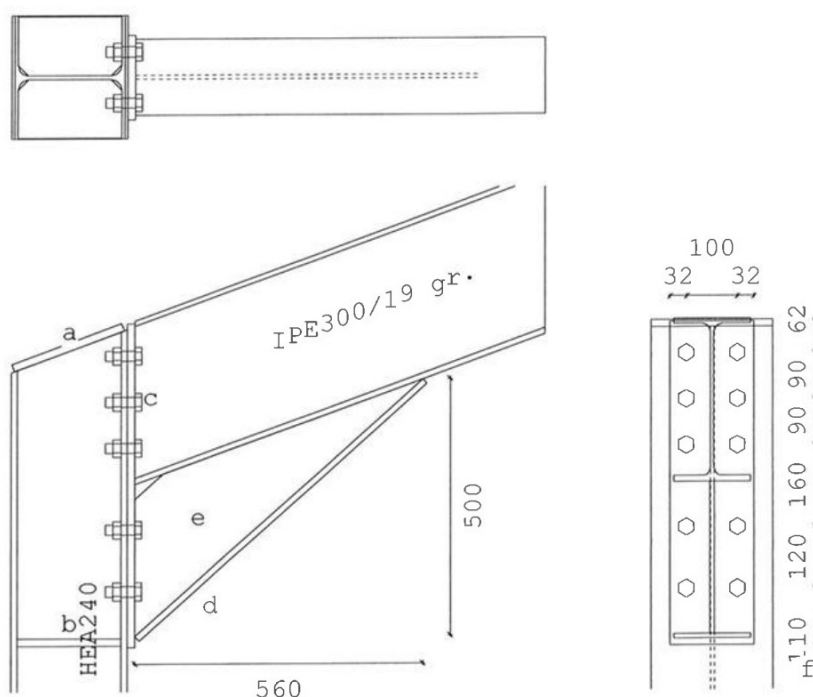
Kn:1 BC:1 Sit:1

**CONTROLES**

| Onderdeel | Zijde | Rij | Item | Ernst | Art./ (Frm.) | Kn:1 BC:1 Sit:1 Min. Waarde | Max. |
|---------------|-------|-----|-------------------------|-------|--------------|-----------------------------|--------|
| Anker | Boven | | Lengte | EN2 | 8.4.4 | 200.0 | 270.0 |
| | Boven | 1 | HOH-afstand p1 | 1-8 | 3.5(1) | 52.8 | 100.0 |
| | Boven | 1 | HOH-afstand p2 | 1-8 | 3.5(1) | 60.4 | 100.0 |
| | Boven | 2 | HOH-afstand p2 | 1-8 | 3.5(1) | 60.4 | 100.0 |
| Anker (Plaat) | Boven | 1 | Eindafstand e1 | 1-8 | 3.5(1) | 28.8 | 55.0 |
| | Boven | 2 | Eindafstand e1 | 1-8 | 3.5(1) | 28.8 | 55.0 |
| Voeg | Boven | | Betonsterkte | 1-8 | 6.2.5 | 4.0 | 20.0 |
| | Boven | | Dikte | 1-8 | 6.2.5 | 0.0 | 42.0 |
| Voetplaat | Boven | | Dikte | 1-8 | 6.2.5 | 4.0 | 15.0 |
| | Boven | | Flenslas $\Delta\Delta$ | 0.8* | M_{pld} | 4.4 | 6.0 |
| | Boven | | Lijflas $\Delta\Delta$ | 0.8* | M_{pld} | 3.0 | 4.0 |
| | Boven | | Positie boven | | | 105.0 | 109.5 |
| | Boven | | Positie onder | | | -109.5 | -105.0 |

VERBINDINGEN - BASISGEGEVENS**Naamloos**

| | |
|---|--------------------|
| Verbindingstype | Knie Gebout |
| Rekenwaarde vloeispanning $f_{y;d}$ platen | 235 |
| Hoek basis doorgaand profiel t.o.v. globale as (linksom positief) | 270 |
| Classificatie constructie | Ongeschoord |
| Classificatie lijf doorgaand profiel | Geschoord |
| Afschuiving kolomlijf actief? | Ja |
| Rekenmodel gebruikt bij de mechanicaresultaten | 1e orde elastisch |
| Statisch systeem | Statisch onbepaald |
| Verbinding t.p.v. plastisch scharnier | Ja |
| Alternatieve methode T-stuk volgens EN 1993-1-8 tabel 6.2 | Ja |

**LEGENDA**

| Onderdeel | Afmetingen | Aantal | Lassen (d=dubb. hoeklas) |
|----------------|------------|--------|--------------------------|
| a Afdekplaat | 240x230-15 | 1 | aw=4d af=6d |
| b Kolomschot | 115x205-15 | 1 | aw=6d af=6d |
| c Kopplaat | 165x632-15 | 1 | aw=4d af=5d |
| d Consoleflens | 150x751-12 | 1 | afe=10 aff=22 afw=4d |
| e Consolelijf | 500x560-8 | 1 | awe=4d awf=4d |
| f Bout | 10*M20 8.8 | 1 | |

PROFIELEN

| | Naam | Lengte | Prod.meth. | Exc | Hoek | $f_{y;d}$ |
|---------------|--------|--------|------------|-----|------|-----------|
| Kolom | HEA240 | 4800 | Gewalst | 0 | 270 | 235 |
| Rechterlijger | IPE300 | 851 | Gewalst | 39 | 19 | 235 |
| Kolom boven | | 140 | | | | |

Verbindingen release 6.03b

30 mei 2023

PROFIELGEGEVENS [mm]**Gewalst Klasse 1 HEA240**

| | | | | | | | | | |
|------------------|-------|------------------|-------|-----|--------|-------------------|---------|------------------|------------|
| h : | 230.0 | i _y : | 100.5 | A : | 7680.0 | W _{ey} : | 675.0E3 | I _y : | 7763.0E4 |
| b : | 240.0 | i _z : | 60.0 | | | W _{ez} : | 230.7E3 | I _z : | 2769.0E4 |
| t _w : | 7.5 | r : | 21.0 | | | W _{py} : | 744.0E3 | I _t : | 42.1E4 |
| t _f : | 12.0 | | | | | W _{pz} : | 351.6E3 | I _w : | 328485.9E6 |

PROFIELGEGEVENS [mm]**Gewalst Klasse 1 IPE300**

| | | | | | | | | | |
|------------------|-------|------------------|-------|-----|--------|-------------------|---------|------------------|------------|
| h : | 300.0 | i _y : | 124.6 | A : | 5380.0 | W _{ey} : | 557.0E3 | I _y : | 8356.0E4 |
| b : | 150.0 | i _z : | 33.5 | | | W _{ez} : | 80.5E3 | I _z : | 604.0E4 |
| t _w : | 7.1 | r : | 15.0 | | | W _{py} : | 628.4E3 | I _t : | 19.9E4 |
| t _f : | 10.7 | | | | | W _{pz} : | 125.2E3 | I _w : | 125934.1E6 |

| PLATEN | Plaats | h | b | t | Exc | a _w | a _f | a _e | Hoek | Las | f _{y;d} |
|--------------|--------|-----|-----|----------------------------------|------|----------------|----------------|----------------|------|-----|------------------|
| Kopplaat | Rechts | 632 | 165 | 15.0 | -124 | ΔΔ4 | ΔΔ5 | | | | 235 |
| Consolelijf | R-O | 500 | 560 | 8.0 | | | ΔΔ4 | ΔΔ4 | | | 235 |
| | | 297 | 596 | (ingevoerde waarden voor h en l) | | | | | | | |
| Consoleflens | R-O | | 150 | 12.0 | | | ΔΔ2 | ΔΔ10 | | | 235 |
| Kolomschot | Onder | 205 | 115 | 15.0 | -430 | ΔΔ6 | ΔΔ6 | | 0 | | 235 |
| Afdekplaat | | 230 | 240 | 15.0 | 0 | ΔΔ4 | ΔΔ6 | | 20 | | 235 |

Δ = Enkele stompe of hoeklas of dubbele hoeklas met slechts 1 las effectief
ΔΔ = Dubbele hoeklas

KRACHTEN Normaalkr. Dwarskr. Moment MSteun DSteun Kn:6 BC:7 Sit:1

| | | | | | |
|--------|-------|--------|--------|------|-------|
| Onder | 35.66 | -18.89 | -99.08 | 9.91 | -1.89 |
| Rechts | 29.95 | 27.06 | 99.08 | 9.91 | 2.71 |

Rechts 17.97 38.21 99.08 T.o.v hoofdas verbinding

BEZWIJKKRACHTEN

Kn:6 BC:7 Sit:1

| Onderdeel | F _{Rd} | Formule | b _{eff} | Rechts |
|--------------------------|-----------------|----------|------------------|---------------------------------|
| Afschuiving kolomlijf | 306.98 | (6.7) | | Avc= 2514 omega=0.82 beta=1.00 |
| Druk kolomlijf | 947.96 | (6.9) | 203.0 | Drukpunt 14.95 |
| Plooi kolomlijf | 947.96 | | 203.0 | kwc=1.00 l _{rel} =0.76 |
| Drukzone ligger kopplaat | 461.74 | (6.21) | | |
| Grensmoment Mc console | | | | |
| Afsch. liggerlijf | 172.66 | frmb 3.2 | | Fsd LR profiel -162.7 |
| Plooi liggerlijf (mtg) | 143.05 | frmb 3.2 | 140.5 | Fsd profiel flens -406.7 |
| Vloei liggerlijf | 203.32 | frmb 3.2 | 140.5 | Fsd console 438.0 |
| Afsch. tgv. cons. | 195.07 | | | |
| Trek bout | 141.00 | | | |
| Trek boutrij | 282.01 | | | |

Let op: De normaalkracht is verwerkt in bovengenoemde bezwijkkrachten.

Dwarskrachtcapaciteiten:

| | | |
|--------------------------------|---------|-------|
| Stuik kolomflens | 1728.00 | (6.7) |
| Stuik kopplaat | 2080.24 | (6.7) |
| Afsch.cap. bouten na red. trek | 793.85 | (6.7) |

TUSSENRESULTATEN STIJFHEID

Kn:6 BC:7 Sit:1

| bij M _{v,Rd} voor boutrij binnen trekflens (h ₁) | | Rechts |
|---|--------------------------------|----------|
| i Onderdeel | k _i mu _i | Bijdrage |
| 1 Afschuifzone kolomlijf | 1.827 2.988 | 71% |
| 2 Drukzone kolomlijf | n.v.t. | |
| 3 Trekzone kolomlijf | n.v.t. | |
| 4 Trekzone kolomflens | 14.902 2.988 | 9% |
| 5 Trekzone kopplaat | 10.088 2.988 | 13% |
| 10 Trekzone bouten | 18.408 2.988 | 7% |

STIJFHEID

Kn:6 BC:7 Sit:1

Maatgevend criterium: Afschuifzone kolomlijf

Rechts

| Verh. | $M_{v,Rd}/Verh.$ | Arm | S_j | ϕ |
|-------|------------------|-----|--------------|---------|
| 1.0 | 160.63 | 523 | 24936 | 0.00644 |
| 1.2 | 133.85 | 523 | 40796 | 0.00328 |
| 1.5 | 107.08 | 523 | 74520 | 0.00144 |

Bij een moment $M_{v,Ed}=108.99$ geldt een stijfheid $S_j=72116$.

De in mechanica gebruikte stijfheid is oneindig (als in NDM).

TOETSING VERBINDING

Kn:6 BC:7 Sit:1

| Artikel | $M_{v,Ed}$ | $M_{v,Rd}$ | z | $V_{wp,Ed}$ | $V_{wp,Rd}$ | Toetsing |
|---------|------------|------------|-----|-------------|-------------|----------|
| 6.2.7.1 | 108.99 | 160.63 | | | | 0.68 |
| 6.2.6.1 | | | 523 | -20.78 | 306.98 | 0.07 |

Let op: Normaalkrachten in eindigende profielen zijn verwerkt in de bezwijk-
en/of de boutrijkrachten. De conservatieve toetsingsformule van
EN 1993-1-8 art. 6.2.7.1 (3) is niet gebruikt.

**Let op: Er dient nog te worden gecontroleerd of het moment in de
snede bij de console voldoet aan de momentcapaciteit M_c .**

TOETSING PROFIEL EN AFSCHUIVING

Kn:6 BC:7 Sit:1

| Plaats | Profiel | Artikel | Formule | Toetsing |
|--------|---------|---------|---------|--------------|
| Onder | HEA240 | EN3-1-1 | 6.2.10 | (6.31) 0.62 |
| | | EN3-1-1 | 6.2.8 | (6.30) 0.62 |
| | | EN3-1-1 | 6.2.5 | (6.12y) 0.62 |
| | | EN3-1-1 | 6.2.6 | (6.17) 0.06 |
| | | EN3-1-1 | 6.2.4 | (6.9) 0.02 |
| | | EN3-1-1 | 6.2.1 | N+D 0.08 |
| Rechts | IPE300 | EN3-1-1 | 6.2.10 | (6.31) 0.74 |
| | | EN3-1-1 | 6.2.8 | (6.30) 0.74 |
| | | EN3-1-1 | 6.2.5 | (6.12y) 0.74 |
| | | EN3-1-1 | 6.2.6 | (6.17) 0.09 |
| | | EN3-1-1 | 6.2.4 | (6.9) 0.02 |
| | | EN3-1-1 | 6.2.1 | N+D 0.11 |
| | | EN3-1-8 | T.3.4 | 0.05 |

MOMENTCLASSIFICATIE EN3-1-8 art.5.2.3

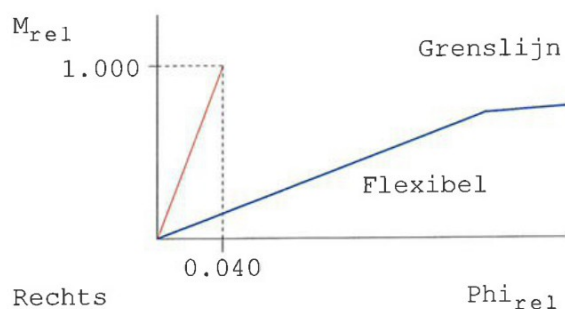
Kn:6 BC:7 Sit:1

| Plaats | $M_{v,Rd}$ | $M_{v,Rd,lijger}$ | Classificatie |
|--------|------------|-------------------|----------------|
| Rechts | 160.63 | 147.67 | Volledig sterk |

STIJFHEIDSCCLASSIFICATIE EN3-1-8 art.5.2.2

Kn:6 BC:7 Sit:1

| Plaats | Punt | Grenswaarden | | Actuele waarden | | Classificatie |
|--------|------|--------------|-----------|-----------------|-----------|---------------|
| | | Φ_{rel} | m_{rel} | Φ_{rel} | m_{rel} | |
| Rechts | 1 | 0.000 | 0.000 | 0.000 | 0.000 | Flexibel |
| | 2 | 0.040 | 1.000 | 0.201 | 0.725 | |
| | 3 | 0.040 | 1.000 | 0.458 | 0.906 | |
| | 4 | 0.040 | 1.000 | 0.899 | 1.088 | |

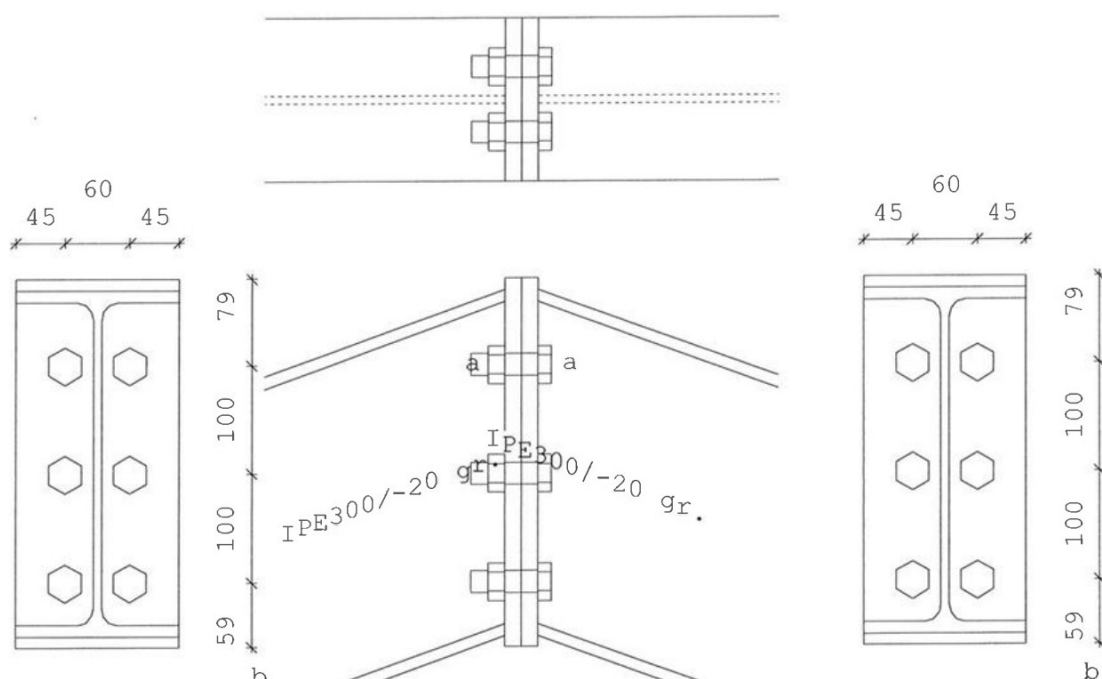
**CONTROLES**

Kn:6 BC:7 Sit:1

| Onderdeel | Zijde | Rij | Item | Ernst | Art./ (Frm.) | Min. | Waarde | Max. |
|--------------|--------|-----|-----------------|------------|--------------|-------|--------|-------|
| Afdekplaat | Rechts | | Dikte | 6.2.6.1 | | 10.7 | 15.0 | |
| | Rechts | | Dikte | frmb 5.2.a | | 4.7 | 15.0 | |
| | Rechts | | Flenslas ΔΔ | 1.0*Mpld | | 5.5 | 6.0 | |
| | Rechts | | Lengte | | | 224.2 | 230.0 | 249.8 |
| | Rechts | | Lijflas ΔΔ | 1.0*Mpld | | 3.5 | 4.0 | |
| Bout | Rechts | 1 | HOH-afstand p1 | 1-8 3.5(1) | | 48.4 | 120.0 | 168.0 |
| | Rechts | 1 | HOH-afstand p2 | 1-8 3.5(1) | | 91.1 | 100.0 | 112.2 |
| | Rechts | 2 | HOH-afstand p1 | 1-8 3.5(1) | | 48.4 | 160.0 | 168.0 |
| | Rechts | 2 | HOH-afstand p2 | 1-8 3.5(1) | | 91.1 | 100.0 | 112.2 |
| | Rechts | 3 | HOH-afstand p1 | 1-8 3.5(1) | | 48.4 | 90.0 | 168.0 |
| | Rechts | 3 | HOH-afstand p2 | 1-8 3.5(1) | | 91.1 | 100.0 | 112.2 |
| | Rechts | 4 | HOH-afstand p1 | 1-8 3.5(1) | | 48.4 | 90.0 | 168.0 |
| | Rechts | 4 | HOH-afstand p2 | 1-8 3.5(1) | | 91.1 | 100.0 | 112.2 |
| | Rechts | 5 | HOH-afstand p2 | 1-8 3.5(1) | | 91.1 | 100.0 | 112.2 |
| Bout (Flens) | Rechts | 5 | Eindafstand e1 | 1-8 3.5(1) | | 26.4 | 52.2 | |
| Bout (Plaat) | Rechts | 1 | Eindafstand e1 | 1-8 3.5(1) | | 26.4 | 110.0 | |
| | Rechts | 5 | Eindafstand e1 | 1-8 3.5(1) | | 26.4 | 62.1 | |
| Console | R-O | | Hoogte | 6.2.6.7(2) | | | 297.0 | 996.8 |
| Consoleflens | R-O | | Dikte | frmb 5.3.a | | 10.3 | 12.0 | |
| | R-O | | Las fl-fl Δ | frmb 5.3.a | | 20.6 | 22.0 | |
| | R-O | | Las fl-plt Δ | 1.0*Mpld | | 9.9 | 10.0 | |
| | R-O | | Las fl-plt Δ | frmb 5.3.a | | 8.2 | 10.0 | |
| Consolelijf | R-O | | Dikte | frmb 5.3.a | | 7.1 | 8.0 | |
| | R-O | | Las lijf-plt ΔΔ | 1.0*Mpld | | 3.7 | 4.0 | |
| Kolomschot | Onder | | Dikte | 6.2.6.2 | | 10.7 | 15.0 | |
| | Onder | | Dikte | frmb 5.6.a | | 5.4 | 15.0 | |
| | Onder | | Lengte | | | 196.0 | 205.0 | 206.0 |
| | Onder | | Lijflas ΔΔ | 1.0*Mpld | | 3.5 | 6.0 | |
| Kopplaat | Rechts | | Flenslas ΔΔ | 1.0*Mpld | | 4.9 | 5.0 | |
| | Rechts | | Lijflas ΔΔ | 1.0*Mpld | | 3.3 | 4.0 | |
| | Rechts | | Positie boven | | | | 191.8 | 194.3 |

VERBINDINGEN - BASISGEGEVENS**Naamloos**

| | |
|---|--------------------|
| Verbindingstype | Stuik Gebout |
| Rekenwaarde vloeispanning $f_{y;d}$ platen | 235 |
| Hoek basis doorgaand profiel t.o.v. globale as (linksom positief) | 270 |
| Classificatie constructie | Ongeschoord |
| Verbinding symmetrisch? | Nee |
| Rekenmodel gebruikt bij de mechanicaresultaten | 1e orde elastisch |
| Statisch systeem | Statisch onbepaald |
| Verbinding t.p.v. plastisch scharnier | Ja |
| Alternatieve methode T-stuk volgens EN 1993-1-8 tabel 6.2 | Ja |

**LEGENDA**

| Onderdeel | Afmetingen | Aantal Lassen (d=dubb. hoeklas) |
|------------|------------|---------------------------------|
| a Kopplaat | 150x339-15 | 2 $a_w=4d$ $a_f=5d$ |
| b Bout | 6*M20 8.8 | 1 |

| PROFIELEN | Naam | Lengte | Prod.meth. | Exc | Hoek | $f_{y;d}$ |
|---------------|--------|--------|------------|-----|------|-----------|
| Rechterligger | IPE300 | 8555 | Gewalst | 0 | -20 | 235 |
| Linkerligger | IPE300 | 8555 | Gewalst | 0 | -20 | 235 |

| PROFIELGEGEVENS [mm] | | | | | | Gewalst | Klasse 1 | IPE300 | |
|----------------------|-------|---------|-------|-----|--------|------------|----------|---------|------------|
| h : | 300.0 | $i_y :$ | 124.6 | A : | 5380.0 | $W_{ey} :$ | 557.0E3 | $I_y :$ | 8356.0E4 |
| b : | 150.0 | $i_z :$ | 33.5 | | | $W_{ez} :$ | 80.5E3 | $I_z :$ | 604.0E4 |
| $t_w :$ | 7.1 | r : | 15.0 | | | $W_{py} :$ | 628.4E3 | $I_t :$ | 19.9E4 |
| $t_f :$ | 10.7 | | | | | $W_{pz} :$ | 125.2E3 | $I_w :$ | 125934.1E6 |

| PLATEN | Plaats | h | b | t | Exc | a_w | a_f | a_e | Hoek | Las | $f_{y;d}$ |
|----------|--------|-----|-----|------|-----|------------------|------------------|-------|------|-----|-----------|
| Kopplaat | Rechts | 339 | 150 | 15.0 | 0 | $\Delta\Delta 4$ | $\Delta\Delta 5$ | | | | 235 |
| Kopplaat | Links | 339 | 150 | 15.0 | 0 | $\Delta\Delta 4$ | $\Delta\Delta 5$ | | | | 235 |

Δ = Enkele stompe of hoeklas of dubbele hoeklas met slechts 1 las effectief
 $\Delta\Delta$ = Dubbele hoeklas

| KRACHTEN | Normaalkr. | Dwarskr. | Moment | MSteun | DSteun | Kn:4 BC:23 Sit:1 |
|----------|------------|----------|--------|--------------------------|--------|------------------|
| Links | 18.34 | -6.68 | 40.71 | 4.07 | -0.67 | |
| Rechts | 18.34 | 6.68 | -40.71 | 4.07 | 0.67 | |
| Links | 19.75 | -0.63 | 40.71 | T.o.v hoofdas verbinding | | |
| Rechts | 19.75 | 0.63 | -40.71 | | | |

| BEZWIJKKRACHTEN | | | | | Kn:4 BC:23 Sit:1 |
|-----------------|----------|---------|-----------|--|------------------|
| Onderdeel | F_{Rd} | Formule | b_{eff} | | Rechts |

Drukpunt 323.56

Drukzone ligger kopplaat 459.91 (6.21)

Trek bout 141.00

Trek boutrij 282.01

Let op: De normaalkracht is verwerkt in bovengenoemde bezwijkkrachten.

Dwarskrachtcapaciteiten:

Stuik kopplaat 1098.07

Afsch.cap. bouten na red. trek 428.40

TUSSENRESULTATEN STIJFHEID

Kn:4 BC:23 Sit:1

bij $M_{v,Rd}$ voor boutrij binnen trekflens (h_1)

| i Onderdeel | k_i | μ_i | Bijdrage |
|---------------------|--------|---------|----------|
| 5 Trekzone kopplaat | 59.650 | 2.988 | 36% |
| 10 Trekzone bouten | 33.200 | 2.988 | 64% |

STIJFHEID

Kn:4 BC:23 Sit:1

Maatgevend criterium: Trekzone bouten

| Verh. | $M_{v,Rd}/Verh.$ | Arm | S_j | ϕ | Rechts |
|-------|------------------|-----|--------|---------|--------|
| 1.0 | 63.19 | 227 | 77052 | 0.00082 | |
| 1.2 | 52.66 | 227 | 126059 | 0.00042 | |
| 1.5 | 42.13 | 227 | 230266 | 0.00018 | |

Bij een moment $M_{v,Ed}=44.78$ geldt een stijfheid $S_j=204034$.

De in mechanica gebruikte stijfheid is oneindig (als in NDM).

BEZWIJKKRACHTEN

Kn:4 BC:23 Sit:1

| Onderdeel | F_{Rd} | Formule | b_{eff} | Links |
|-----------|----------|---------|-----------|-------|
|-----------|----------|---------|-----------|-------|

Drukpunt 323.56

Drukzone ligger kopplaat 459.91 (6.21)

Trek bout 141.00

Trek boutrij 282.01

Let op: De normaalkracht is verwerkt in bovengenoemde bezwijkkrachten.

Dwarskrachtcapaciteiten:

Stuik kopplaat 1098.07

Afsch.cap. bouten na red. trek 428.40

TUSSENRESULTATEN STIJFHEID

Kn:4 BC:23 Sit:1

bij $M_{v,Rd}$ voor boutrij binnen trekflens (h_1)

| i Onderdeel | k_i | μ_i | Bijdrage |
|---------------------|--------|---------|----------|
| 5 Trekzone kopplaat | 59.650 | 2.988 | 36% |
| 10 Trekzone bouten | 33.200 | 2.988 | 64% |

STIJFHEID

Kn:4 BC:23 Sit:1

Maatgevend criterium: Trekzone bouten

| Verh. | $M_{v,Rd}/Verh.$ | Arm | S_j | ϕ | Links |
|-------|------------------|-----|--------|---------|-------|
| 1.0 | 63.19 | 227 | 77052 | 0.00082 | |
| 1.2 | 52.66 | 227 | 126059 | 0.00042 | |
| 1.5 | 42.13 | 227 | 230266 | 0.00018 | |

Verbindingen release 6.03b

22 mei 2023

Bij een moment $M_{v,Ed}=44.78$ geldt een stijfheid $S_j=204034$.

De in mechanica gebruikte stijfheid is oneindig (als in NDM).

TOETSING VERBINDING

Kn:4 BC:23 Sit:1

| Artikel | $M_{v,Ed}$ | $M_{v,Rd}$ | z | $V_{wp,Ed}$ | $V_{wp,Rd}$ | Toetsing |
|---------|------------|------------|---|-------------|-------------|----------|
| 6.2.7.1 | -44.78 | 63.19 | | | | 0.71 |
| 6.2.7.1 | 44.78 | 63.19 | | | | 0.71 |

Let op: Normaalkrachten in eindigende profielen zijn verwerkt in de bezwijk-
en/of de boutrijkrachten. De conservatieve toetsingsformule van
EN 1993-1-8 art. 6.2.7.1 (3) is niet gebruikt.

TOETSING PROFIEL EN AFSCHUIVING

Kn:4 BC:23 Sit:1

| Plaats | Profiel | Artikel | Formule | Toetsing |
|--------|---------|---------|---------------|----------|
| Rechts | IPE300 | EN3-1-1 | 6.2.10 (6.31) | 0.30 |
| | | EN3-1-1 | 6.2.8 (6.30) | 0.30 |
| | | EN3-1-1 | 6.2.5 (6.12y) | 0.30 |
| | | EN3-1-1 | 6.2.6 (6.17) | 0.02 |
| | | EN3-1-1 | 6.2.4 (6.9) | 0.01 |
| | | EN3-1-1 | 6.2.1 N+D | 0.04 |
| Links | IPE300 | EN3-1-1 | 6.2.10 (6.31) | 0.30 |
| | | EN3-1-1 | 6.2.8 (6.30) | 0.30 |
| | | EN3-1-1 | 6.2.5 (6.12y) | 0.30 |
| | | EN3-1-1 | 6.2.6 (6.17) | 0.02 |
| | | EN3-1-1 | 6.2.4 (6.9) | 0.01 |
| | | EN3-1-1 | 6.2.1 N+D | 0.04 |

MOMENTCLASSIFICATIE EN3-1-8 art.5.2.3

Kn:4 BC:23 Sit:1

| Plaats | $M_{v,Rd}$ | $M_{v,Rd,ligger}$ | Classificatie |
|--------|------------|-------------------|---------------------|
| Rechts | 63.19 | 147.67 | Niet volledig sterk |
| Links | 63.19 | 147.67 | Niet volledig sterk |

STIJFHEIDSClassificatie EN3-1-8 art.5.2.2

Kn:4 BC:23 Sit:1

| Plaats | Punt | Grenswaarden | | Actuele waarden | | Classificatie |
|--------|------|--------------|-----------|-----------------|-----------|---------------|
| | | Φ_{rel} | m_{rel} | Φ_{rel} | m_{rel} | |
| Rechts | 1 | 0.000 | 0.000 | 0.000 | 0.000 | Stijf |
| | 2 | 0.040 | 1.000 | 0.003 | 0.285 | |
| | 3 | 0.040 | 1.000 | 0.006 | 0.357 | |
| | 4 | 0.040 | 1.000 | 0.011 | 0.428 | |
| Links | 1 | 0.000 | 0.000 | 0.000 | 0.000 | Stijf |
| | 2 | 0.040 | 1.000 | 0.003 | 0.285 | |
| | 3 | 0.040 | 1.000 | 0.006 | 0.357 | |
| | 4 | 0.040 | 1.000 | 0.011 | 0.428 | |

M-PHI DIAGRAM EN3-1-8 fig. 5.4 Ongeschoord

Kn:4 BC:23 Sit:1



CONTROLES

Kn:4 BC:23 Sit:1

| Onderdeel | Zijde | Rij | Item | Ernst | Art./(Frm.) | Min. | Waarde | Max. |
|--------------|-------|-----|----------------|-------|-------------|-------|--------------|-------|
| Bout | Beide | 1 | HOH-afstand p1 | 1-8 | 3.5(1) | 48.4 | 100.0 | 200.0 |
| | Beide | 1 | HOH-afstand p2 | 1-8 | 3.5(1) | 60.0 | 60.0 | 97.2 |
| | Beide | 2 | HOH-afstand p1 | 1-8 | 3.5(1) | 48.4 | 100.0 | 200.0 |
| | Beide | 2 | HOH-afstand p2 | 1-8 | 3.5(1) | 60.0 | 60.0 | 97.2 |
| | Beide | 3 | HOH-afstand p2 | 1-8 | 3.5(1) | 60.0 | 60.0 | 97.2 |
| Bout (Plaat) | Beide | 1 | Eindafstand e1 | 1-8 | 3.5(1) | 26.4 | 59.6 | |
| | Beide | 3 | Eindafstand e1 | 1-8 | 3.5(1) | 26.4 | 79.6 | |
| Kopplaat | Beide | | Flenslas ΔΔ | 1.0* | Mpld | 4.9 | 5.0 | |
| | Beide | | Lijflas ΔΔ | 1.0* | Mpld | 3.3 | 4.0 | |
| | Beide | | Positie boven | | | 164.2 | 169.6 | |
| | Beide | | Positie onder | | | | -169.6-164.2 | |

WINDBELASTING KOPGEVELKOLOMMEN AS 1**Gebouwgegevens**

| | | |
|------------------------------------|--|-------------------|
| Gebouwtype | <i>Categorie E</i> | |
| Gevolgklasse | <i>CC1</i> | |
| Betrouwbaarheidsklasse | <i>RC1 ($K_{fi} = 0,9$)</i> | |
| Ontwerplevensduurklasse | <i>15</i> | |
| locatie i.v.m. windbelasting | <i>gebied III</i> | |
| omgeving i.v.m. windbelasting | <i>onbebouwd</i> | |
| reductiefactor Ψ_t (bij wind) | <i>0,85</i> | |
| stuwdruk $q_p(z)$ | <i>0,66</i> | kN/m ² |
| factor windddruk buiten | <i>0,80</i> | |
| factor onderdruk binnen | <i>0,30</i> | |
| partitiele factor γ_q | <i>1,35</i> | |

Resultaten per kolom

| Spant as | lengte [m] | bel. breedte [m] | M(d) [kNm] | Staafl [nr] |
|-------------|---------------|---------------------|---------------|----------------|
| 1 | 6,74 | 5,42 | 25,7 | 8 |
| 1 | 7,29 | 4,75 | 26,3 | 9 |
| 1 | 5,83 | 4,42 | 15,7 | 10 |
| | 0,00 | 0,00 | 0,0 | |
| | 0,00 | 0,00 | 0,0 | |
| | 0,00 | 0,00 | 0,0 | |
| | 0,00 | 0,00 | 0,0 | |
| | 0,00 | 0,00 | 0,0 | |
| | 0,00 | 0,00 | 0,0 | |
| | 0,00 | 0,00 | 0,0 | |

→ pag. 38

→ pag. 62

Project.....: 14811
 Onderdeel....: spant as 1
 Dimensies....: kN;m;rad (tenzij anders aangegeven)
 Datum.....: 22/05/2023
 Bestand.....: F:\Tekenkamer\Constructeur\Projecten Raamwerken
 Ateko\spant as 1.rww

Belastingbreedte.: 2.580
 Rekenmodel.....: 1e-orde-elastisch.
 Theorie voor de bepaling van de krachtsverdeling:
 Geometrisch lineair.
 Fysisch lineair.

Gunstige werking van de permanente belasting wordt automatisch verwerkt.

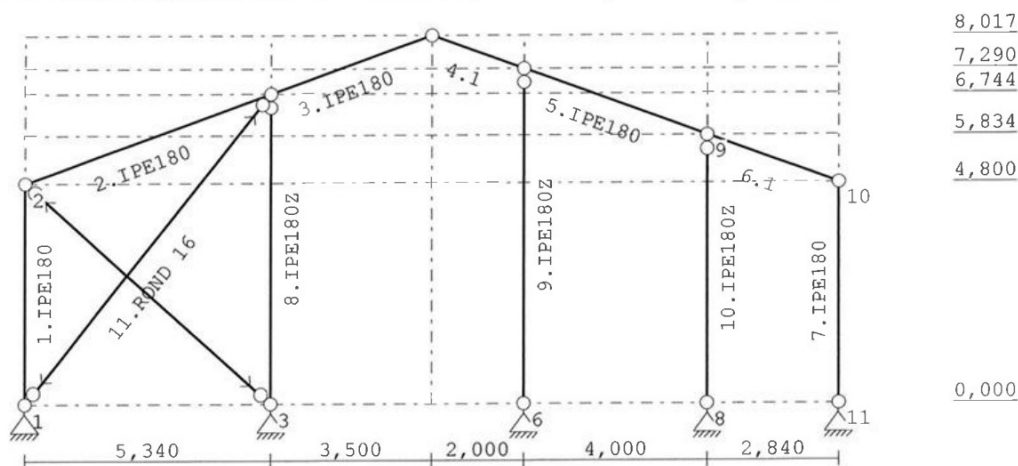
Toegepaste normen volgens Eurocode met Nederlandse NB

AS1

| | | | |
|-------------|----------------------|------------------|-------------|
| Belastingen | NEN-EN 1990:2002 | C2:2010 | NB:2011(nl) |
| | NEN-EN 1991-1-1:2002 | C1:2009 | NB:2011(nl) |
| | NEN-EN 1991-1-3:2003 | C1:2009 | NB:2011(nl) |
| | NEN-EN 1991-1-4:2005 | C2:2011 | NB:2011(nl) |
| Staal | NEN-EN 1993-1-1:2006 | C2:2011, A1:2016 | NB:2016(nl) |

GEOMETRIE

Bel. breedte = $\frac{1}{2} \times 4,84 + 0,16 = 2,58 \text{ m}$



STRAMIENLIJNEN

| Nr. | Naam | X | Z-min | Z-max |
|-----|------|--------|-------|-------|
| 1 | | 0.000 | 0.000 | 8.017 |
| 2 | | 5.340 | 0.000 | 8.017 |
| 3 | | 8.840 | 0.000 | 8.017 |
| 4 | | 10.840 | 0.000 | 8.017 |
| 5 | | 14.840 | 0.000 | 8.017 |
| 6 | | 17.680 | 0.000 | 8.017 |

NIVEAUS

| Nr. | Z | X-min | X-max |
|-----|-------|-------|--------|
| 1 | 0.000 | 0.000 | 17.680 |
| 2 | 4.800 | 0.000 | 17.680 |
| 3 | 5.834 | 0.000 | 17.680 |
| 4 | 7.290 | 0.000 | 17.680 |
| 5 | 8.017 | 0.000 | 17.680 |
| 6 | 6.744 | 0.000 | 17.680 |

MATERIALEN

| Mt | Omschrijving | E-modulus[N/mm2] | S.G. | Pois. | Uitz. coëff |
|----|--------------|------------------|------|-------|-------------|
| 1 | S235 | 210000 | 78.5 | 0.30 | 1.2000e-05 |

Raamwerken release 6.60c

Project.....: 14811

Onderdeel....: spant as 1

PROFIELEN [mm]

| Prof. | Omschrijving | Materiaal | Oppervlak | Traagheid | Vormf. |
|-------|--------------|-----------|------------|------------|--------|
| 1 | IPE180 | 1:S235 | 2.3950e+03 | 1.3170e+07 | 0.00 |
| 2 | IPE180Z | 1:S235 | 2.3950e+03 | 1.0090e+06 | 0.00 |
| 3 | IPE200Z | 1:S235 | 2.8480e+03 | 1.4240e+06 | 0.00 |
| 4 | ROND 16 | 1:S235 | 2.0106e+02 | 3.2170e+03 | 0.00 |

PROFIELEN vervolg [mm]

| Prof. | Staaftype | Breedte | Hoogte | e | Type | b1 | h1 | b2 | h2 |
|-------|-----------|---------|--------|------|------|----|----|----|----|
| 1 | 0:Normaal | 91 | 180 | 90.0 | | | | | |
| 2 | 0:Normaal | 91 | 180 | 45.5 | | | | | |
| 3 | 0:Normaal | 100 | 200 | 50.0 | | | | | |
| 4 | 1:Trek | 16 | 16 | 8.0 | | | | | |

KNOPEN

| Knoop | X | Z | Knoop | X | Z |
|-------|--------|-------|-------|--------|-------|
| 1 | 0.000 | 0.000 | 6 | 10.840 | 0.000 |
| 2 | 0.000 | 4.800 | 7 | 10.840 | 7.290 |
| 3 | 5.340 | 0.000 | 8 | 14.840 | 0.000 |
| 4 | 5.340 | 6.744 | 9 | 14.840 | 5.834 |
| 5 | 8.840 | 8.017 | 10 | 17.680 | 4.800 |
| 11 | 17.680 | 0.000 | | | |

STAVEN

| St. | ki | kj | Profiel | Aansl.i | Aansl.j | Lengte Opm. |
|-----|----|----|-----------|---------|---------|-------------|
| 1 | 1 | 2 | 1:IPE180 | NDM | NDM | 4.800 |
| 2 | 2 | 4 | 1:IPE180 | NDM | NDM | 5.683 |
| 3 | 4 | 5 | 1:IPE180 | NDM | NDM | 3.724 |
| 4 | 5 | 7 | 1:IPE180 | NDM | NDM | 2.128 |
| 5 | 7 | 9 | 1:IPE180 | NDM | NDM | 4.257 |
| 6 | 9 | 10 | 1:IPE180 | NDM | NDM | 3.022 |
| 7 | 10 | 11 | 1:IPE180 | NDM | NDM | 4.800 |
| 8 | 3 | 4 | 2:IPE180Z | NDM | ND- | 6.744 |
| 9 | 6 | 7 | 2:IPE180Z | NDM | ND- | 7.290 |
| 10 | 8 | 9 | 2:IPE180Z | NDM | ND- | 5.834 |
| 11 | 1 | 4 | 4:ROND 16 | ND- | ND- | 8.602 |
| 12 | 3 | 2 | 4:ROND 16 | ND- | ND- | 7.180 |

VASTE STEUNPUNTEN

| Nr. | knoop | Kode | XZR 1=vast 0=vrij | Hoek |
|-----|-------|------|-------------------|------|
| 1 | 1 | 110 | | 0.00 |
| 2 | 3 | 110 | | 0.00 |
| 3 | 6 | 110 | | 0.00 |
| 4 | 8 | 110 | | 0.00 |
| 5 | 11 | 110 | | 0.00 |

BELASTINGGENERATIE ALGEMEEN.

| | | | |
|-----------------------------|-------|-------------------------|------|
| Betrouwbaarheidsklasse..... | 1 | Referentieperiode..... | 15 |
| Gebouwdiepte..... | 35.00 | Gebouwhoogte..... | 8.02 |
| Niveau aansl.terrein..... | 0.00 | E.g. scheid.w. [kN/m2]: | 1.20 |

WIND

| | |
|---------------------------------|---------------------------------|
| Terrein categorie ...[4.3.2]... | Onbebouwd |
| Windgebied | 1 Vb,0 ..[4.2]..... 29.500 |
| Referentie periode wind..... | 15.00 Vb(p) ..[4.2]..... 27.389 |
| K | 0.200 n[4.2]..... 0.500 |
| Positie spant in het gebouw.... | 0.000 Kr[4.3.2]..... 0.209 |
| z0 | 0.200 zmin ..[4.3.2]..... 4.000 |

Project.....: 14811
Onderdeel....: spant as 1

WIND

Co wind van links ..[4.3.3]...: 1.000 Co wind van rechts....: 1.000
Co wind loodrecht ..[4.3.3]...: 1.000
Cpi wind van links ..[7.2.9]...: 0.200 -0.300
Cpi windloodrecht ...[7.2.9]...: 0.200 -0.300
Cpi wind van rechts ..[7.2.9]...: 0.200 -0.300
Cfr windwrijving[7.5].....: 0.040

SNEEUW

Sneeuwbelasting (sk) 50 jaar : 0.70
Sneeuwbelasting (sn) n jaar : 0.53

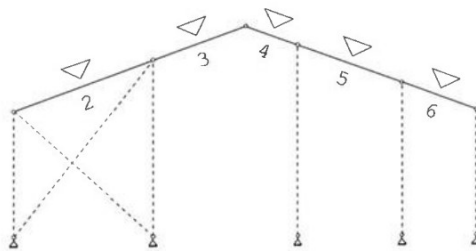
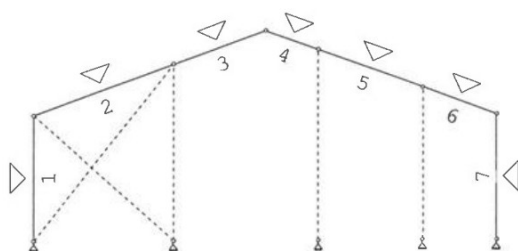
STAFTYPEN

| Type | staven |
|------------------|---------|
| 4:Wand / kolom. | : 8-10 |
| 5:Linker gevel. | : 1 |
| 6:Rechter gevel. | : 7 |
| 7:Dak. | : 2-6 |
| 9:Open. | : 11,12 |

LASTVELDEN

Wind staven

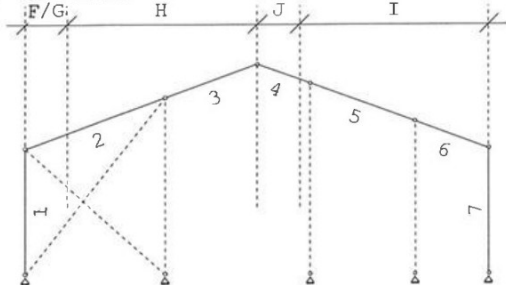
Sneeuw staven

**WIND DAKTYPES**

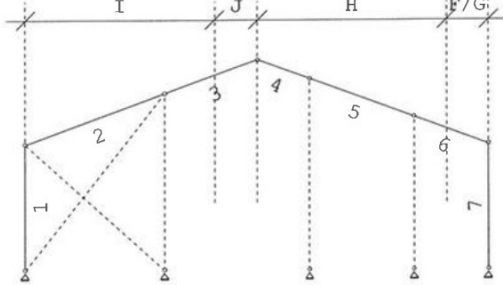
| Nr. | Staaft Type | reductie bij wind van links | reductie bij wind van rechts | Cpe volgens art: |
|-----|---------------|--------------------------------|---------------------------------|------------------|
| 1 | 1 Gevel | 1.000 | 1.000 | 7.2.2 |
| 2 | 2-3 Zadel dak | 1.000 | 1.000 | 7.2.5 |
| 3 | 4-6 Zadel dak | 1.000 | 1.000 | 7.2.5 |
| 4 | 7 Gevel | 1.000 | 1.000 | 7.2.2 |

WIND ZONES

Wind van links



Wind van rechts

**WIND VAN LINKS ZONES****WIND VAN RECHTS ZONES**

| Nr. | Staaft | Positie | Lengte | Zone |
|-----|--------|---------|--------|------|
| 1 | 1 | 0.000 | 4.800 | D |
| 2 | 2-3 | 0.000 | 1.603 | F/G |
| 3 | 2-3 | 1.603 | 7.237 | H |
| 4 | 4-6 | 0.000 | 1.603 | J |
| 5 | 4-6 | 1.603 | 7.237 | I |
| 6 | 7 | 0.000 | 4.800 | E |

| Nr. | Staaft | Positie | Lengte | Zone |
|-----|--------|---------|--------|------|
| 1 | 7 | 0.000 | 4.800 | D |
| 2 | 4-6 | 0.000 | 1.603 | F/G |
| 3 | 4-6 | 1.603 | 7.237 | H |
| 4 | 2-3 | 0.000 | 1.603 | J |
| 5 | 2-3 | 1.603 | 7.237 | I |
| 6 | 1 | 0.000 | 4.800 | E |

Project.....: 14811

Onderdeel.....: spant as 1

Wind indexen

| Index | CsCd | Cpe/Cpi | qp | breedte | reductie | Qw | Zone | Hoek(en) |
|-------|------|---------|-------|---------|----------|--------|------|----------|
| Qw1 | | 0.300 | 0.808 | 2.580 | | -0.626 | -i | |
| Qw2 | 1.00 | 0.800 | 0.808 | 2.580 | | -1.668 | D | |
| Qw3 | 1.00 | 0.367 | 0.808 | 2.580 | | -0.765 | F | 20.0 |
| Qw4 | 1.00 | 0.267 | 0.808 | 2.580 | | -0.556 | H | 20.0 |
| Qw5 | 1.00 | -0.833 | 0.808 | 2.580 | | 1.738 | J | 20.0 |
| Qw6 | 1.00 | -0.400 | 0.808 | 2.580 | | 0.834 | I | 20.0 |
| Qw7 | 1.00 | -0.500 | 0.808 | 2.580 | | 1.043 | E | |
| Qw8 | | -0.200 | 0.808 | 2.580 | | 0.417 | +i | |
| Qw9 | 1.00 | -0.767 | 0.808 | 2.580 | | 1.599 | F | 20.0 |
| Qw10 | 1.00 | -0.267 | 0.808 | 2.580 | | 0.556 | H | 20.0 |
| Qw11 | 1.00 | -1.200 | 0.808 | 2.580 | | 2.502 | A | |
| Qw12 | 1.00 | -1.333 | 0.808 | 1.603 | | 1.728 | G | 20.0 |
| Qw13 | 1.00 | -1.233 | 0.808 | 1.603 | | 1.598 | F | 20.0 |
| Qw14 | 1.00 | -0.667 | 0.808 | 0.977 | | 0.526 | H | 20.0 |
| Qw15 | 1.00 | -0.500 | 0.808 | 2.580 | | 1.043 | C | |
| Qw16 | 1.00 | -0.500 | 0.808 | 2.580 | | 1.043 | I | 20.0 |

SNEEUW DAKTYPEN

| Staaf | artikel |
|-------|-----------------|
| 2-3 | 5.3.3 Zadel dak |
| 4-6 | 5.3.3 Zadel dak |

Sneeuw indexen

| Index | art | μ | s_k | red. | posfac | breedte | Q_s | hoek |
|-------|-------|-------|-------|------|--------|---------|-------|------|
| Qs1 | 5.3.3 | 0.800 | 0.53 | 1.00 | | 2.580 | 1.085 | 20.0 |
| Qs2 | 5.3.3 | 0.800 | 0.53 | 1.00 | | 2.580 | 1.085 | 20.0 |
| Qs3 | 5.3.3 | 0.800 | 0.53 | 1.00 | | 2.580 | 1.085 | 20.0 |
| Qs4 | 5.3.3 | 0.800 | 0.53 | 1.00 | | 2.580 | 1.085 | 20.0 |
| Qs5 | 5.3.3 | 0.800 | 0.53 | 1.00 | | 2.580 | 1.085 | 20.0 |
| Qs6 | 5.3.3 | 0.400 | 0.53 | 1.00 | | 2.580 | 0.542 | 20.0 |
| Qs7 | 5.3.3 | 0.400 | 0.53 | 1.00 | | 2.580 | 0.542 | 20.0 |
| Qs8 | 5.3.3 | 0.400 | 0.53 | 1.00 | | 2.580 | 0.542 | 20.0 |
| Qs9 | 5.3.3 | 0.400 | 0.53 | 1.00 | | 2.580 | 0.542 | 20.0 |
| Qs10 | 5.3.3 | 0.400 | 0.53 | 1.00 | | 2.580 | 0.542 | 20.0 |

 $\alpha = 20^\circ$ **BELASTINGGEVALLEN**

| B.G. | Omschrijving | Type |
|------|---------------------------------|------|
| | 1 Permanente belasting EGZ=0.00 | 1 |
| g | 2 Wind van links onderdruk A | 7 |
| g | 3 Wind van links overdruk A | 8 |
| g | 4 Wind van links onderdruk B | 9 |
| g | 5 Wind van links overdruk B | 10 |
| g | 6 Wind van links onderdruk C | 37 |
| g | 7 Wind van links overdruk C | 38 |
| g | 8 Wind van links onderdruk D | 39 |
| g | 9 Wind van links overdruk D | 40 |
| g | 10 Wind van rechts onderdruk A | 11 |
| g | 11 Wind van rechts overdruk A | 12 |
| g | 12 Wind van rechts onderdruk B | 13 |
| g | 13 Wind van rechts overdruk B | 14 |
| g | 14 Wind van rechts onderdruk C | 41 |
| g | 15 Wind van rechts overdruk C | 42 |
| g | 16 Wind van rechts onderdruk D | 43 |
| g | 17 Wind van rechts overdruk D | 44 |
| g | 18 Wind loodrecht onderdruk A | 15 |
| g | 19 Wind loodrecht overdruk A | 16 |
| g | 20 Wind loodrecht onderdruk B | 45 |
| g | 21 Wind loodrecht overdruk B | 46 |
| g | 22 Sneeuw A | 22 |
| g | 23 Sneeuw B | 23 |
| g | 24 Sneeuw C | 33 |

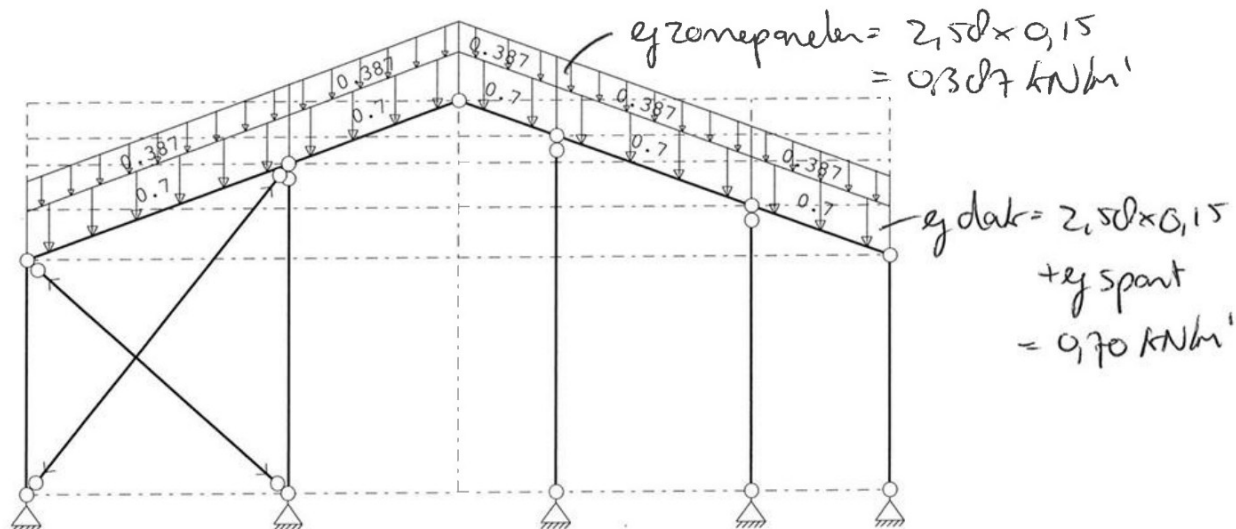
g = gegenereerd belastinggeval

Project.....: 14811

Onderdeel.....: spant as 1

BELASTINGEN

B.G:1 Permanente belasting

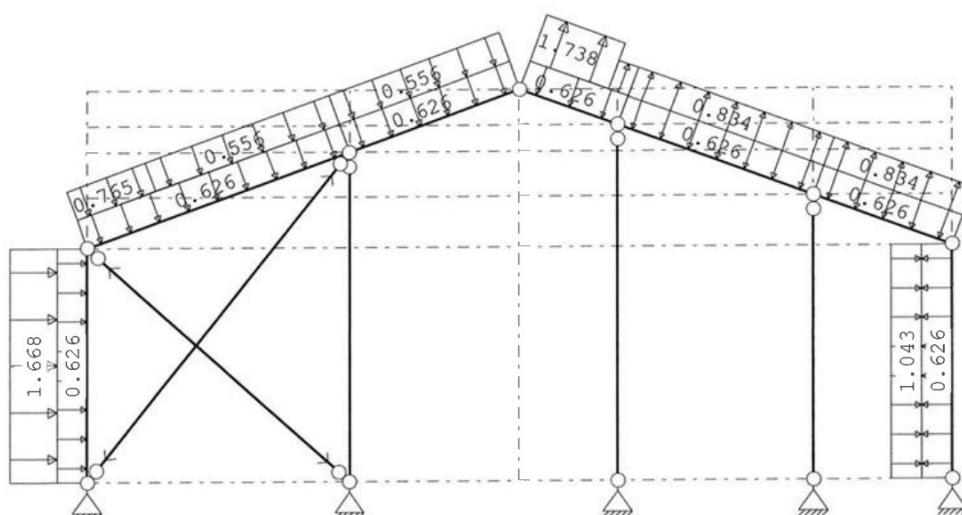
**STAAFBELASTINGEN**

B.G:1 Permanente belasting

| Staat | Type | q1/p/m | q2 | A | B | Ψ_0 | Ψ_1 | Ψ_2 |
|-------|-------------|--------|-------|-------|-------|----------|----------|----------|
| 2 | 5:QZGlobaal | -0.70 | -0.70 | 0.000 | 0.000 | | | |
| 3 | 5:QZGlobaal | -0.70 | -0.70 | 0.000 | 0.000 | | | |
| 4 | 5:QZGlobaal | -0.70 | -0.70 | 0.000 | 0.000 | | | |
| 5 | 5:QZGlobaal | -0.70 | -0.70 | 0.000 | 0.000 | | | |
| 6 | 5:QZGlobaal | -0.70 | -0.70 | 0.000 | 0.000 | | | |
| 2 | 5:QZGlobaal | -0.39 | -0.39 | 0.000 | 0.000 | | | |
| 3 | 5:QZGlobaal | -0.39 | -0.39 | 0.000 | 0.000 | | | |
| 4 | 5:QZGlobaal | -0.39 | -0.39 | 0.000 | 0.000 | | | |
| 5 | 5:QZGlobaal | -0.39 | -0.39 | 0.000 | 0.000 | | | |
| 6 | 5:QZGlobaal | -0.39 | -0.39 | 0.000 | 0.000 | | | |

BELASTINGEN

B.G:2 Wind van links onderdruk A

**STAAFBELASTINGEN**

B.G:2 Wind van links onderdruk A

| Staat | Type | Index | q1/p/m | q2 | A | B | Ψ_0 | Ψ_1 | Ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -1.67 | -1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw3 | -0.76 | -0.76 | 0.000 | 3.977 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 1

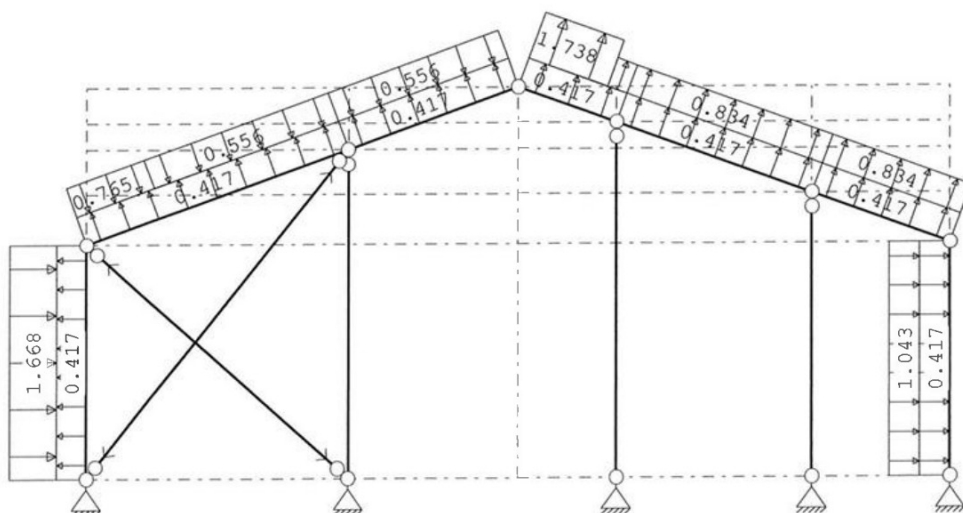
STAAFBELASTINGEN

B.G:2 Wind van links onderdruk A

| Staaft | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|--------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 2 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw5 | 1.74 | 1.74 | 0.000 | 0.422 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw6 | 0.83 | 0.83 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw6 | 0.83 | 0.83 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw6 | 0.83 | 0.83 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw7 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:3 Wind van links overdruk A

**STAAFBELASTINGEN**

B.G:3 Wind van links overdruk A

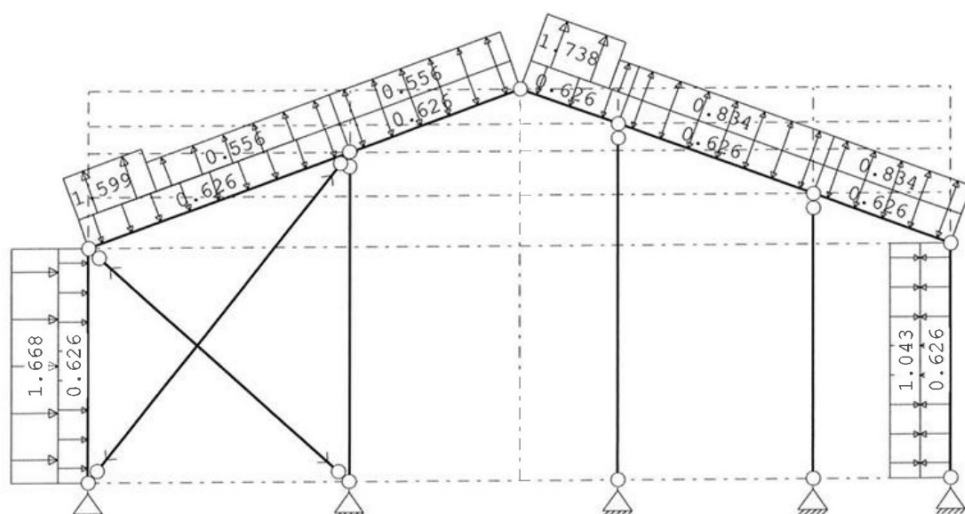
| Staaft | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|--------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -1.67 | -1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw3 | -0.76 | -0.76 | 0.000 | 3.977 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw5 | 1.74 | 1.74 | 0.000 | 0.422 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw6 | 0.83 | 0.83 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw6 | 0.83 | 0.83 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw6 | 0.83 | 0.83 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw7 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel.....: spant as 1

BELASTINGEN

B.G:4 Wind van links onderdruk B

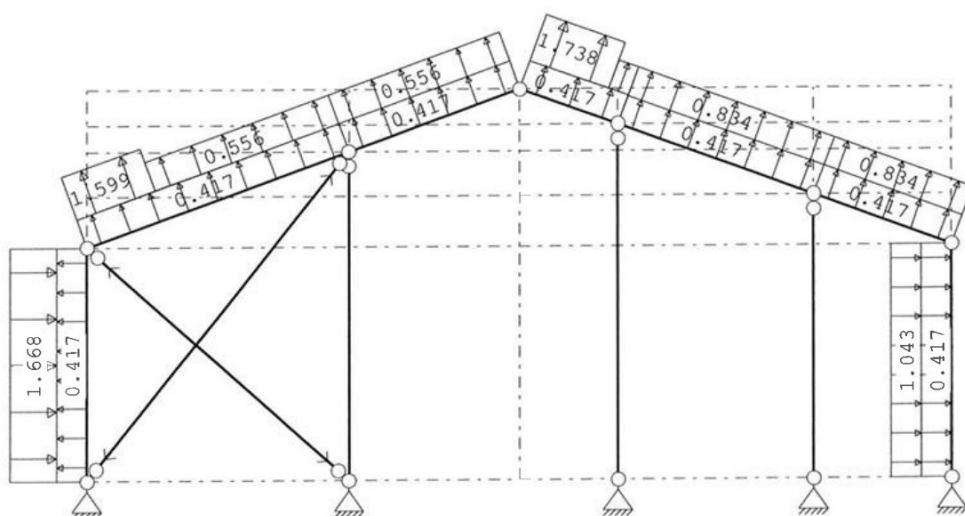
**STAAFBELASTINGEN**

B.G:4 Wind van links onderdruk B

| Staatf Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|--------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 1:QZLokaal | Qw2 | -1.67 | -1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 1:QZLokaal | Qw9 | 1.60 | 1.60 | 0.000 | 3.977 | 0.0 | 0.2 | 0.0 |
| 2 1:QZLokaal | Qw10 | 0.56 | 0.56 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 1:QZLokaal | Qw10 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 1:QZLokaal | Qw5 | 1.74 | 1.74 | 0.000 | 0.422 | 0.0 | 0.2 | 0.0 |
| 4 1:QZLokaal | Qw6 | 0.83 | 0.83 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 1:QZLokaal | Qw6 | 0.83 | 0.83 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 1:QZLokaal | Qw6 | 0.83 | 0.83 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 1:QZLokaal | Qw7 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:5 Wind van links overdruk B



Project.....: 14811

Onderdeel.....: spant as 1

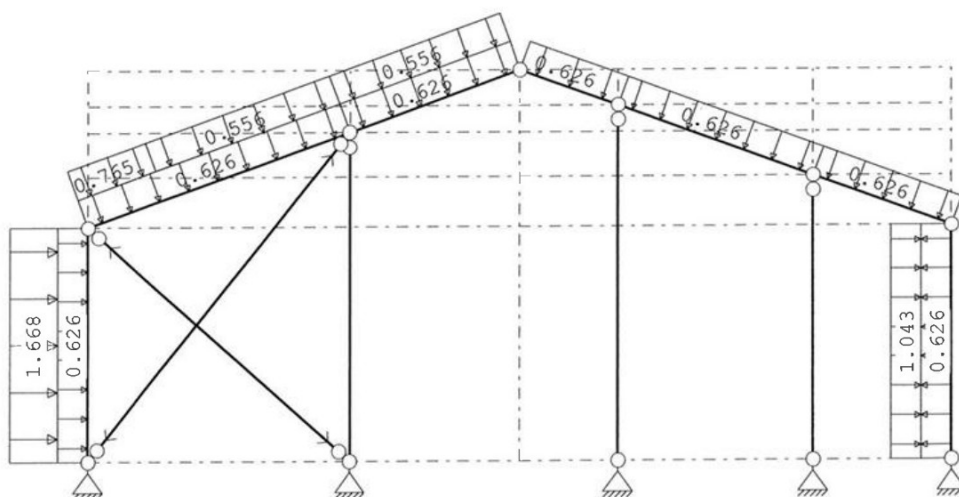
STAAFBELASTINGEN

B.G:5 Wind van links overdruk B

| Staaft | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|--------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -1.67 | -1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw9 | 1.60 | 1.60 | 0.000 | 3.977 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw10 | 0.56 | 0.56 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw10 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw5 | 1.74 | 1.74 | 0.000 | 0.422 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw6 | 0.83 | 0.83 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw6 | 0.83 | 0.83 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw6 | 0.83 | 0.83 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw7 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:6 Wind van links onderdruk C

**STAAFBELASTINGEN**

B.G:6 Wind van links onderdruk C

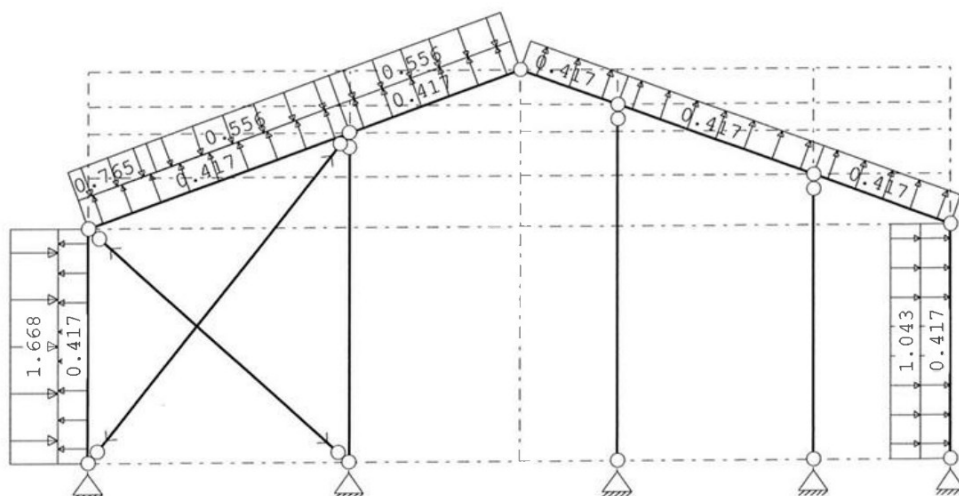
| Staaft | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|--------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -1.67 | -1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw3 | -0.76 | -0.76 | 0.000 | 3.977 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw7 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 1

BELASTINGEN

B.G:7 Wind van links overdruk C

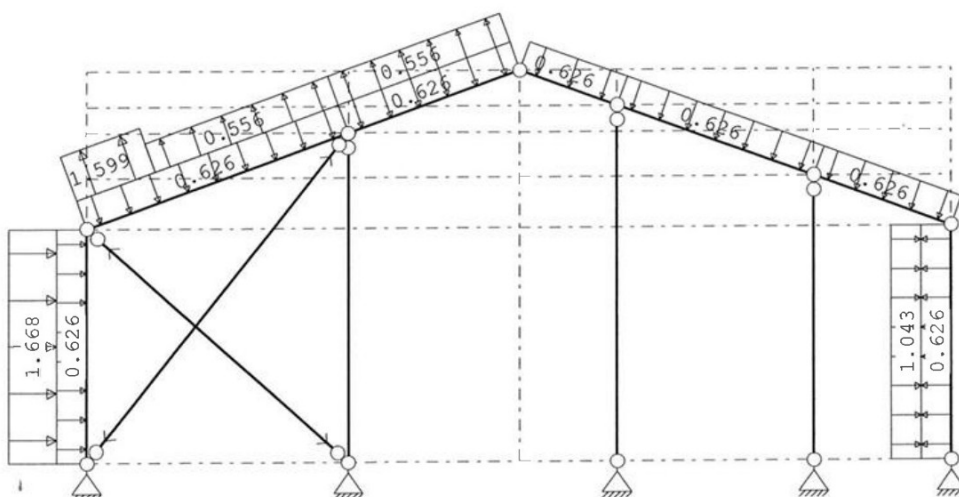
**STAAFBELASTINGEN**

B.G:7 Wind van links overdruk C

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -1.67 | -1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw3 | -0.76 | -0.76 | 0.000 | 3.977 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw7 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:8 Wind van links onderdruk D

**STAAFBELASTINGEN**

B.G:8 Wind van links onderdruk D

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -1.67 | -1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 1

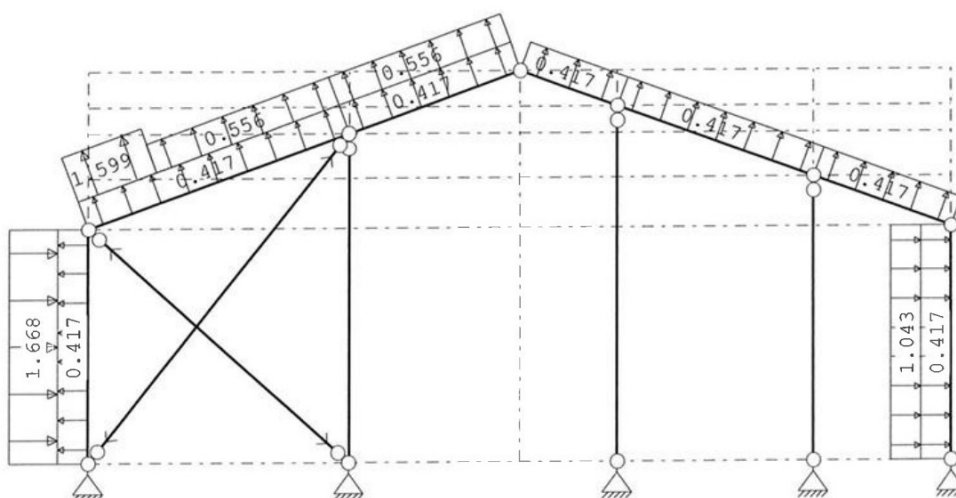
STAAFBELASTINGEN

B.G:8 Wind van links onderdruk D

| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|------|-------|-------|----------|----------|----------|
| 2 | 1:QZLokaal | Qw9 | 1.60 | 1.60 | 0.000 | 3.977 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw10 | 0.56 | 0.56 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw10 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Ow7 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:9 Wind van links overdruk D



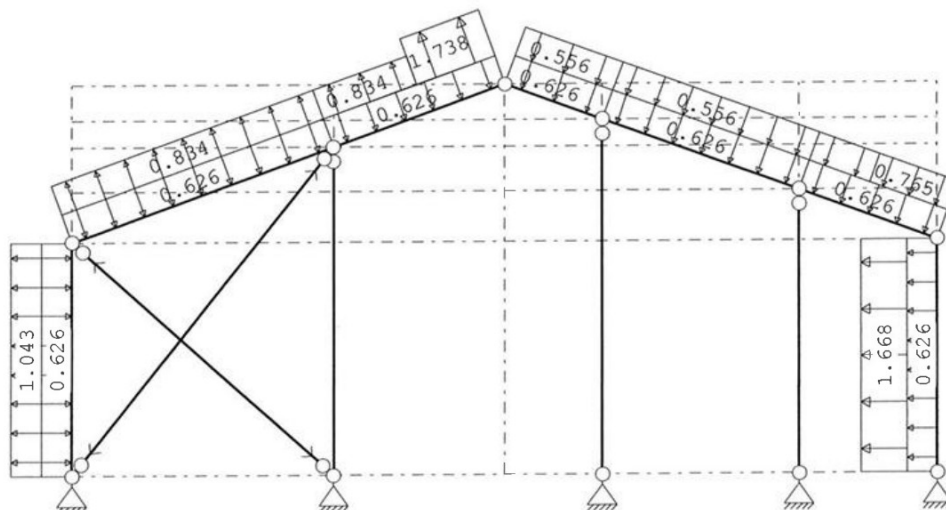
STAAFBELASTINGEN

B.G:9 Wind van links overdruk D

| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -1.67 | -1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw9 | 1.60 | 1.60 | 0.000 | 3.977 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw10 | 0.56 | 0.56 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw10 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw7 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:10 Wind van rechts onderdruk A



Project.....: 14811

Onderdeel....: spant as 1

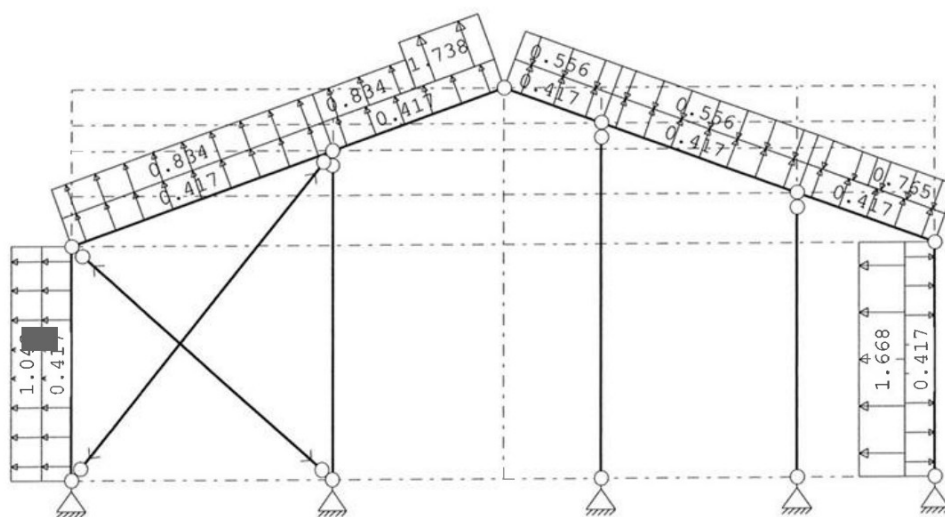
STAAFBELASTINGEN

B.G:10 Wind van rechts onderdruk A

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw2 | -1.67 | -1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw3 | -0.76 | -0.76 | 1.316 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw5 | 1.74 | 1.74 | 2.018 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw6 | 0.83 | 0.83 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw6 | 0.83 | 0.83 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw7 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:11 Wind van rechts overdruk A

**STAAFBELASTINGEN**

B.G:11 Wind van rechts overdruk A

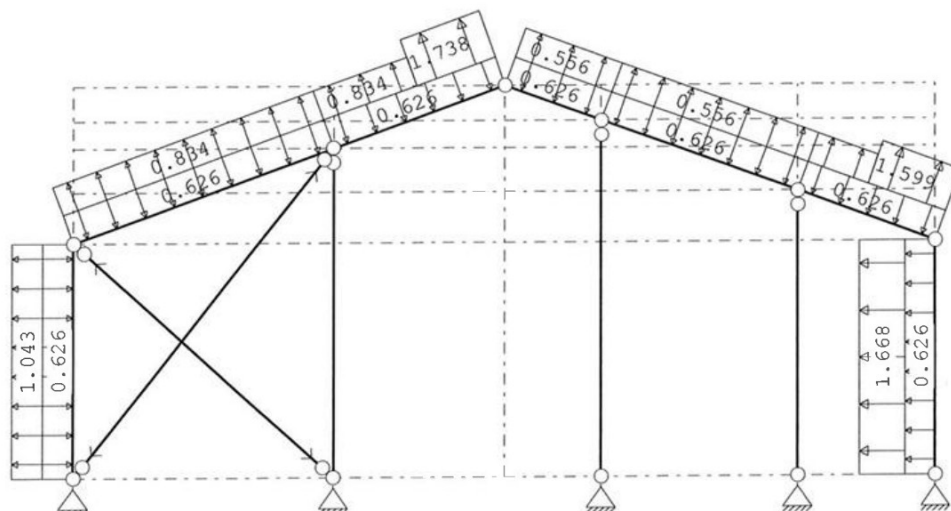
| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw2 | -1.67 | -1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw3 | -0.76 | -0.76 | 1.316 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw5 | 1.74 | 1.74 | 2.018 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw6 | 0.83 | 0.83 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw6 | 0.83 | 0.83 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw7 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel.....: spant as 1

BELASTINGEN

B.G:12 Wind van rechts onderdruk B

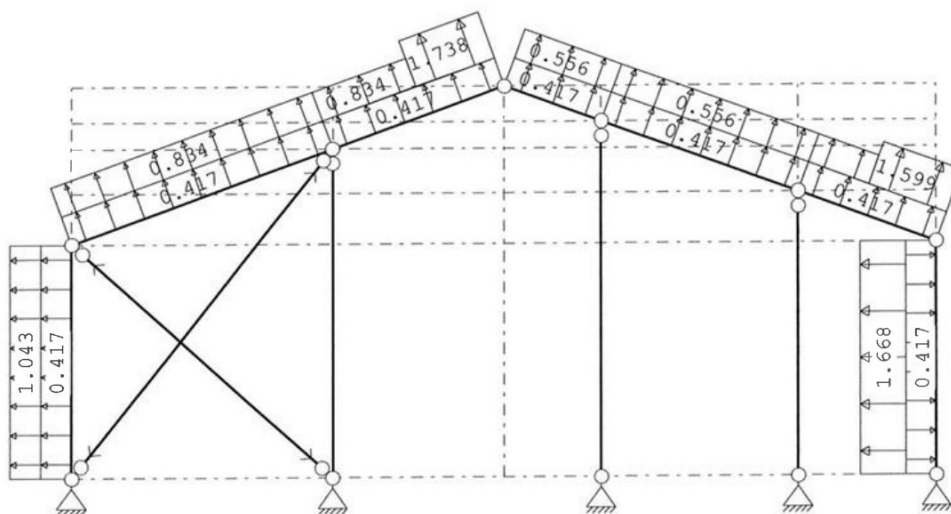
**STAAFBELASTINGEN**

B.G:12 Wind van rechts onderdruk B

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw2 | -1.67 | -1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw9 | 1.60 | 1.60 | 1.316 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw10 | 0.56 | 0.56 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw10 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw10 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw5 | 1.74 | 1.74 | 2.018 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw6 | 0.83 | 0.83 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw6 | 0.83 | 0.83 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw7 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:13 Wind van rechts overdruk B



Project.....: 14811

Onderdeel....: spant as 1

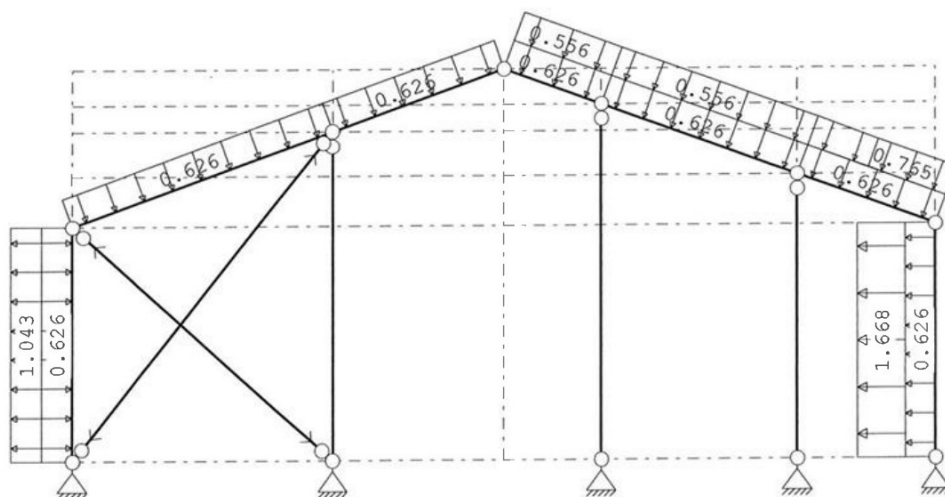
STAAFBELASTINGEN

B.G:13 Wind van rechts overdruk B

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw2 | -1.67 | -1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw9 | 1.60 | 1.60 | 1.316 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw10 | 0.56 | 0.56 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw10 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw10 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw5 | 1.74 | 1.74 | 2.018 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw6 | 0.83 | 0.83 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw6 | 0.83 | 0.83 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw7 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:14 Wind van rechts onderdruk C

**STAAFBELASTINGEN**

B.G:14 Wind van rechts onderdruk C

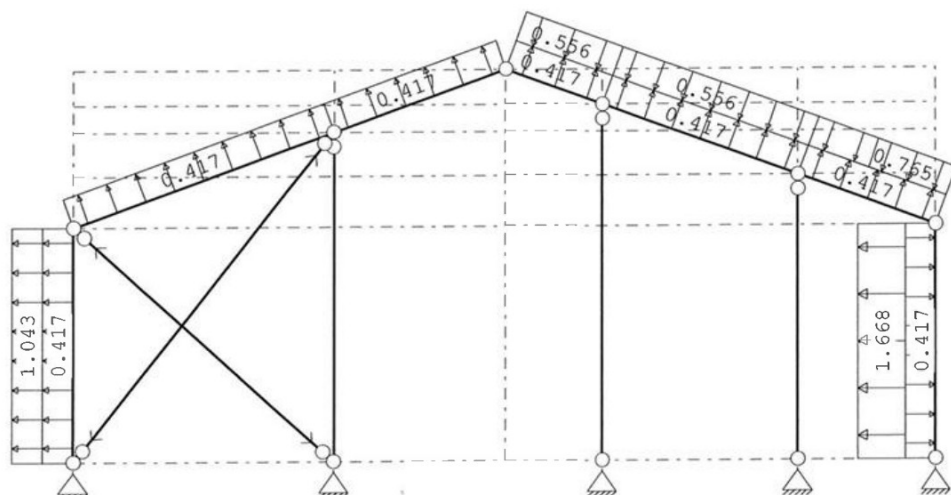
| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw2 | -1.67 | -1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw3 | -0.76 | -0.76 | 1.316 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw7 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel.....: spant as 1

BELASTINGEN

B.G:15 Wind van rechts overdruk C

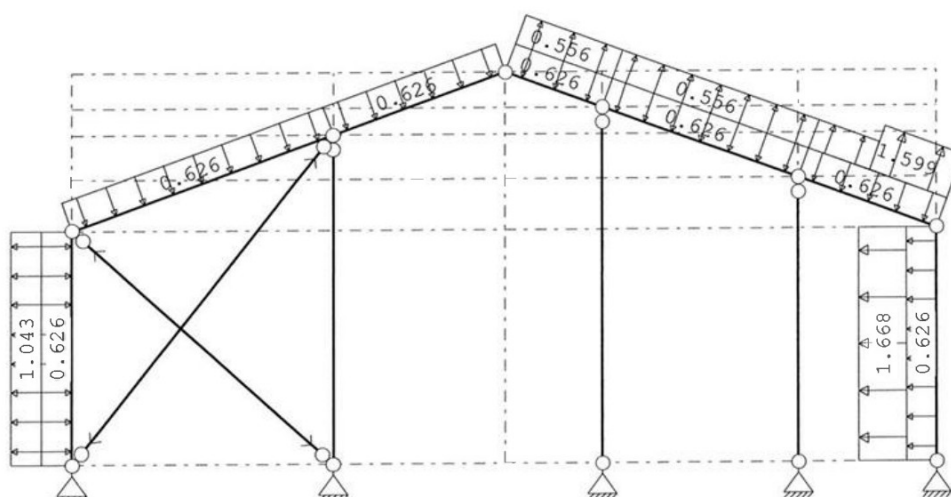
**STAAFBELASTINGEN**

B.G:15 Wind van rechts overdruk C

| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw2 | -1.67 | -1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw3 | -0.76 | -0.76 | 1.316 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw4 | -0.56 | -0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw7 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:16 Wind van rechts onderdruk D

**STAAFBELASTINGEN**

B.G:16 Wind van rechts onderdruk D

| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 1

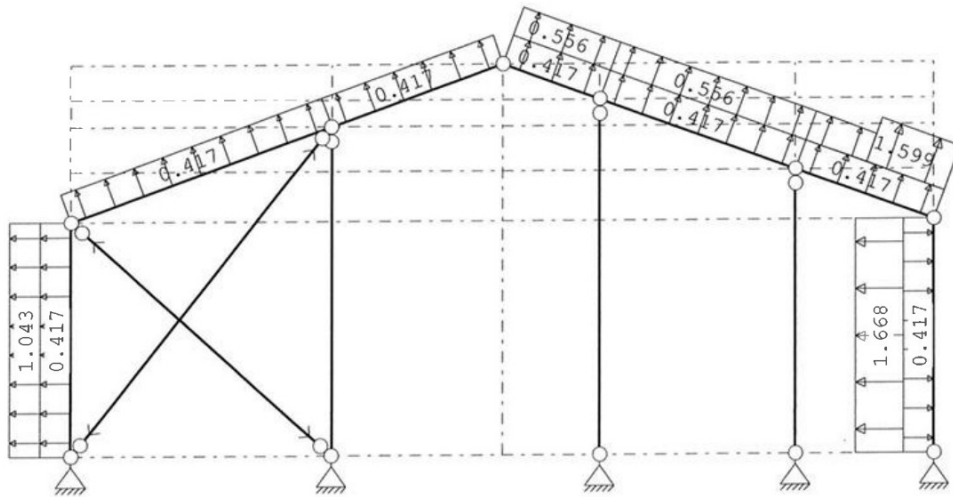
STAAFBELASTINGEN

B.G:16 Wind van rechts onderdruk D

| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 7 | 1:QZLokaal | Qw2 | -1.67 | -1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw9 | 1.60 | 1.60 | 1.316 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw10 | 0.56 | 0.56 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw10 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw10 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw7 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:17 Wind van rechts overdruk D



STAAFBELASTINGEN

B.G:17 Wind van rechts overdruk D

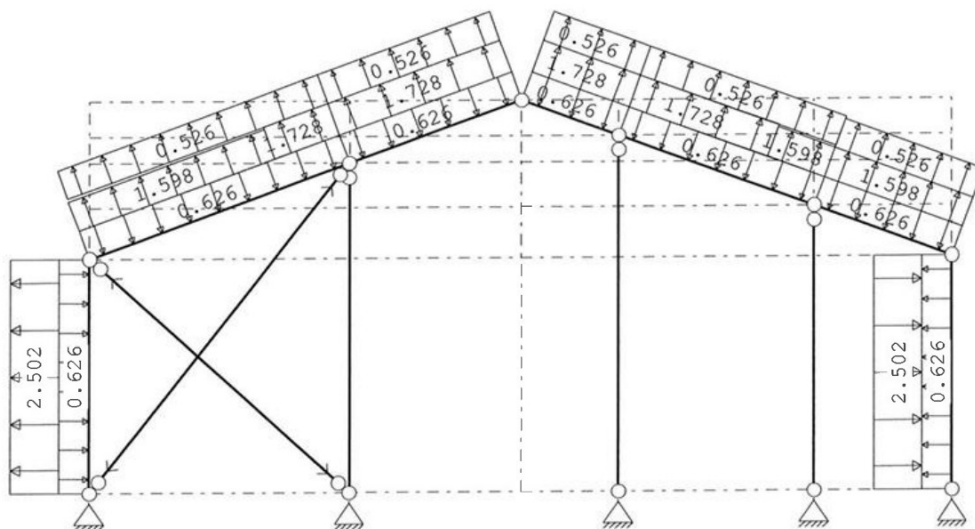
| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw2 | -1.67 | -1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw9 | 1.60 | 1.60 | 1.316 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw10 | 0.56 | 0.56 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw10 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw10 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw7 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 1

BELASTINGEN

B.G:18 Wind loodrecht onderdruk A

**STAAFBELASTINGEN**

B.G:18 Wind loodrecht onderdruk A

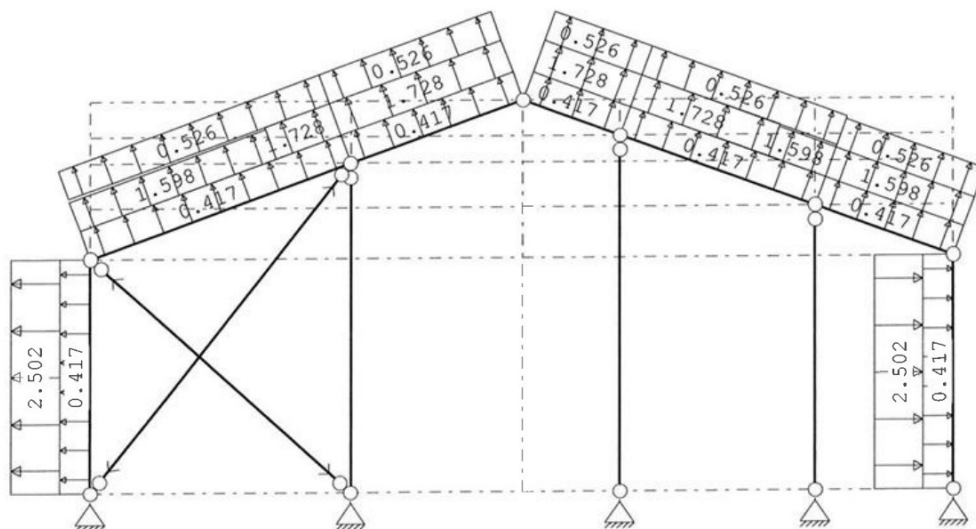
| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw11 | 2.50 | 2.50 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw11 | 2.50 | 2.50 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw12 | 1.73 | 1.73 | 4.266 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw13 | 1.60 | 1.60 | 0.000 | 1.417 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw14 | 0.53 | 0.53 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw12 | 1.73 | 1.73 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw14 | 0.53 | 0.53 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw12 | 1.73 | 1.73 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw14 | 0.53 | 0.53 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw13 | 1.60 | 1.60 | 3.013 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw12 | 1.73 | 1.73 | 0.000 | 1.244 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw14 | 0.53 | 0.53 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw13 | 1.60 | 1.60 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw14 | 0.53 | 0.53 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 1

BELASTINGEN

B.G:19 Wind loodrecht overdruk A

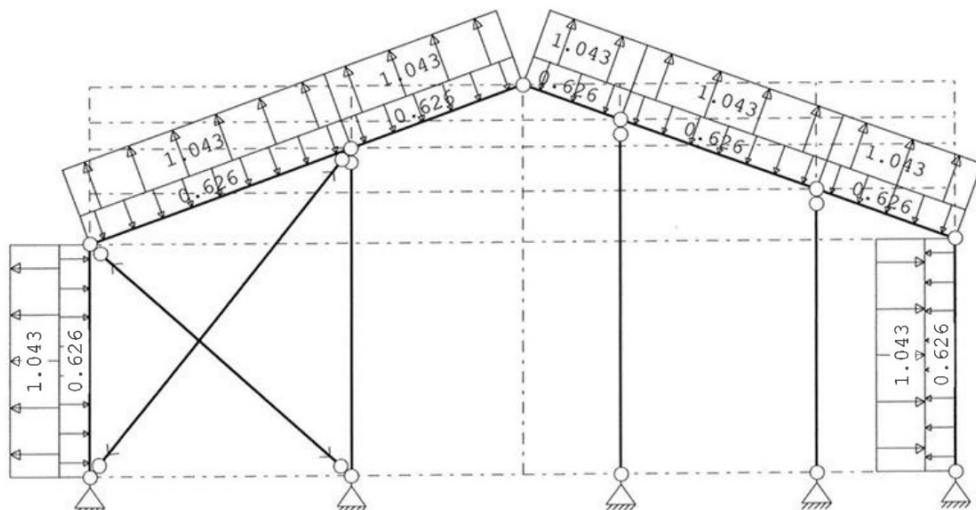
**STAAFBELASTINGEN**

B.G:19 Wind loodrecht overdruk A

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw11 | 2.50 | 2.50 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw11 | 2.50 | 2.50 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw12 | 1.73 | 1.73 | 4.266 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw13 | 1.60 | 1.60 | 0.000 | 1.417 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw14 | 0.53 | 0.53 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw12 | 1.73 | 1.73 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw14 | 0.53 | 0.53 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw12 | 1.73 | 1.73 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw14 | 0.53 | 0.53 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw13 | 1.60 | 1.60 | 3.013 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw12 | 1.73 | 1.73 | 0.000 | 1.244 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw14 | 0.53 | 0.53 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw13 | 1.60 | 1.60 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw14 | 0.53 | 0.53 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:20 Wind loodrecht onderdruk B



Project.....: 14811

Onderdeel....: spant as 1

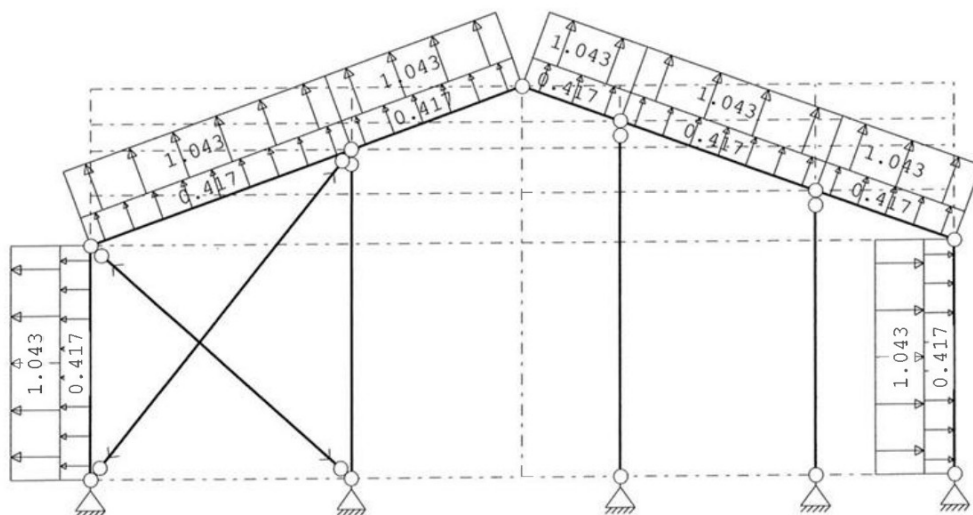
STAAFBELASTINGEN

B.G:20 Wind loodrecht onderdruk B

| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw1 | -0.63 | -0.63 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw15 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw15 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw16 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw16 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw16 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw16 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw16 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:21 Wind loodrecht overdruk B

**STAAFBELASTINGEN**

B.G:21 Wind loodrecht overdruk B

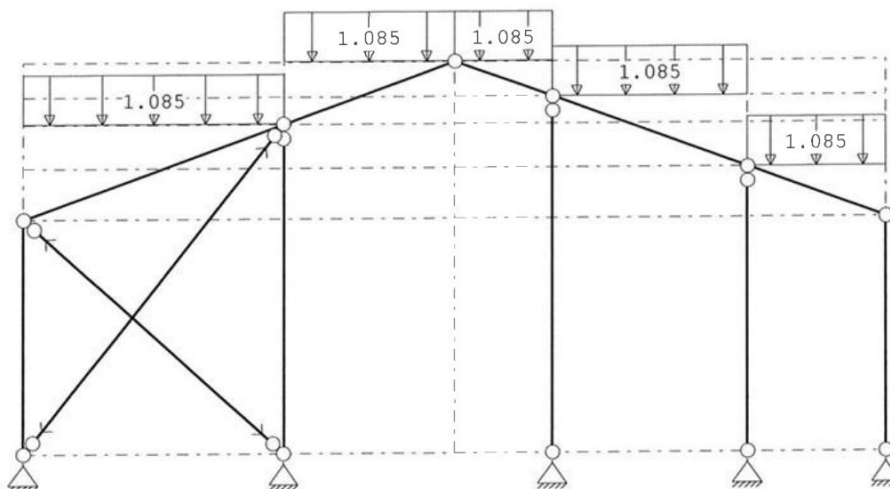
| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw8 | 0.42 | 0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw15 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 7 | 1:QZLokaal | Qw15 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw16 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw16 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw16 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw16 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw16 | 1.04 | 1.04 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 1

BELASTINGEN

B.G:22 Sneeuw A

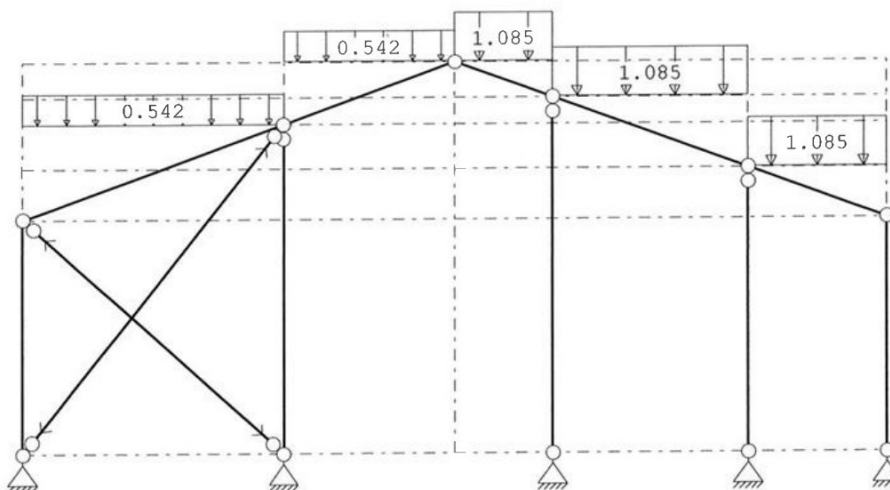
**STAAFBELASTINGEN**

B.G:22 Sneeuw A

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|-------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 2 | 3:QZgeProj. | Qs1 | -1.08 | -1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 3:QZgeProj. | Qs2 | -1.08 | -1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 3:QZgeProj. | Qs3 | -1.08 | -1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 3:QZgeProj. | Qs4 | -1.08 | -1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 3:QZgeProj. | Qs5 | -1.08 | -1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:23 Sneeuw B

**STAAFBELASTINGEN**

B.G:23 Sneeuw B

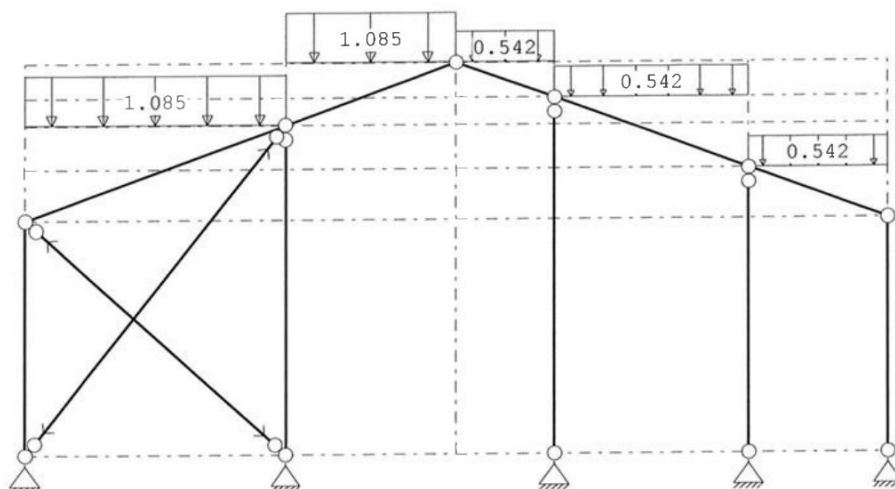
| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|-------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 2 | 3:QZgeProj. | Qs6 | -0.54 | -0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 3:QZgeProj. | Qs7 | -0.54 | -0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 3:QZgeProj. | Qs3 | -1.08 | -1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 3:QZgeProj. | Qs4 | -1.08 | -1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 3:QZgeProj. | Qs5 | -1.08 | -1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 1

BELASTINGEN

B.G:24 Sneeuw C

**STAAFBELASTINGEN**

B.G:24 Sneeuw C

| Staat | Type | Index | q1/p/m | q2 | A | B | Ψ_0 | Ψ_1 | Ψ_2 |
|-------|-------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 2 | 3:QZgeProj. | Qs1 | -1.08 | -1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 3:QZgeProj. | Qs2 | -1.08 | -1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 3:QZgeProj. | Qs8 | -0.54 | -0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 3:QZgeProj. | Qs9 | -0.54 | -0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 3:QZgeProj. | Qs10 | -0.54 | -0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGCOMBINATIES

| BC | Type |
|----|--|
| 1 | Fund. 1.22 $G_{k,1}$ |
| 2 | Fund. 0.90 $G_{k,1}$ |
| 3 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,2}$ |
| 4 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,3}$ |
| 5 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,4}$ |
| 6 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,5}$ |
| 7 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,6}$ |
| 8 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,7}$ |
| 9 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,8}$ |
| 10 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,9}$ |
| 11 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,10}$ |
| 12 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,11}$ |
| 13 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,12}$ |
| 14 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,13}$ |
| 15 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,14}$ |
| 16 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,15}$ |
| 17 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,16}$ |
| 18 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,17}$ |
| 19 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,18}$ |
| 20 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,19}$ |
| 21 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,20}$ |
| 22 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,21}$ |
| 23 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,22}$ |
| 24 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,23}$ |
| 25 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,24}$ |
| 26 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,2}$ |
| 27 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,3}$ |
| 28 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,4}$ |
| 29 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,5}$ |
| 30 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,6}$ |
| 31 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,7}$ |
| 32 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,8}$ |
| 33 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,9}$ |
| 34 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,10}$ |
| 35 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,11}$ |
| 36 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,12}$ |
| 37 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,13}$ |
| 38 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,14}$ |

Project.....: 14811

Onderdeel.....: spant as 1

BELASTINGCOMBINATIES

| BC Type | | | | |
|----------|------|-----------|---|------------------------|
| 39 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,15}$ |
| 40 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,16}$ |
| 41 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,17}$ |
| 42 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,18}$ |
| 43 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,19}$ |
| 44 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,20}$ |
| 45 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,21}$ |
| 46 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,22}$ |
| 47 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,23}$ |
| 48 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,24}$ |
| 49 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,2}$ |
| 50 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,3}$ |
| 51 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,4}$ |
| 52 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,5}$ |
| 53 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,6}$ |
| 54 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,7}$ |
| 55 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,8}$ |
| 56 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,9}$ |
| 57 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,10}$ |
| 58 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,11}$ |
| 59 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,12}$ |
| 60 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,13}$ |
| 61 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,14}$ |
| 62 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,15}$ |
| 63 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,16}$ |
| 64 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,17}$ |
| 65 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,18}$ |
| 66 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,19}$ |
| 67 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,20}$ |
| 68 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,21}$ |
| 69 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,22}$ |
| 70 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,23}$ |
| 71 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,24}$ |
| 72 Quas. | 1.00 | $G_{k,1}$ | | |
| 73 Freq. | 1.00 | $G_{k,1}$ | | |
| 74 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,2}$ |
| 75 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,3}$ |
| 76 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,4}$ |
| 77 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,5}$ |
| 78 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,6}$ |
| 79 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,7}$ |
| 80 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,8}$ |
| 81 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,9}$ |
| 82 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,10}$ |
| 83 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,11}$ |
| 84 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,12}$ |
| 85 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,13}$ |
| 86 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,14}$ |
| 87 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,15}$ |
| 88 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,16}$ |
| 89 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,17}$ |
| 90 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,18}$ |
| 91 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,19}$ |
| 92 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,20}$ |
| 93 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,21}$ |
| 94 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,22}$ |
| 95 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,23}$ |
| 96 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,24}$ |
| 97 Blij. | 1.00 | $G_{k,1}$ | | |

GUNSTIGE WERKING PERMANENTE BELASTINGEN

BC Staven met gunstige werking

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

Project.....: 14811

Onderdeel....: spant as 1

GUNSTIGE WERKING PERMANENTE BELASTINGEN

BC Staven met gunstige werking

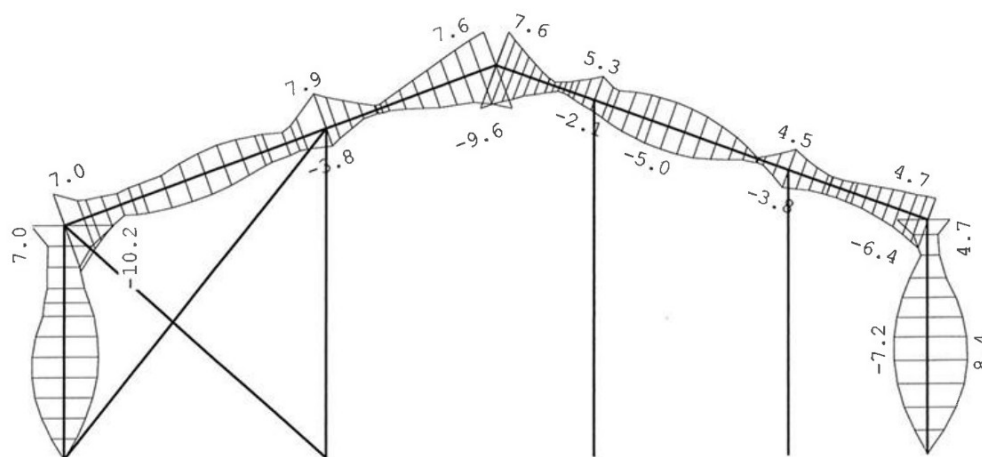
6 Geen
7 Geen
8 Geen
9 Geen
10 Geen
11 Geen
12 Geen
13 Geen
14 Geen
15 Geen
16 Geen
17 Geen
18 Geen
19 Geen
20 Geen
21 Geen
22 Geen
23 Geen
24 Geen
25 Geen
26 [REDACTED] de factor:0.90
27 Alle staven de factor:0.90
28 Alle staven de factor:0.90
29 [REDACTED] de factor:0.90
30 [REDACTED] de factor:0.90
31 [REDACTED] staven de factor:0.90
32 Alle staven de factor:0.90
33 Alle staven de factor:0.90
34 Alle staven de factor:0.90
35 Alle staven de factor:0.90
36 Alle staven de factor:0.90
37 Alle staven de factor:0.90
38 Alle staven de factor:0.90
39 Alle staven de factor:0.90
40 Alle staven de factor:0.90
41 Alle staven de factor:0.90
42 Alle staven de factor:0.90
43 Alle staven de factor:0.90
44 Alle staven de factor:0.90
45 Alle staven de factor:0.90
46 [REDACTED] de factor:0.90
47 Alle staven de factor:0.90
48 Alle staven de factor:0.90

Project.....: 14811

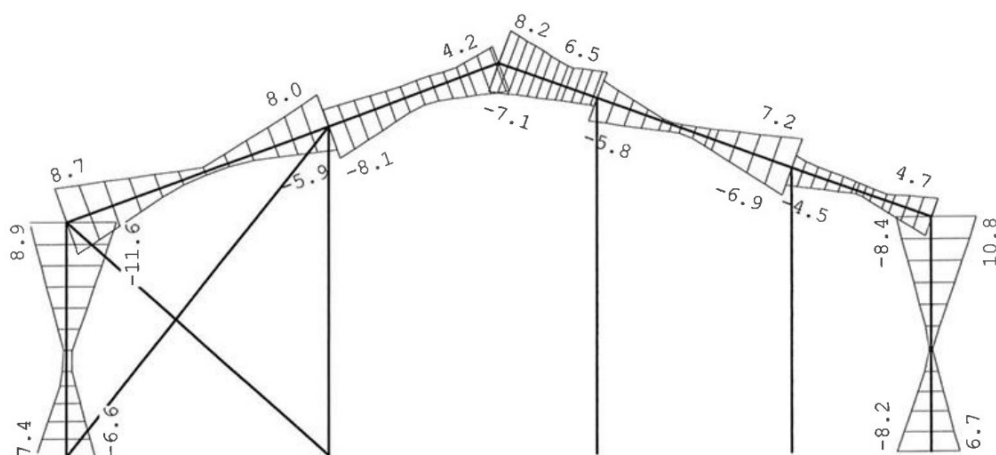
Onderdeel....: spant as 1

OMHULLENDE VAN DE FUNDAMENTELE COMBINATIES**MOMENTEN**

Fundamentele combinatie

**DWARSKRACHTEN**

Fundamentele combinatie

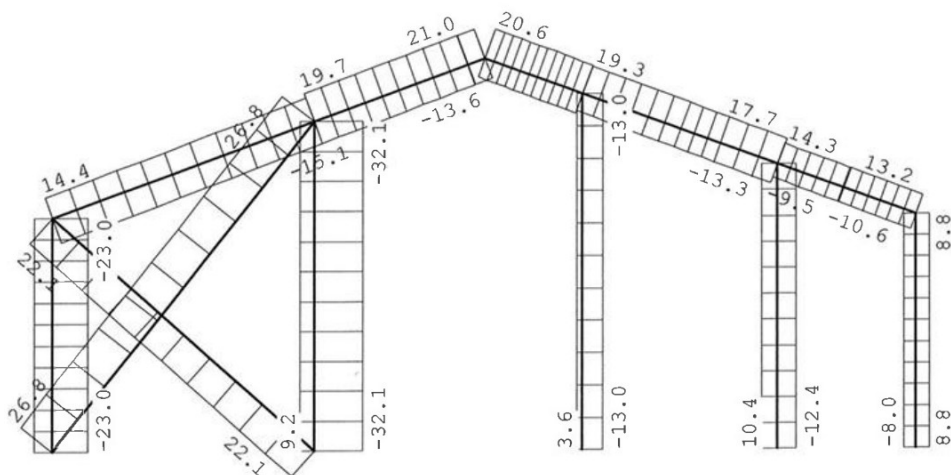


Project.....: 14811

Onderdeel....: spant as 1

NORMAALKRACHTEN

Fundamentele combinatie

**STAALPROFIELEN - ALGEMENE GEGEVENS**

Stabiliteit: Classificatie gehele constructie: Geschoord
 Doorbuiging en verplaatsing:
 Aantal bouwlagen: 1
 Gebouwtype: Industrieel
 Toel. horiz. verplaatsing gehele gebouw: h/150
 Kleinste gevelhoogte [m]: 4.8

MATERIAAL

| Mat nr. | Profielnaam | Vloeisp. [N/mm ²] | Productie methode | Min. drsn. klasse |
|---------|-------------|-------------------------------|-------------------|-------------------|
| 1 | IPE180 | 235 | Gewalst | 1 |
| 2 | IPE180Z | 235 | Gewalst | 1 |
| 3 | IPE200Z | 235 | Gewalst | 1 |
| 4 | ROND 16 | 235 | Gewalst | 1 |

Partiële veiligheidsfactoren:

Gamma M;0 : 1.00 Gamma M;1 : 1.00

KNIKSTABILITEIT

| Staal nr. | l_{sys} [m] | Classif. y sterke as | $l_{knik,y}$ [m] | Extra aanp. y [kN] | Classif. z zwakke as | $l_{knik,z}$ [m] | Extra aanp. z [kN] |
|-----------|---------------|-------------------------|------------------|-----------------------|-------------------------|------------------|-----------------------|
| 1 | 4.800 | Geschoord | 4.800 | 0.0 | Geschoord | 4.800 | 0.0 |
| 2 | 5.683 | Geschoord | 5.683 | 0.0 | Geschoord | 5.683 | 0.0 |
| 3 | 3.724 | Geschoord | 3.724 | 0.0 | Geschoord | 3.724 | 0.0 |
| 4 | 2.128 | Geschoord | 2.128 | 0.0 | Geschoord | 2.128 | 0.0 |
| 5 | 4.257 | Geschoord | 4.257 | 0.0 | Geschoord | 4.257 | 0.0 |
| 6 | 3.022 | Geschoord | 3.022 | 0.0 | Geschoord | 3.022 | 0.0 |
| 7 | 4.800 | Geschoord | 4.800 | 0.0 | Geschoord | 4.800 | 0.0 |
| 8 | 6.744 | Geschoord | 6.744 | 0.0 | Geschoord | 1.900* | 0.0 |
| 9 | 7.290 | Geschoord | 7.290 | 0.0 | Geschoord | 1.900* | 0.0 |
| 10 | 5.834 | Geschoord | 5.834 | 0.0 | Geschoord | 1.900* | 0.0 |
| 11 | 8.602 | Geschoord | 8.602 | 0.0 | Geschoord | 8.602 | 0.0 |
| 12 | 7.180 | Geschoord | 7.180 | 0.0 | Geschoord | 7.180 | 0.0 |

* Door gebruiker gedefinieerde kniklengte

KIPSTABILITEIT

| Staal nr. | Plts. aangr. | l gaffel [m] | Kipsteunafstanden [m] |
|-----------|--------------|--------------|-----------------------|
| 1 | 1.0*h | boven: 4.80 | 4.800 |
| | | onder: 4.80 | 4.800 |
| 2 | 1.0*h | boven: 5.68 | 5.683 |
| | | onder: 5.68 | 5.683 |
| 3 | 1.0*h | boven: 3.72 | 3.724 |
| | | onder: 3.72 | 3.724 |
| 4 | 1.0*h | boven: 2.13 | 2.128 |
| | | onder: 2.13 | 2.128 |

Project.....: 14811

Onderdeel....: spant as 1

KIPSTABILITEIT

| Staaf | Plts. aangr. | 1 gaffel | Kipsteunafstanden |
|-------|-----------------|----------|--------------------|
| | | [m] | [m] |
| 5 | 1.0*h | boven: | 4.26 4.257 |
| | | onder: | 4.26 4.257 |
| 6 | 1.0*h | boven: | 3.02 3.022 |
| | | onder: | 3.02 3.022 |
| 7 | 1.0*h | boven: | 4.80 4.800 |
| | | onder: | 4.80 4.800 |
| 8 | 1.0*h | boven: | 6.74 1;2*1,9;1,944 |
| | | onder: | 6.74 1;2*1,9;1,944 |
| 9 | 1.0*h | boven: | 7.29 1;3*1,9;,59 |
| | | onder: | 7.29 1;3*1,9;,59 |
| 10 | 1.0*h | boven: | 5.83 1;2*1,9;1,034 |
| | | onder: | 5.83 1;2*1,9;1,034 |
| 11 | 1.0*h | boven: | 8.60 8.602 |
| | | onder: | 8.60 8.602 |
| 12 | 1.0*h | boven: | 7.18 7.180 |
| | | onder: | 7.18 7.180 |

Winkel gewelkolen
(pag. 37)

KRACHTEN UIT HET VLAK

| Staaf | Mbegin [kNm] | Mmidden [kNm] | Meinde [kNm] | Vbegin [kN] | Vtpv [kN] | Mmax [kN] | Veinde [kN] | Mx [kNm] |
|-------|-----------------|------------------|-----------------|----------------|--------------|--------------|----------------|-------------|
| 8 | 0.0 | 25.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9 | 0.0 | 26.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10 | 0.0 | 15.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

TOETSING SPANNINGEN

| Staaf | Mat | BC | Sit | Kl | Plaats | Norm | Artikel | Formule | Hoogste toetsing U.C. [N/mm ²] | Opm. |
|-------|-----|----|-----|----|--------|---------|---------|---------|---|------|
| nr. | | | | | | | | | | |
| 1 | 1 | 3 | 1 | 1 | Staaf | EN3-1-1 | 6.3.3 | (6.62) | 0.485 | 114 |
| 2 | 1 | 3 | 1 | 1 | Staaf | EN3-1-1 | 6.3.3 | (6.62) | 0.567 | 133 |
| 3 | 1 | 34 | 1 | 1 | Staaf | EN3-1-1 | 6.3.3 | (6.62) | 0.302 | 71 |
| 4 | 1 | 20 | 1 | 1 | Begin | EN3-1-1 | 6.2.10 | (6.31) | 0.245 | 58 |
| 5 | 1 | 11 | 1 | 1 | Staaf | EN3-1-1 | 6.3.3 | (6.62) | 0.380 | 89 |
| 6 | 1 | 17 | 1 | 1 | Staaf | EN3-1-1 | 6.3.3 | (6.62) | 0.172 | 40 |
| 7 | 1 | 11 | 1 | 1 | Staaf | EN3-1-1 | 6.3.3 | (6.62) | 0.492 | 116 |
| 8 | 2 | 3 | 1 | 1 | Staaf | EN3-1-1 | 6.3.3 | (6.61) | 0.832 | 196 |
| 9 | 2 | 23 | 1 | 1 | Staaf | EN3-1-1 | 6.3.3 | (6.62) | 0.812 | 191 |
| 10 | 2 | 11 | 1 | 1 | Staaf | EN3-1-1 | 6.3.3 | (6.62) | 0.464 | 109 |
| 11 | 4 | 3 | 1 | 1 | Begin | EN3-1-1 | 6.2.3 | (6.5) | 0.568 | 133 |
| 12 | 4 | 35 | 1 | 1 | Begin | EN3-1-1 | 6.2.3 | (6.5) | 0.469 | 110 |

→ profielen voldoen!

Project.....: 14811
 Onderdeel.....: spant as 8
 Dimensies.....: kN;m;rad (tenzij anders aangegeven)
 Datum.....: 22/05/2023
 Bestand.....: F:\Tekenkamer\Constructeur\Projecten Raamwerken
 Ateko\spant as 8.rww

Belastingbreedte.: 2.580
 Rekenmodel.....: 1e-orde-elastisch.
 Theorie voor de bepaling van de krachtsverdeling:
 Geometrisch lineair.
 Fysisch lineair.

Gunstige werking van de permanente belasting wordt automatisch verwerkt.

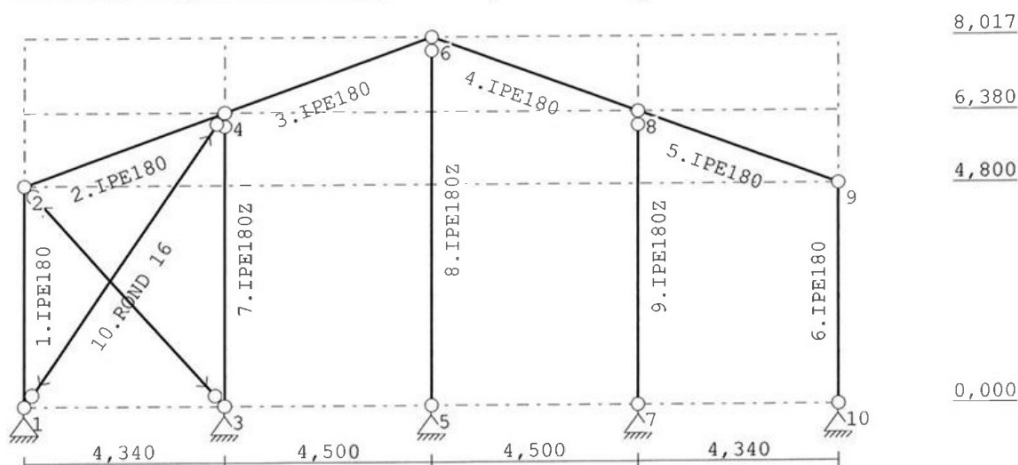
Toegepaste normen volgens Eurocode met Nederlandse NB

AS 3

| | | | |
|-------------|----------------------|------------------|-------------|
| Belastingen | NEN-EN 1990:2002 | C2:2010 | NB:2011(nl) |
| | NEN-EN 1991-1-1:2002 | C1:2009 | NB:2011(nl) |
| | NEN-EN 1991-1-3:2003 | C1:2009 | NB:2011(nl) |
| | NEN-EN 1991-1-4:2005 | C2:2011 | NB:2011(nl) |
| Staal | NEN-EN 1993-1-1:2006 | C2:2011, A1:2016 | NB:2016(nl) |

GEOMETRIE

Bel. breedte = $\frac{1}{2} \times 4,84 + 0,16 = 2,58 \text{ m}$



STRAMIENLIJNEN

| Nr. | Naam | X | Z-min | Z-max |
|-----|------|--------|-------|-------|
| 1 | | 0.000 | 0.000 | 8.017 |
| 2 | | 4.340 | 0.000 | 8.017 |
| 3 | | 8.840 | 0.000 | 8.017 |
| 4 | | 13.340 | 0.000 | 8.017 |
| 5 | | 17.680 | 0.000 | 8.017 |

NIVEAUS

| Nr. | Z | X-min | X-max |
|-----|-------|-------|--------|
| 1 | 0.000 | 0.000 | 17.680 |
| 2 | 4.800 | 0.000 | 17.680 |
| 3 | 6.380 | 0.000 | 17.680 |
| 4 | 8.017 | 0.000 | 17.680 |

MATERIALEN

| Mt | Omschrijving | E-modulus [N/mm ²] | S.G. | Pois. | Uitz. coëff |
|----|--------------|--------------------------------|------|-------|-------------|
| 1 | S235 | 210000 | 78.5 | 0.30 | 1.2000e-05 |

PROFIELEN [mm]

| Prof. | Omschrijving | Materiaal | Oppervlak | Traagheid | Vormf. |
|-------|--------------|-----------|------------|------------|--------|
| 1 | IPE180 | 1:S235 | 2.3950e+03 | 1.3170e+07 | 0.00 |
| 2 | IPE180Z | 1:S235 | 2.3950e+03 | 1.0090e+06 | 0.00 |
| 3 | ROND 16 | 1:S235 | 2.0106e+02 | 3.2170e+03 | 0.00 |

Project.....: 14811

Onderdeel....: spant as 8

PROFIELEN vervolg [mm]

| Prof. | Staaftype | Breedte | Hoogte | e | Type | b1 | h1 | b2 | h2 |
|-------|-----------|---------|--------|------|------|----|----|----|----|
| 1 | 0:Normaal | 91 | 180 | 90.0 | | | | | |
| 2 | 0:Normaal | 91 | 180 | 45.5 | | | | | |
| 3 | 1:Trek | 16 | 16 | 8.0 | | | | | |

KNOPEN

| Knoop | X | Z | Knoop | X | Z |
|-------|-------|-------|-------|--------|-------|
| 1 | 0.000 | 0.000 | 6 | 8.840 | 8.017 |
| 2 | 0.000 | 4.800 | 7 | 13.340 | 0.000 |
| 3 | 4.340 | 0.000 | 8 | 13.340 | 6.380 |
| 4 | 4.340 | 6.380 | 9 | 17.680 | 4.800 |
| 5 | 8.840 | 0.000 | 10 | 17.680 | 0.000 |

STAVEN

| St. | ki | kj | Profiel | Aansl.i | Aansl.j | Lengte Opm. |
|-----|----|----|-----------|---------|---------|-------------|
| 1 | 1 | 2 | 1:IPE180 | NDM | NDM | 4.800 |
| 2 | 2 | 4 | 1:IPE180 | NDM | NDM | 4.619 |
| 3 | 4 | 6 | 1:IPE180 | NDM | NDM | 4.789 |
| 4 | 6 | 8 | 1:IPE180 | NDM | NDM | 4.789 |
| 5 | 8 | 9 | 1:IPE180 | NDM | NDM | 4.619 |
| 6 | 9 | 10 | 1:IPE180 | NDM | NDM | 4.800 |
| 7 | 3 | 4 | 2:IPE180Z | NDM | ND- | 6.380 |
| 8 | 5 | 6 | 2:IPE180Z | NDM | ND- | 8.017 |
| 9 | 7 | 8 | 2:IPE180Z | NDM | ND- | 6.380 |
| 10 | 1 | 4 | 3:ROND 16 | ND- | ND- | 7.716 |
| 11 | 3 | 2 | 3:ROND 16 | ND- | ND- | 6.471 |

VASTE STEUNPUNTEN

| Nr. | knoop | Kode | XZR 1=vast 0=vrij | Hoek |
|-----|-------|------|-------------------|------|
| 1 | 1 | 110 | | 0.00 |
| 2 | 3 | 110 | | 0.00 |
| 3 | 5 | 110 | | 0.00 |
| 4 | 7 | 110 | | 0.00 |
| 5 | 10 | 110 | | 0.00 |

BELASTINGGENERATIE ALGEMEEN.

| | | | |
|-----------------------------|-------|-------------------------|------|
| Betrouwbaarheidsklasse..... | 1 | Referentieperiode..... | 15 |
| Gebouwdiepte..... | 35.00 | Gebouwhoogte..... | 8.02 |
| Niveau aansl.terrein..... | 0.00 | E.g. scheid.w. [kN/m2]: | 1.20 |

WIND

| | |
|-----------------------------------|-------------------------------------|
| Terrein categorie ...[4.3.2].... | Onbebouwd |
| Windgebied | 3 Vb,0 ..[4.2].....: 24.500 |
| Referentie periode wind..... | 15.00 Vb(p) ..[4.2].....: 22.397 |
| K | 0.280 n[4.2].....: 0.500 |
| Positie spant in het gebouw.... | 0.000 Kr[4.3.2].....: 0.209 |
| z0 | 0.200 Zmin ..[4.3.2].....: 4.000 |
| Co wind van links ..[4.3.3].... | 1.000 Co wind van rechts....: 1.000 |
| Co wind loodrecht ..[4.3.3].... | 1.000 |
| Cpi wind van links ..[7.2.9].... | 0.200 -0.300 |
| Cpi windloodrecht ...[7.2.9].... | 0.200 -0.300 |
| Cpi wind van rechts ..[7.2.9].... | 0.200 -0.300 |
| Cfr windwrijving[7.5]..... | 0.040 |

SNEEUW

| | |
|--------------------------------|------|
| Sneeuwbelasting (sk) 50 jaar : | 0.70 |
| Sneeuwbelasting (sn) n jaar : | 0.53 |

STAAFTYPEN

| Type | staven |
|------------------|---------|
| 4:Wand / kolom. | : 7-9 |
| 5:Linker gevel. | : 1 |
| 6:Rechter gevel. | : 6 |
| 7:Dak. | : 2-5 |
| 9:Open. | : 10,11 |

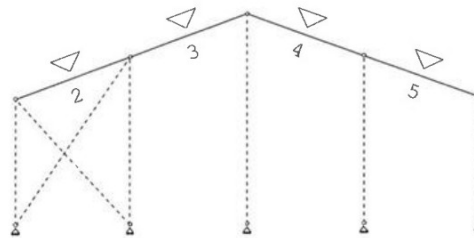
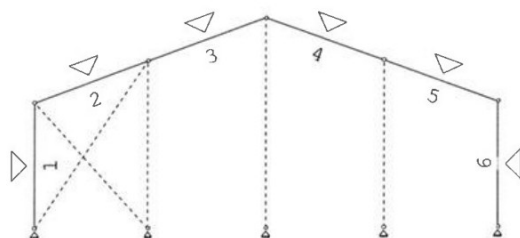
Project.....: 14811

Onderdeel.....: spant as 8

LASTVELDEN

Wind staven

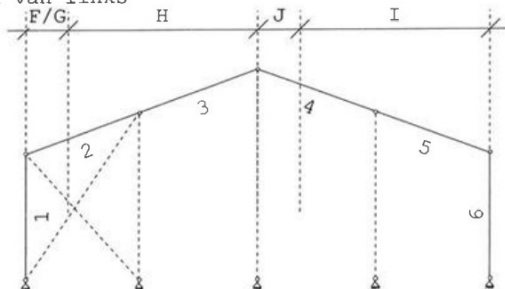
Sneeuw staven

**WIND DAKTYPES**

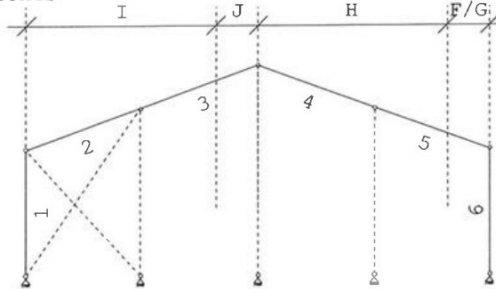
| Nr. | Staaft Type | reductie bij wind van links | reductie bij wind van rechts | Cpe volgens art: |
|-----|--------------|--------------------------------|---------------------------------|------------------|
| 1 | 1 Gevel | 1.000 | 1.000 | 7.2.2 |
| 2 | 2-3 Zadeldak | 1.000 | 1.000 | 7.2.5 |
| 3 | 4-5 Zadeldak | 1.000 | 1.000 | 7.2.5 |
| 4 | 6 Gevel | 1.000 | 1.000 | 7.2.2 |

WIND ZONES

Wind van links



Wind van rechts

**WIND VAN LINKS ZONES**

| Nr. | Staaft | Positie | Lengte | Zone |
|-----|--------|---------|--------|------|
| 1 | 1 | 0.000 | 4.800 | D |
| 2 | 2-3 | 0.000 | 1.603 | F/G |
| 3 | 2-3 | 1.603 | 7.237 | H |
| 4 | 4-5 | 0.000 | 1.603 | J |
| 5 | 4-5 | 1.603 | 7.237 | I |
| 6 | 6 | 0.000 | 4.800 | E |

WIND VAN RECHTS ZONES

| Nr. | Staaft | Positie | Lengte | Zone |
|-----|--------|---------|--------|------|
| 1 | 6 | 0.000 | 4.800 | D |
| 2 | 4-5 | 0.000 | 1.603 | F/G |
| 3 | 4-5 | 1.603 | 7.237 | H |
| 4 | 2-3 | 0.000 | 1.603 | J |
| 5 | 2-3 | 1.603 | 7.237 | I |
| 6 | 1 | 0.000 | 4.800 | E |

Wind indexen

| Index | CsCd | Cpe/Cpi | qp | breedte | reductie | Qw Zone | Hoek(en) |
|-------|------|---------|-------|---------|----------|---------|----------|
| Qw1 | | 0.300 | 0.540 | 2.580 | | -0.418 | -i |
| Qw2 | 1.00 | 0.800 | 0.540 | 2.580 | | -1.115 | D |
| Qw3 | 1.00 | 0.367 | 0.540 | 2.580 | | -0.511 | F |
| Qw4 | 1.00 | 0.267 | 0.540 | 2.580 | | -0.372 | H |
| Qw5 | 1.00 | -0.833 | 0.540 | 2.580 | | 1.162 | J |
| Qw6 | 1.00 | -0.400 | 0.540 | 2.580 | | 0.558 | I |
| Qw7 | 1.00 | -0.500 | 0.540 | 2.580 | | 0.697 | E |
| Qw8 | | -0.200 | 0.540 | 2.580 | | 0.279 | +i |
| Qw9 | 1.00 | -0.767 | 0.540 | 2.580 | | 1.069 | F |
| Qw10 | 1.00 | -0.267 | 0.540 | 2.580 | | 0.372 | H |
| Qw11 | 1.00 | -1.200 | 0.540 | 2.580 | | 1.673 | A |
| Qw12 | 1.00 | -1.333 | 0.540 | 1.603 | | 1.155 | G |
| Qw13 | 1.00 | -1.233 | 0.540 | 1.603 | | 1.069 | F |
| Qw14 | 1.00 | -0.667 | 0.540 | 0.977 | | 0.352 | H |
| Qw15 | 1.00 | -0.500 | 0.540 | 2.580 | | 0.697 | C |
| Qw16 | 1.00 | -0.500 | 0.540 | 2.580 | | 0.697 | I |

Project.....: 14811
Onderdeel....: spant as 8

SNEEUW DAKTYPEN

| Staaf | artikel |
|-------|----------------|
| 2-3 | 5.3.3 Zadeldak |
| 4-5 | 5.3.3 Zadeldak |

Sneeuw indexen

| Index | art | μ | s_k | red. posfac | breedte | Q_s | hoek |
|-------|-------|-------|-------|-------------|---------|-------|------|
| Qs1 | 5.3.3 | 0.800 | 0.53 | 1.00 | 2.580 | 1.085 | 20.0 |
| Qs2 | 5.3.3 | 0.800 | 0.53 | 1.00 | 2.580 | 1.085 | 20.0 |
| Qs3 | 5.3.3 | 0.400 | 0.53 | 1.00 | 2.580 | 0.542 | 20.0 |
| Qs4 | 5.3.3 | 0.400 | 0.53 | 1.00 | 2.580 | 0.542 | 20.0 |

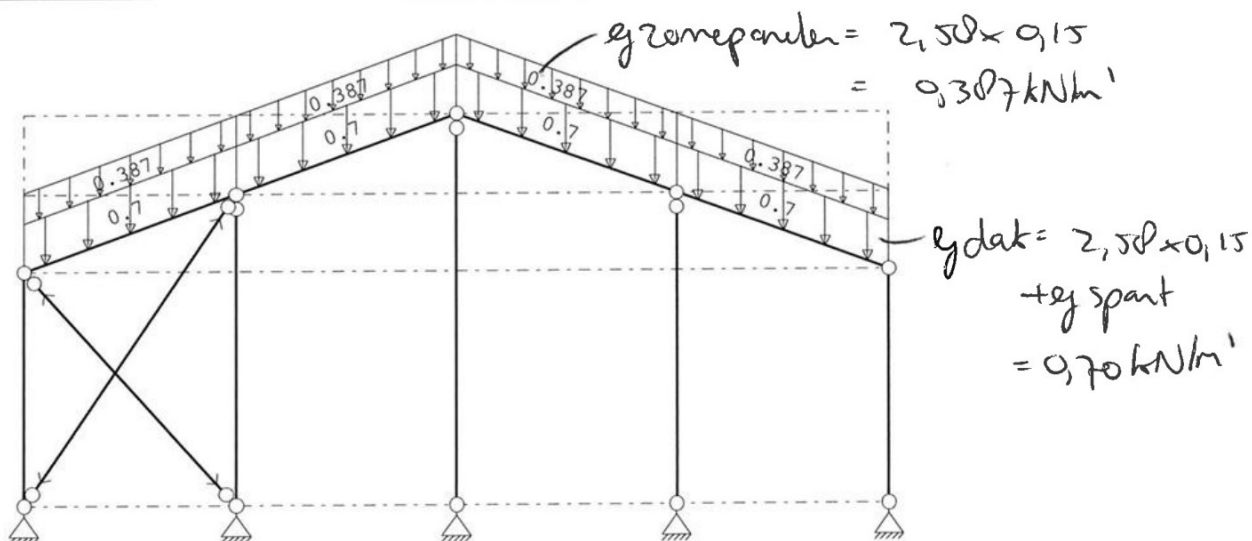
 $\alpha = 20^\circ$ **BELASTINGGEVALLEN**

| B.G. | Omschrijving | Type |
|------|---------------------------------|------|
| | 1 Permanente belasting EGZ=0.00 | 1 |
| g | 2 Wind van links onderdruk A | 7 |
| g | 3 Wind van links overdruk A | 8 |
| g | 4 Wind van links onderdruk B | 9 |
| g | 5 Wind van links overdruk B | 10 |
| g | 6 Wind van links onderdruk C | 37 |
| g | 7 Wind van links overdruk C | 38 |
| g | 8 Wind van links onderdruk D | 39 |
| g | 9 Wind van links overdruk D | 40 |
| g | 10 Wind van rechts onderdruk A | 11 |
| g | 11 Wind van rechts overdruk A | 12 |
| g | 12 Wind van rechts onderdruk B | 13 |
| g | 13 Wind van rechts overdruk B | 14 |
| g | 14 Wind van rechts onderdruk C | 41 |
| g | 15 Wind van rechts overdruk C | 42 |
| g | 16 Wind van rechts onderdruk D | 43 |
| g | 17 Wind van rechts overdruk D | 44 |
| g | 18 Wind loodrecht onderdruk A | 15 |
| g | 19 Wind loodrecht overdruk A | 16 |
| g | 20 Wind loodrecht onderdruk B | 45 |
| g | 21 Wind loodrecht overdruk B | 46 |
| g | 22 Sneeuw A | 22 |
| g | 23 Sneeuw B | 23 |
| g | 24 Sneeuw C | 33 |

g = gegenereerd belastinggeval

BELASTINGEN

B.G:1 Permanente belasting



Project.....: 14811

Onderdeel....: spant as 8

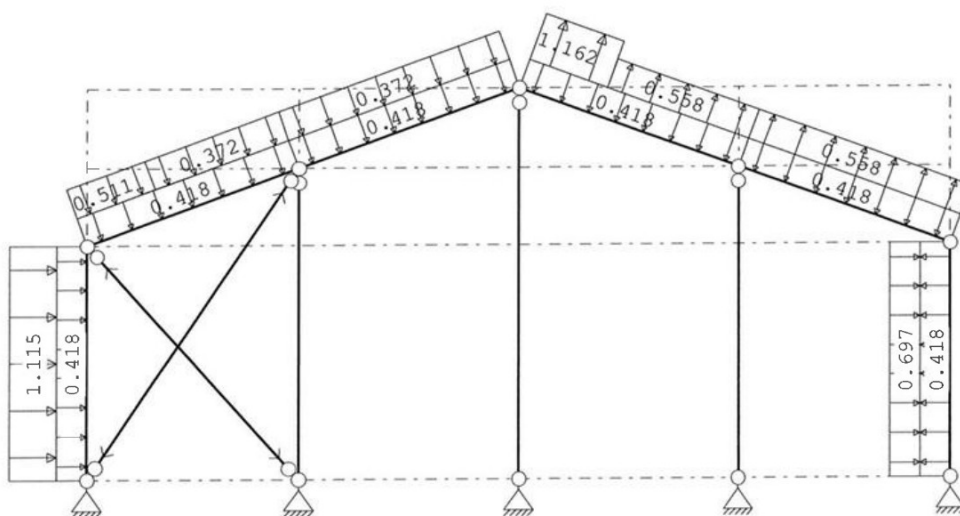
STAAFBELASTINGEN

B.G:1 Permanente belasting

| Staaf | Type | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|-------------|--------|-------|-------|-------|----------|----------|----------|
| 2 | 5:QZGlobaal | -0.70 | -0.70 | 0.000 | 0.000 | | | |
| 3 | 5:QZGlobaal | -0.70 | -0.70 | 0.000 | 0.000 | | | |
| 4 | 5:QZGlobaal | -0.70 | -0.70 | 0.000 | 0.000 | | | |
| 5 | 5:QZGlobaal | -0.70 | -0.70 | 0.000 | 0.000 | | | |
| 2 | 5:QZGlobaal | -0.39 | -0.39 | 0.000 | 0.000 | | | |
| 3 | 5:QZGlobaal | -0.39 | -0.39 | 0.000 | 0.000 | | | |
| 4 | 5:QZGlobaal | -0.39 | -0.39 | 0.000 | 0.000 | | | |
| 5 | 5:QZGlobaal | -0.39 | -0.39 | 0.000 | 0.000 | | | |

BELASTINGEN

B.G:2 Wind van links onderdruk A

**STAAFBELASTINGEN**

B.G:2 Wind van links onderdruk A

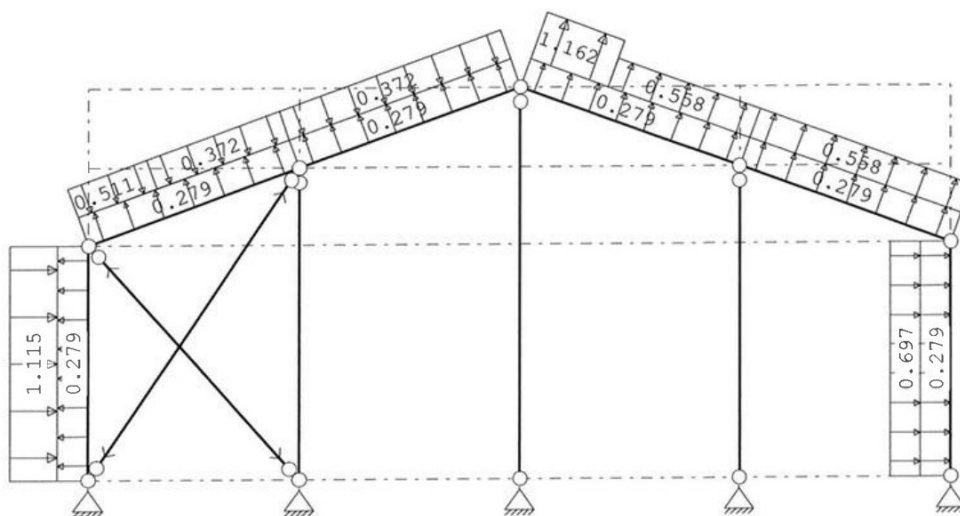
| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -1.12 | -1.12 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw3 | -0.51 | -0.51 | 0.000 | 2.912 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw4 | -0.37 | -0.37 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw4 | -0.37 | -0.37 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw5 | 1.16 | 1.16 | 0.000 | 3.082 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw6 | 0.56 | 0.56 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw6 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw7 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 8

BELASTINGEN

B.G:3 Wind van links overdruk A

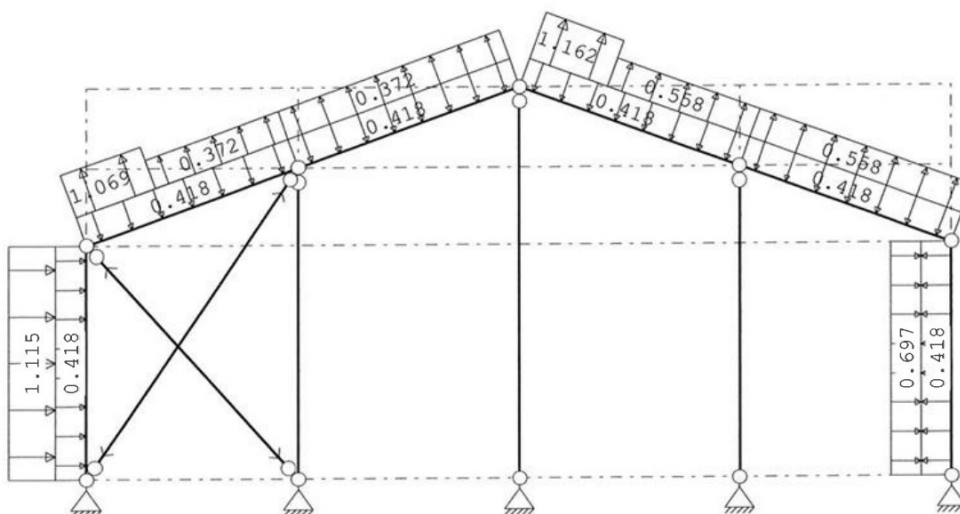
**STAAFBELASTINGEN**

B.G:3 Wind van links overdruk A

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -1.12 | -1.12 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw3 | -0.51 | -0.51 | 0.000 | 2.912 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw4 | -0.37 | -0.37 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw4 | -0.37 | -0.37 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw5 | 1.16 | 1.16 | 0.000 | 3.082 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw6 | 0.56 | 0.56 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw6 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw7 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:4 Wind van links onderdruk B



Project.....: 14811

Onderdeel....: spant as 8

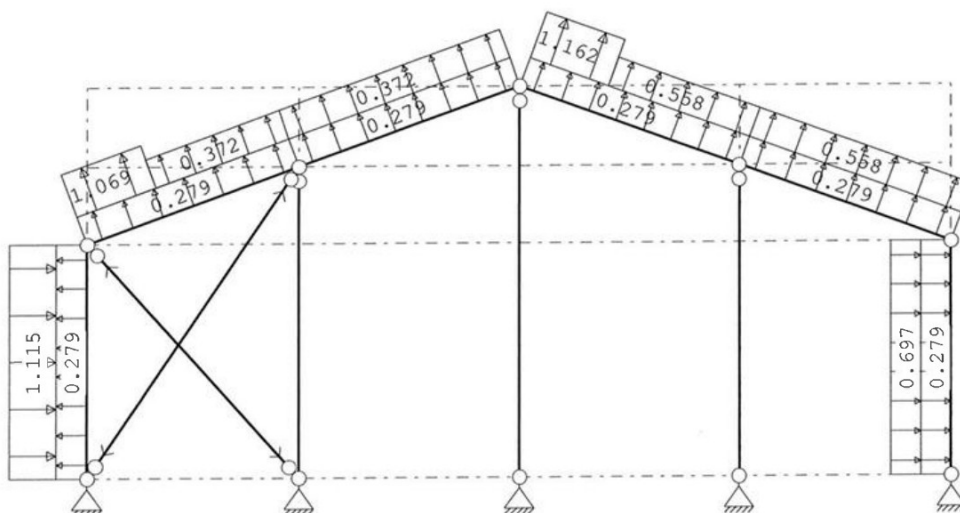
STAAFBELASTINGEN

B.G:4 Wind van links onderdruk B

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -1.12 | -1.12 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw9 | 1.07 | 1.07 | 0.000 | 2.912 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw10 | 0.37 | 0.37 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw10 | 0.37 | 0.37 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw5 | 1.16 | 1.16 | 0.000 | 3.082 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw6 | 0.56 | 0.56 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw6 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw7 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:5 Wind van links overdruk B

**STAAFBELASTINGEN**

B.G:5 Wind van links overdruk B

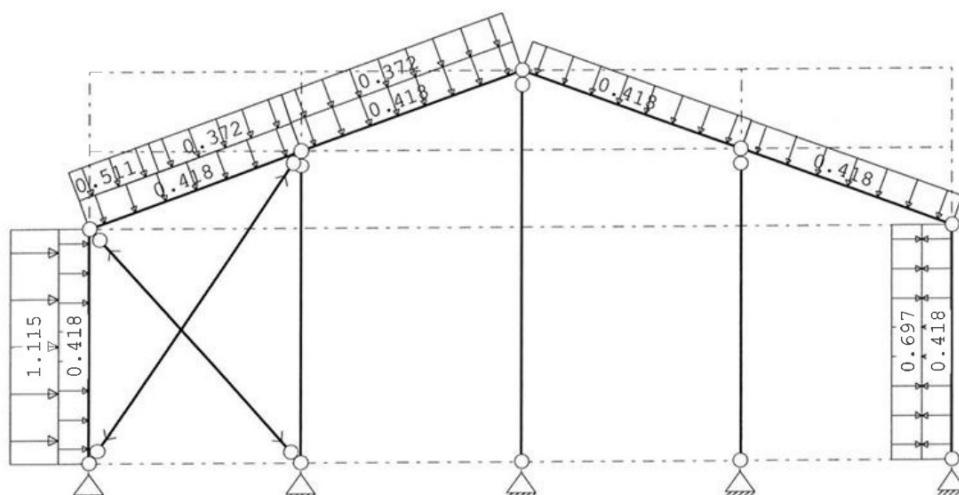
| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -1.12 | -1.12 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw9 | 1.07 | 1.07 | 0.000 | 2.912 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw10 | 0.37 | 0.37 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw10 | 0.37 | 0.37 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw5 | 1.16 | 1.16 | 0.000 | 3.082 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw6 | 0.56 | 0.56 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw6 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw7 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel.....: spant as 8

BELASTINGEN

B.G:6 Wind van links onderdruk C

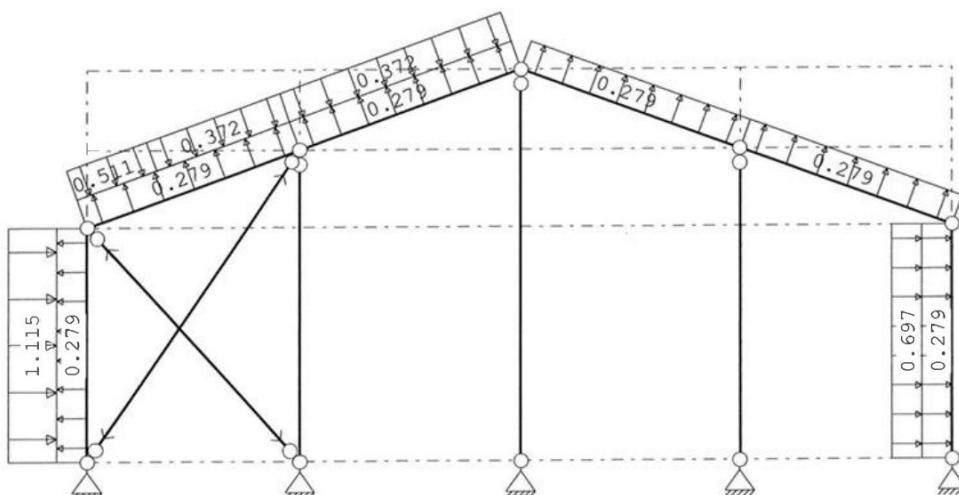
**STAAFBELASTINGEN**

B.G:6 Wind van links onderdruk C

| Staaft | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|--------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -1.12 | -1.12 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw3 | -0.51 | -0.51 | 0.000 | 2.912 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw4 | -0.37 | -0.37 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw4 | -0.37 | -0.37 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw7 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:7 Wind van links overdruk C

**STAAFBELASTINGEN**

B.G:7 Wind van links overdruk C

| Staaft | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|--------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -1.12 | -1.12 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw3 | -0.51 | -0.51 | 0.000 | 2.912 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw4 | -0.37 | -0.37 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 8

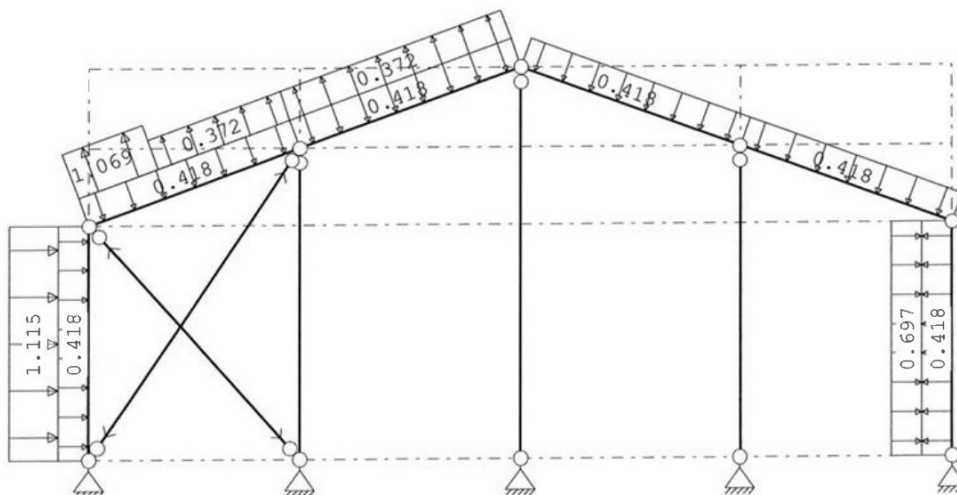
STAAFBELASTINGEN

B.G:7 Wind van links overdruk C

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 3 | 1:QZLokaal | Qw4 | -0.37 | -0.37 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw7 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:8 Wind van links onderdruk D

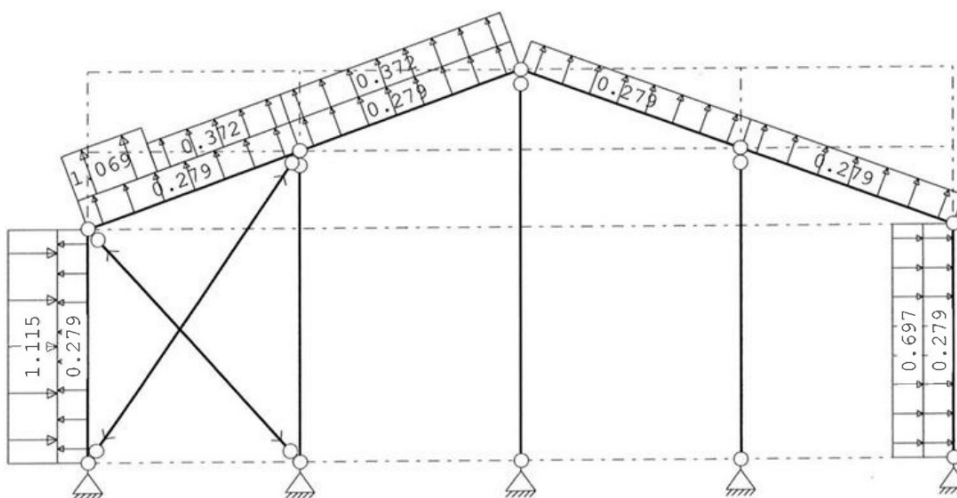
**STAAFBELASTINGEN**

B.G:8 Wind van links onderdruk D

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -1.12 | -1.12 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw9 | 1.07 | 1.07 | 0.000 | 2.912 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw10 | 0.37 | 0.37 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw10 | 0.37 | 0.37 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw7 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:9 Wind van links overdruk D



Project.....: 14811

Onderdeel.....: spant as 8

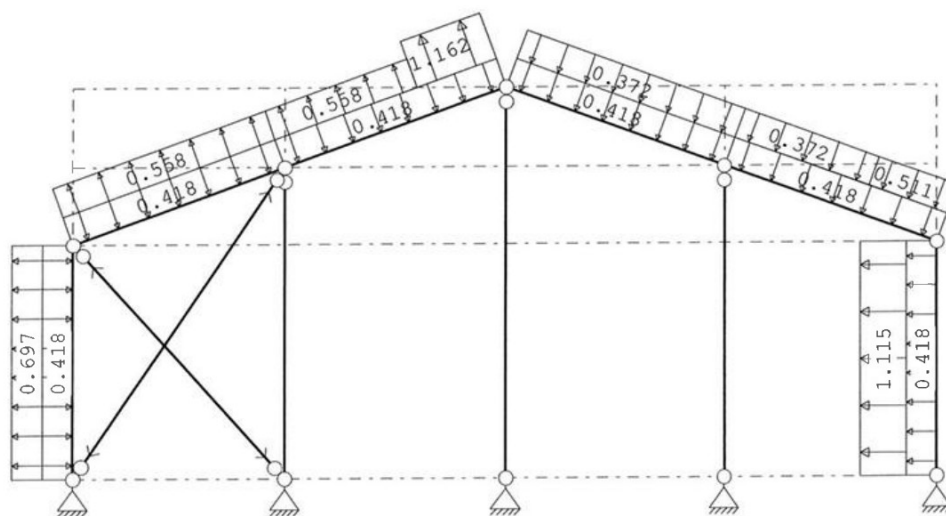
STAAFBELASTINGEN

B.G:9 Wind van links overdruk D

| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw2 | -1.12 | -1.12 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw9 | 1.07 | 1.07 | 0.000 | 2.912 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw10 | 0.37 | 0.37 | 1.706 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw10 | 0.37 | 0.37 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw7 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:10 Wind van rechts onderdruk A

**STAAFBELASTINGEN**

B.G:10 Wind van rechts onderdruk A

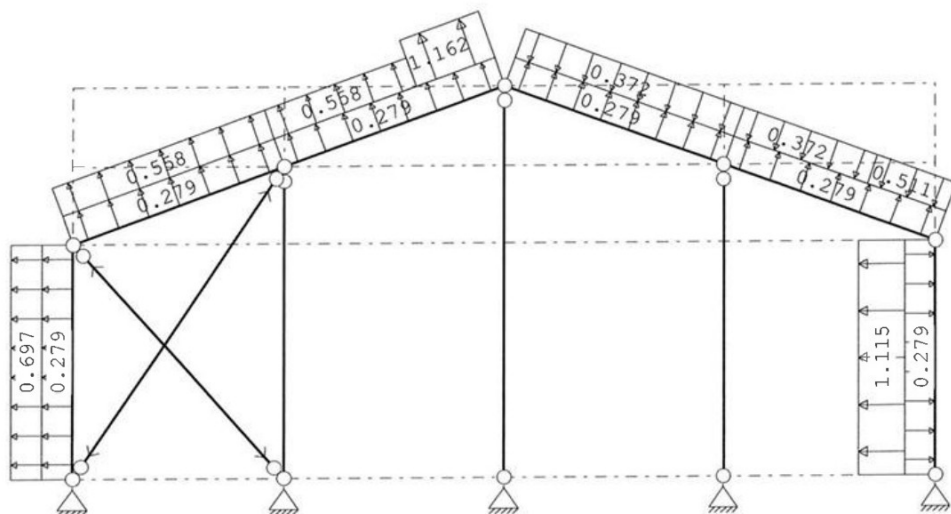
| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw2 | -1.12 | -1.12 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw3 | -0.51 | -0.51 | 2.912 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw4 | -0.37 | -0.37 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw4 | -0.37 | -0.37 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw5 | 1.16 | 1.16 | 3.082 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw6 | 0.56 | 0.56 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw6 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw7 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 8

BELASTINGEN

B.G:11 Wind van rechts overdruk A

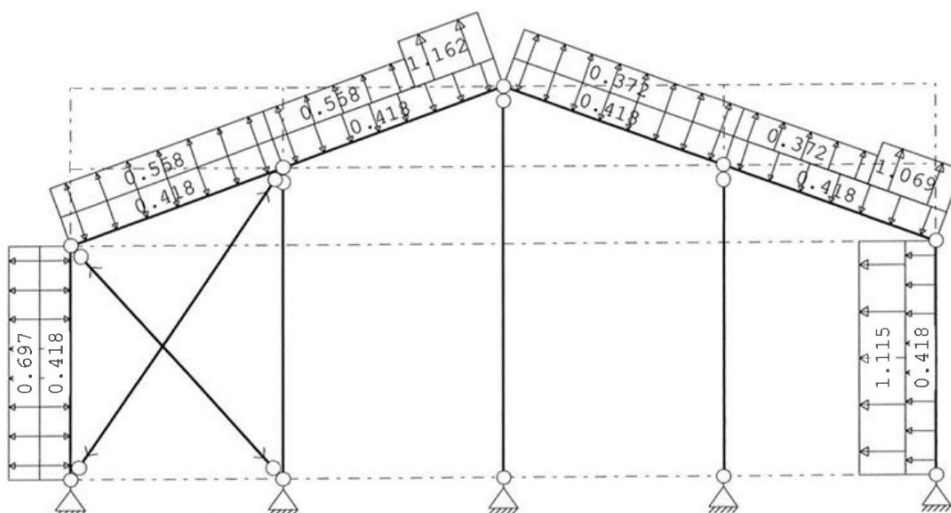
**STAAFBELASTINGEN**

B.G:11 Wind van rechts overdruk A

| Staal Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|--------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 1:QZLokaal | Qw2 | -1.12 | -1.12 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 1:QZLokaal | Qw3 | -0.51 | -0.51 | 2.912 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 1:QZLokaal | Qw4 | -0.37 | -0.37 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 4 1:QZLokaal | Qw4 | -0.37 | -0.37 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 1:QZLokaal | Qw5 | 1.16 | 1.16 | 3.082 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 1:QZLokaal | Qw6 | 0.56 | 0.56 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 2 1:QZLokaal | Qw6 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 1:QZLokaal | Qw7 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:12 Wind van rechts onderdruk B



Project.....: 14811

Onderdeel.....: spant as 8

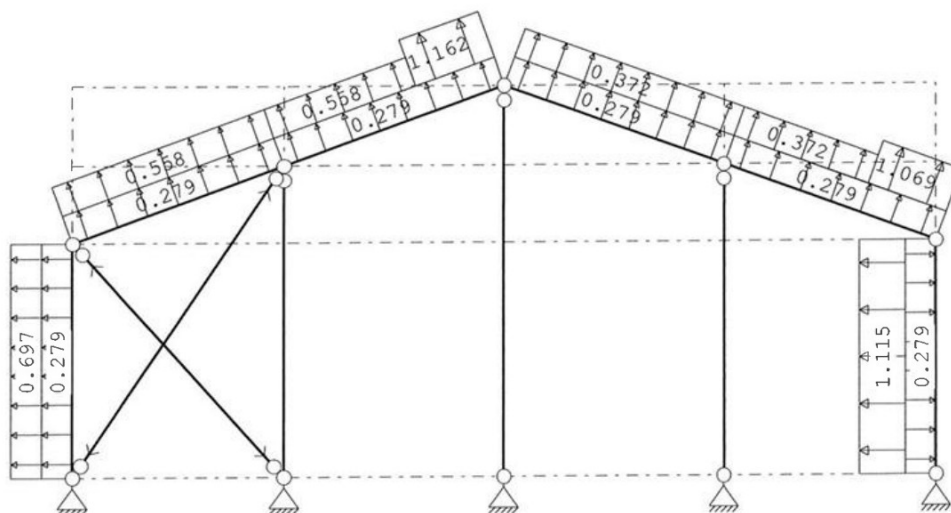
STAAFBELASTINGEN

B.G:12 Wind van rechts onderdruk B

| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw2 | -1.12 | -1.12 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw9 | 1.07 | 1.07 | 2.912 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw10 | 0.37 | 0.37 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw10 | 0.37 | 0.37 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw5 | 1.16 | 1.16 | 3.082 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw6 | 0.56 | 0.56 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw6 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw7 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:13 Wind van rechts overdruk B

**STAAFBELASTINGEN**

B.G:13 Wind van rechts overdruk B

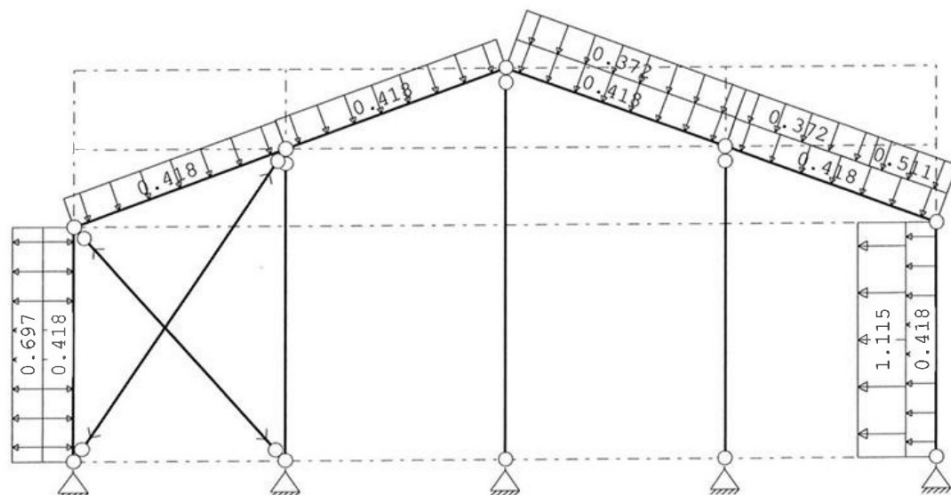
| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw2 | -1.12 | -1.12 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw9 | 1.07 | 1.07 | 2.912 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw10 | 0.37 | 0.37 | 0.000 | | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw10 | 0.37 | 0.37 | 0.000 | | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw5 | 1.16 | 1.16 | 3.082 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw6 | 0.56 | 0.56 | 0.000 | | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw6 | 0.56 | 0.56 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw7 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 8

BELASTINGEN

B.G:14 Wind van rechts onderdruk C

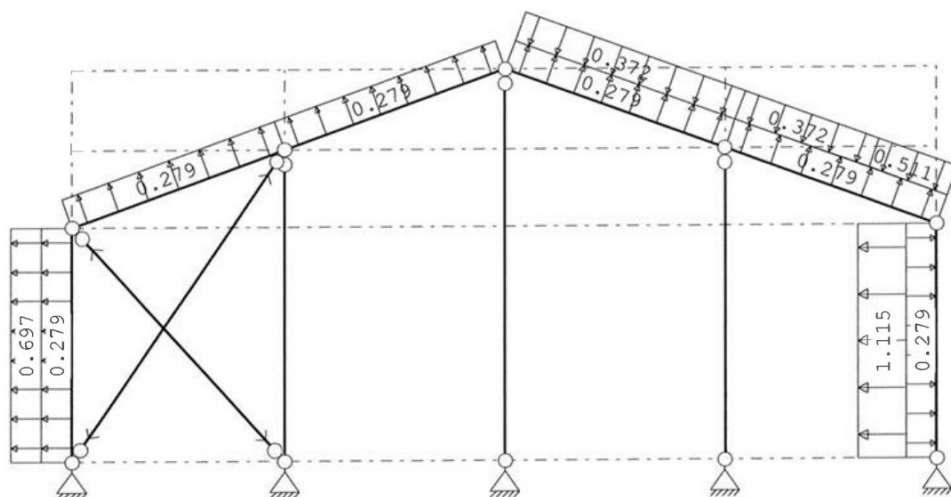
**STAAFBELASTINGEN**

B.G:14 Wind van rechts onderdruk C

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw2 | -1.12 | -1.12 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw3 | -0.51 | -0.51 | 2.912 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw4 | -0.37 | -0.37 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw4 | -0.37 | -0.37 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw7 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:15 Wind van rechts overdruk C

**STAAFBELASTINGEN**

B.G:15 Wind van rechts overdruk C

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw2 | -1.12 | -1.12 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw3 | -0.51 | -0.51 | 2.912 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw4 | -0.37 | -0.37 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel.....: spant as 8

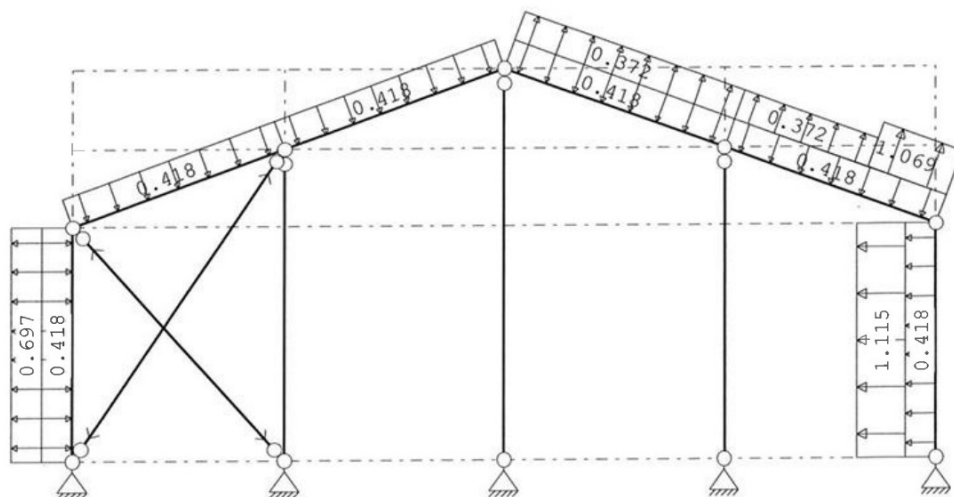
STAAFBELASTINGEN

B.G:15 Wind van rechts overdruk C

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 4 | 1:QZLokaal | Qw4 | -0.37 | -0.37 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw7 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:16 Wind van rechts onderdruk D

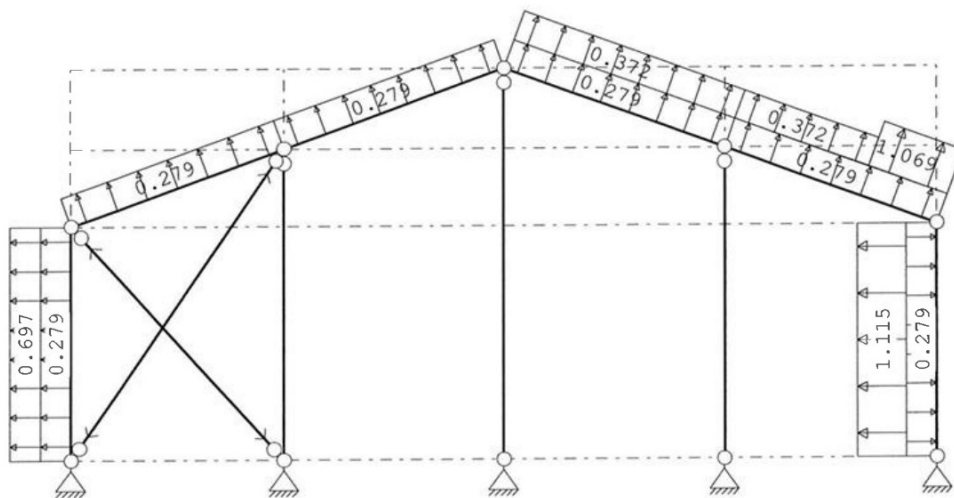
**STAAFBELASTINGEN**

B.G:16 Wind van rechts onderdruk D

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw2 | -1.12 | -1.12 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw9 | 1.07 | 1.07 | 2.912 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw10 | 0.37 | 0.37 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw10 | 0.37 | 0.37 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw7 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:17 Wind van rechts overdruk D



Project.....: 14811

Onderdeel....: spant as 8

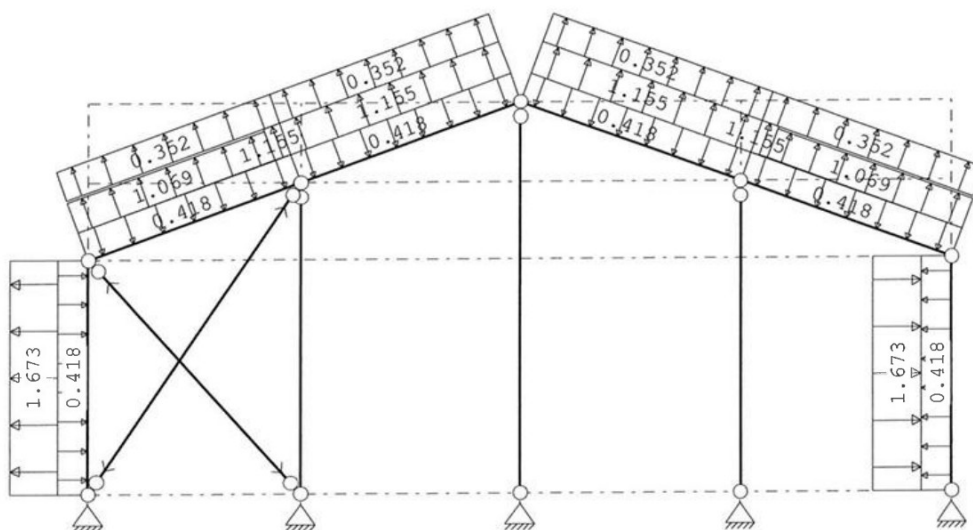
STAAFBELASTINGEN

B.G:17 Wind van rechts overdruk D

| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw2 | -1.12 | -1.12 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw9 | 1.07 | 1.07 | 2.912 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw10 | 0.37 | 0.37 | 0.000 | 1.706 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw10 | 0.37 | 0.37 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw7 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:18 Wind loodrecht onderdruk A

**STAAFBELASTINGEN**

B.G:18 Wind loodrecht onderdruk A

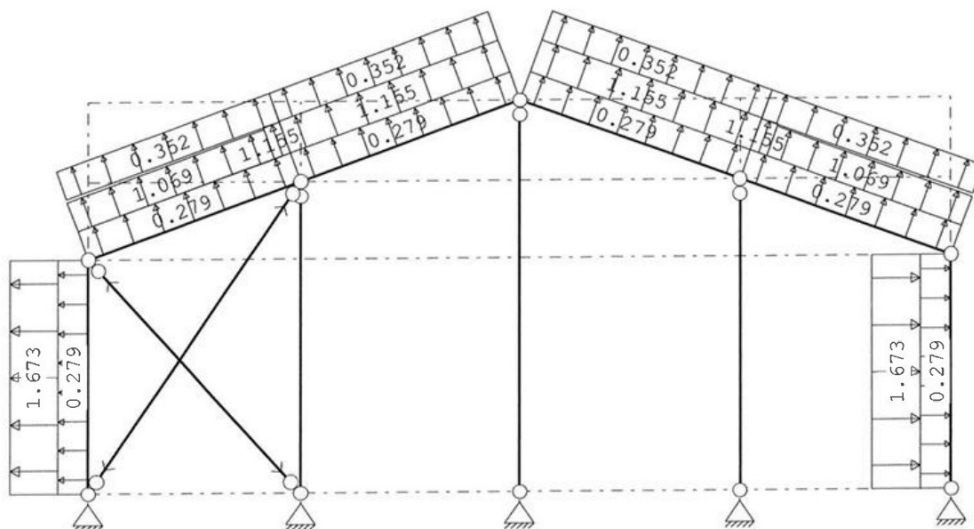
| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw11 | 1.67 | 1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw11 | 1.67 | 1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw12 | 1.16 | 1.16 | 4.266 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw13 | 1.07 | 1.07 | 0.000 | 0.353 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw14 | 0.35 | 0.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw12 | 1.16 | 1.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw14 | 0.35 | 0.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw12 | 1.16 | 1.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw14 | 0.35 | 0.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw13 | 1.07 | 1.07 | 0.353 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw12 | 1.16 | 1.16 | 0.000 | 4.266 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw14 | 0.35 | 0.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 8

BELASTINGEN

B.G:19 Wind loodrecht overdruk A

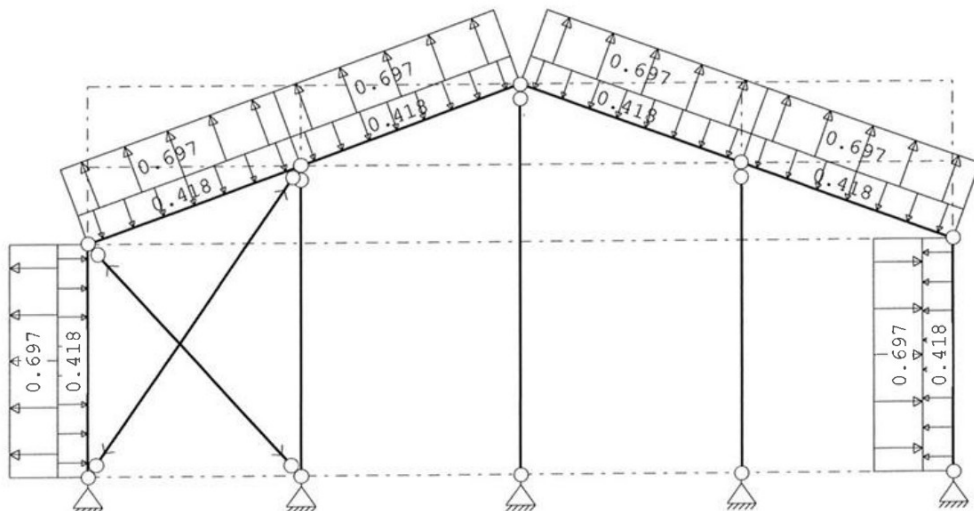
**STAAFBELASTINGEN**

B.G:19 Wind loodrecht overdruk A

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw11 | 1.67 | 1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw11 | 1.67 | 1.67 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw12 | 1.16 | 1.16 | 4.266 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw13 | 1.07 | 1.07 | 0.000 | 0.353 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw14 | 0.35 | 0.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw12 | 1.16 | 1.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw14 | 0.35 | 0.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw12 | 1.16 | 1.16 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw14 | 0.35 | 0.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw13 | 1.07 | 1.07 | 0.353 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw12 | 1.16 | 1.16 | 0.000 | 4.266 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw14 | 0.35 | 0.35 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:20 Wind loodrecht onderdruk B



Project.....: 14811

Onderdeel....: spant as 8

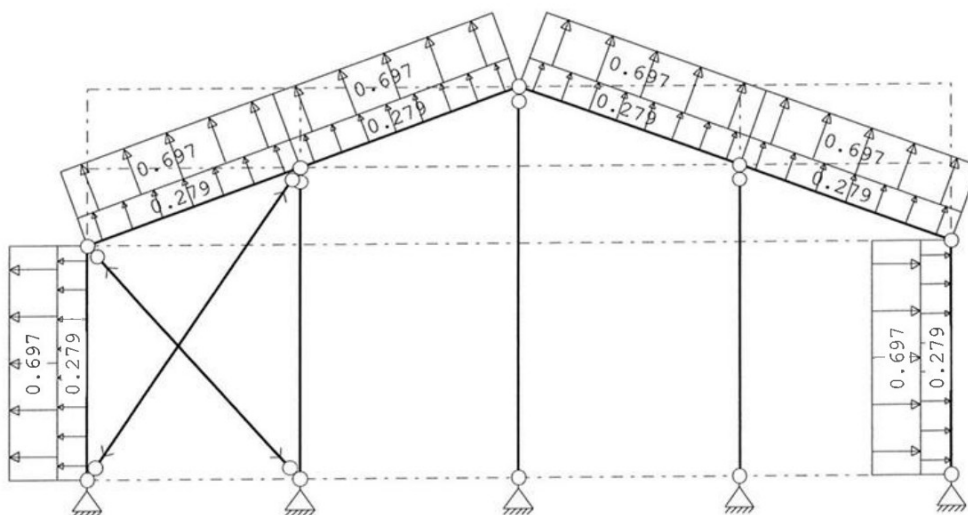
STAAFBELASTINGEN

B.G:20 Wind loodrecht onderdruk B

| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw1 | -0.42 | -0.42 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw15 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw15 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw16 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw16 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw16 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw16 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:21 Wind loodrecht overdruk B

**STAAFBELASTINGEN**

B.G:21 Wind loodrecht overdruk B

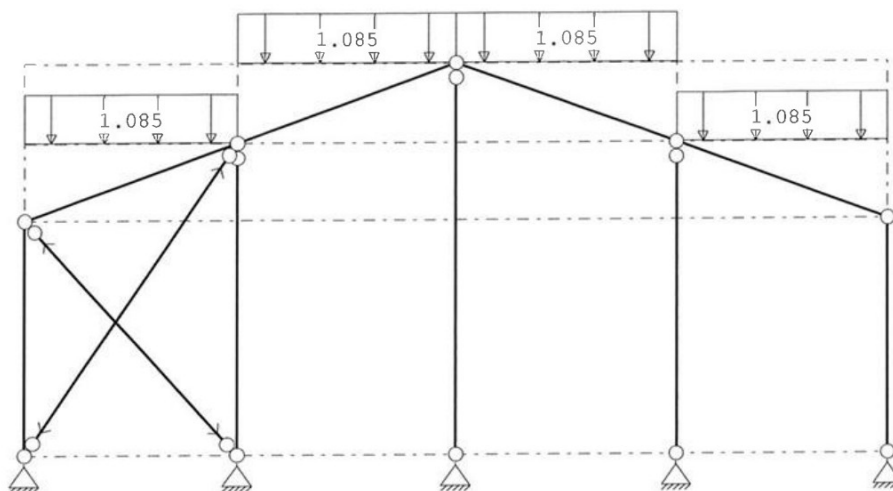
| Staaf | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|------------|-------|--------|------|-------|-------|----------|----------|----------|
| 1 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw8 | 0.28 | 0.28 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 1 | 1:QZLokaal | Qw15 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 6 | 1:QZLokaal | Qw15 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 2 | 1:QZLokaal | Qw16 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 1:QZLokaal | Qw16 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 1:QZLokaal | Qw16 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 1:QZLokaal | Qw16 | 0.70 | 0.70 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 8

BELASTINGEN

B.G:22 Sneeuw A

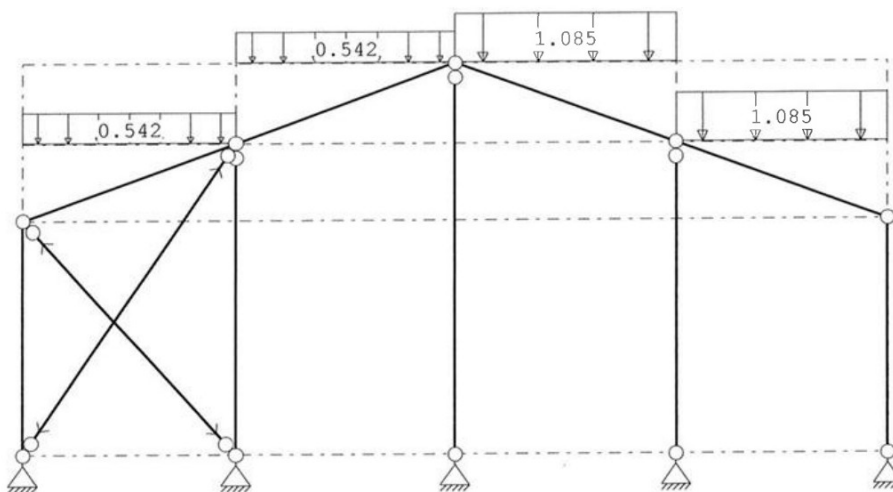
**STAAFBELASTINGEN**

B.G:22 Sneeuw A

| Staaft Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|---------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 2 3:QZgeProj. | Qs1 | -1.08 | -1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 3:QZgeProj. | Qs2 | -1.08 | -1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 3:QZgeProj. | Qs2 | -1.08 | -1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 3:QZgeProj. | Qs1 | -1.08 | -1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGEN

B.G:23 Sneeuw B

**STAAFBELASTINGEN**

B.G:23 Sneeuw B

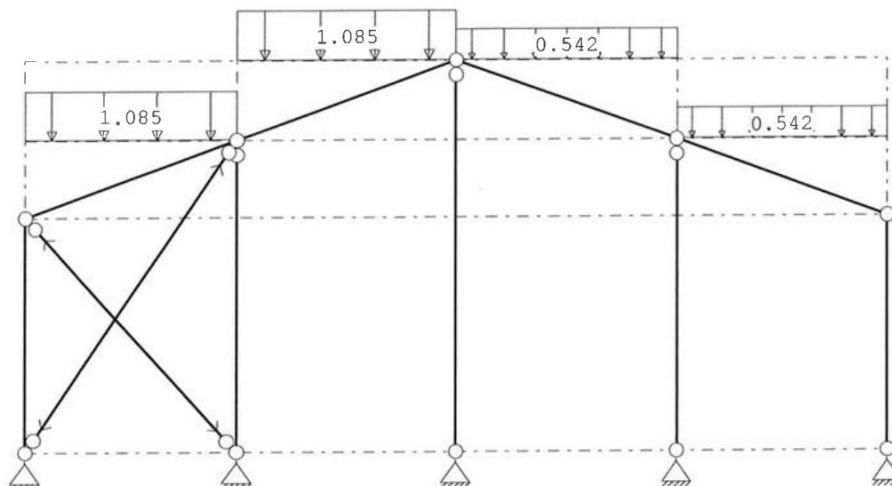
| Staaft Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|---------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 2 3:QZgeProj. | Qs3 | -0.54 | -0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 3:QZgeProj. | Qs4 | -0.54 | -0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 3:QZgeProj. | Qs2 | -1.08 | -1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 3:QZgeProj. | Qs1 | -1.08 | -1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

Project.....: 14811

Onderdeel....: spant as 8

BELASTINGEN

B.G:24 Sneeuw C

**STAAFBELASTINGEN**

B.G:24 Sneeuw C

| Staat | Type | Index | q1/p/m | q2 | A | B | ψ_0 | ψ_1 | ψ_2 |
|-------|-------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 2 | 3:QZgeProj. | Qs1 | -1.08 | -1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 3 | 3:QZgeProj. | Qs2 | -1.08 | -1.08 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 4 | 3:QZgeProj. | Qs4 | -0.54 | -0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |
| 5 | 3:QZgeProj. | Qs3 | -0.54 | -0.54 | 0.000 | 0.000 | 0.0 | 0.2 | 0.0 |

BELASTINGCOMBINATIES

| BC | Type |
|----|--|
| 1 | Fund. 1.22 $G_{k,1}$ |
| 2 | Fund. 0.90 $G_{k,1}$ |
| 3 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,2}$ |
| 4 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,3}$ |
| 5 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,4}$ |
| 6 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,5}$ |
| 7 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,6}$ |
| 8 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,7}$ |
| 9 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,8}$ |
| 10 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,9}$ |
| 11 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,10}$ |
| 12 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,11}$ |
| 13 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,12}$ |
| 14 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,13}$ |
| 15 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,14}$ |
| 16 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,15}$ |
| 17 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,16}$ |
| 18 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,17}$ |
| 19 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,18}$ |
| 20 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,19}$ |
| 21 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,20}$ |
| 22 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,21}$ |
| 23 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,22}$ |
| 24 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,23}$ |
| 25 | Fund. 1.08 $G_{k,1}$ + 1.35 $Q_{k,24}$ |
| 26 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,2}$ |
| 27 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,3}$ |
| 28 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,4}$ |
| 29 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,5}$ |
| 30 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,6}$ |
| 31 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,7}$ |
| 32 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,8}$ |
| 33 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,9}$ |
| 34 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,10}$ |
| 35 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,11}$ |
| 36 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,12}$ |
| 37 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,13}$ |
| 38 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,14}$ |
| 39 | Fund. 0.90 $G_{k,1}$ + 1.35 $Q_{k,15}$ |

Project.....: 14811

Onderdeel....: spant as 8

BELASTINGCOMBINATIES

| BC Type | | | | |
|----------|------|-----------|---|------------------------|
| 40 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,16}$ |
| 41 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,17}$ |
| 42 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,18}$ |
| 43 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,19}$ |
| 44 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,20}$ |
| 45 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,21}$ |
| 46 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,22}$ |
| 47 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,23}$ |
| 48 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,24}$ |
| 49 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,2}$ |
| 50 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,3}$ |
| 51 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,4}$ |
| 52 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,5}$ |
| 53 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,6}$ |
| 54 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,7}$ |
| 55 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,8}$ |
| 56 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,9}$ |
| 57 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,10}$ |
| 58 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,11}$ |
| 59 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,12}$ |
| 60 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,13}$ |
| 61 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,14}$ |
| 62 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,15}$ |
| 63 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,16}$ |
| 64 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,17}$ |
| 65 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,18}$ |
| 66 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,19}$ |
| 67 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,20}$ |
| 68 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,21}$ |
| 69 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,22}$ |
| 70 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,23}$ |
| 71 Kar. | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,24}$ |
| 72 Quas. | 1.00 | $G_{k,1}$ | | |
| 73 Freq. | 1.00 | $G_{k,1}$ | | |
| 74 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,2}$ |
| 75 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,3}$ |
| 76 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,4}$ |
| 77 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,5}$ |
| 78 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,6}$ |
| 79 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,7}$ |
| 80 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,8}$ |
| 81 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,9}$ |
| 82 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,10}$ |
| 83 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,11}$ |
| 84 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,12}$ |
| 85 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,13}$ |
| 86 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,14}$ |
| 87 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,15}$ |
| 88 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,16}$ |
| 89 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,17}$ |
| 90 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,18}$ |
| 91 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,19}$ |
| 92 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,20}$ |
| 93 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,21}$ |
| 94 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,22}$ |
| 95 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,23}$ |
| 96 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,24}$ |
| 97 Blij. | 1.00 | $G_{k,1}$ | | |

GUNSTIGE WERKING PERMANENTE BELASTINGEN

BC Staven met gunstige werking

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

Project.....: 14811

Onderdeel....: spant as 8

GUNSTIGE WERKING PERMANENTE BELASTINGEN

BC Staven met gunstige werking

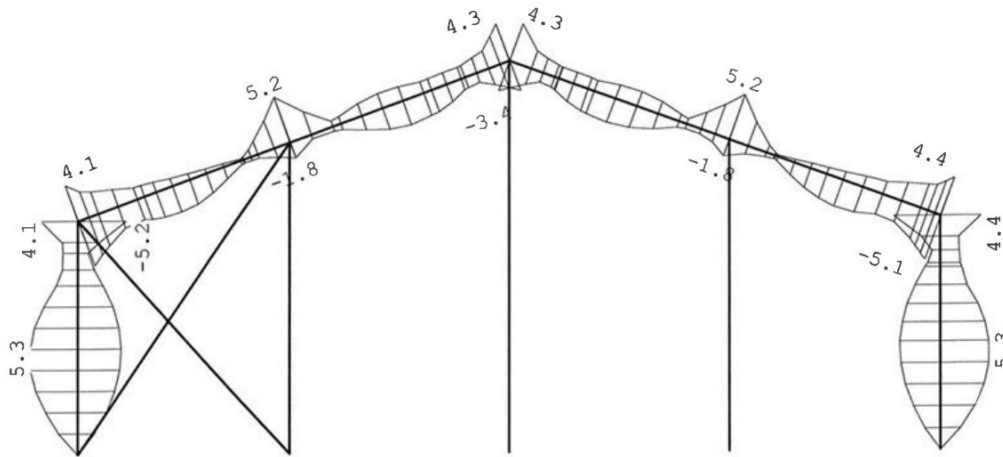
7 Geen
8 Geen
9 Geen
10 Geen
11 Geen
12 Geen
13 Geen
14 Geen
15 Geen
16 Geen
17 Geen
18 Geen
19 Geen
20 Geen
21 Geen
22 Geen
23 Geen
24 Geen
25 Geen
26 Alle staven de factor:0.90
27 Alle staven de factor:0.90
28 Alle staven de factor:0.90
29 Alle staven de factor:0.90
30 Alle staven de factor:0.90
31 Alle staven de factor:0.90
32 Alle staven de factor:0.90
33 Alle staven de factor:0.90
34 Alle staven de factor:0.90
35 Alle staven de factor:0.90
36 Alle staven de factor:0.90
37 Alle staven de factor:0.90
38 Alle staven de factor:0.90
39 Alle staven de factor:0.90
40 Alle staven de factor:0.90
41 Alle staven de factor:0.90
42 Alle staven de factor:0.90
43 Alle staven de factor:0.90
44 Alle staven de factor:0.90
45 Alle staven de factor:0.90
46 Alle staven de factor:0.90
47 Alle staven de factor:0.90
48 Alle staven de factor:0.90

Project.....: 14811

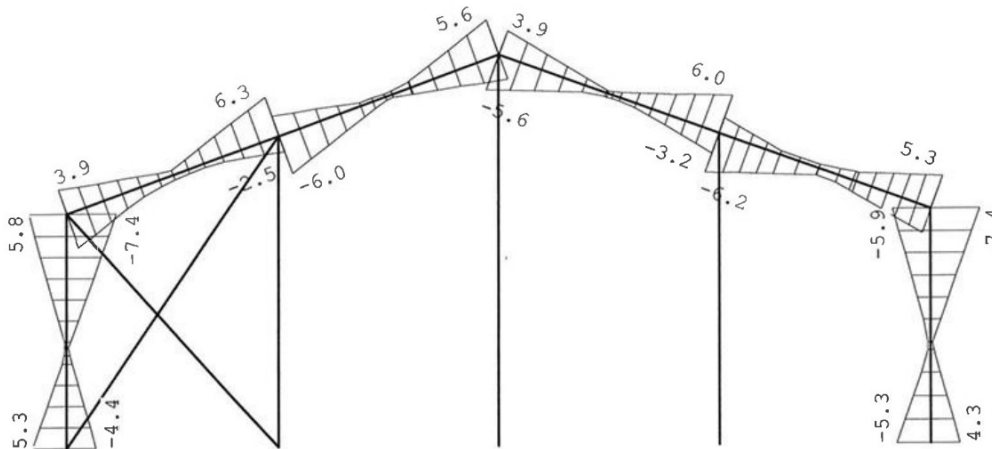
Onderdeel....: spant as 8

OMHULLENDE VAN DE FUNDAMENTELE COMBINATIES**MOMENTEN**

Fundamentele combinatie

**DWARSKRACHTEN**

Fundamentele combinatie

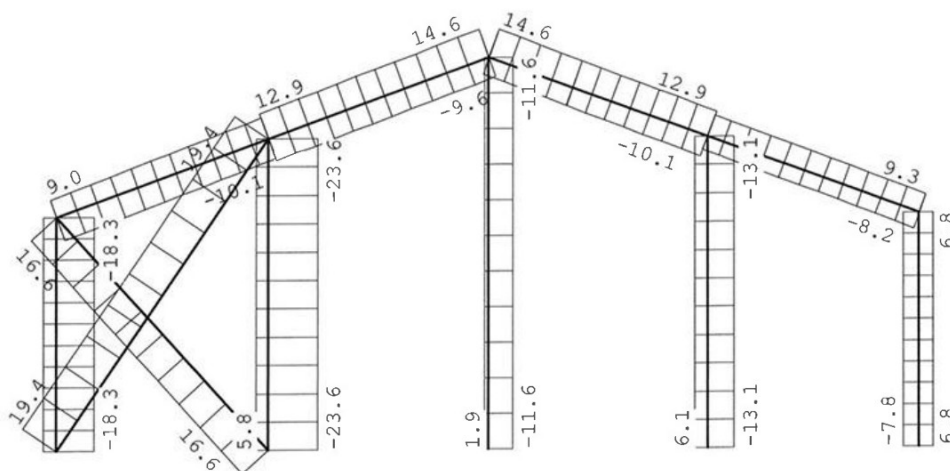


Project.....: 14811

Onderdeel....: spant as 8

NORMAALKRACHTEN

Fundamentele combinatie



STAALPROFIELEN - ALGEMENE GEGEVENS

| | | |
|------------------------------|--|-------------|
| Stabiliteit: | Classificatie gehele constructie: | Geschoord |
| Doorbuiging en verplaatsing: | | |
| | Aantal bouwlagen: | 1 |
| | Gebouwtype: | Industrieel |
| | Toel. horiz. verplaatsing gehele gebouw: | h/150 |
| | Kleinste gevelhoogte [m]: | 4.8 |

MATERIAAL

| Mat nr. | Profielnaam | Vloeis p. [N/mm ²] | Productie methode | Min. drsn. klasse |
|------------|-------------|-----------------------------------|----------------------|----------------------|
| 1 | IPE180 | 235 | Gewalst | 1 |
| 2 | IPE180Z | 235 | Gewalst | 1 |
| 3 | ROND 16 | 235 | Gewalst | 1 |

Partiële veiligheidsfactoren:

Gamma M;0 : 1.00 Gamma M;1 : 1.00

KNIKSTABILITEIT

| KNIKSTABILITEIT | | | | Extra | | Extra | |
|-----------------|------------------|-------------------------|---------------------|-----------------|-------------------------|---------------------|-----------------|
| Staafl | l_{sys} [m] | Classif. y sterke as | $l_{knik;y}$ [m] | aanp. y [kN] | Classif. z zwakke as | $l_{knik;z}$ [m] | aanp. z [kN] |
| 1 | 4.800 | Geschoord | 4.800 | 0.0 | Geschoord | 4.800 | 0.0 |
| 2 | 4.619 | Geschoord | 4.619 | 0.0 | Geschoord | 4.619 | 0.0 |
| 3 | 4.789 | Geschoord | 4.789 | 0.0 | Geschoord | 4.789 | 0.0 |
| 4 | 4.789 | Geschoord | 4.789 | 0.0 | Geschoord | 4.789 | 0.0 |
| 5 | 4.619 | Geschoord | 4.619 | 0.0 | Geschoord | 4.619 | 0.0 |
| 6 | 4.800 | Geschoord | 4.800 | 0.0 | Geschoord | 4.800 | 0.0 |
| 7 | 6.380 | Geschoord | 6.380 | 0.0 | Geschoord | 1.900* | 0.0 |
| 8 | 8.017 | Geschoord | 8.017 | 0.0 | Geschoord | 1.900* | 0.0 |
| 9 | 6.380 | Geschoord | 6.380 | 0.0 | Geschoord | 1.900* | 0.0 |
| 10 | 7.716 | Geschoord | 7.716 | 0.0 | Geschoord | 7.716 | 0.0 |
| 11 | 6.471 | Geschoord | 6.471 | 0.0 | Geschoord | 6.471 | 0.0 |

* Door gebruiker gedefinieerde kniklengte

KIPSTABILITEIT

| Staaft | Plts. aangr. | | l gaffel [m] | Kipsteunafstanden [m] |
|--------|-----------------|--------|-----------------|--------------------------|
| 1 | 1.0*h | boven: | 4.80 | 4.800 |
| | | onder: | 4.80 | 4.800 |
| 2 | 1.0*h | boven: | 4.62 | 4.619 |
| | | onder: | 4.62 | 4.619 |
| 3 | 1.0*h | boven: | 4.79 | 4.789 |
| | | onder: | 4.79 | 4.789 |
| 4 | 1.0*h | boven: | 4.79 | 4.789 |
| | | onder: | 4.79 | 4.789 |
| 5 | 1.0*h | boven: | 4.62 | 4.619 |
| | | onder: | 4.62 | 4.619 |

Project.....: 14811

Onderdeel....: spant as 8

KIPSTABILITEIT

| Staafl | Plts. aangr. | l gaffel | Kipsteunafstanden | |
|--------|-----------------|----------|-------------------|---------------|
| | | | [m] | [m] |
| 6 | 1.0*h | boven: | 4.80 | 4.800 |
| | | onder: | 4.80 | 4.800 |
| 7 | 1.0*h | boven: | 6.38 | 1;2*1,9;1,58 |
| | | onder: | 6.38 | 1;2*1,9;1,58 |
| 8 | 1.0*h | boven: | 8.02 | 1;3*1,9;1,317 |
| | | onder: | 8.02 | 1;3*1,9;1,317 |
| 9 | 1.0*h | boven: | 6.38 | 1;2*1,9;1,58 |
| | | onder: | 6.38 | 1;2*1,9;1,58 |
| 10 | 1.0*h | boven: | 7.72 | 7.716 |
| | | onder: | 7.72 | 7.716 |
| 11 | 1.0*h | boven: | 6.47 | 6.471 |
| | | onder: | 6.47 | 6.471 |

Winkel + gewelkolommen
(pag. 64)

KRACHTEN UIT HET VLAK

| Staafl | Mbegin [kNm] | Mmidden [kNm] | Meinde [kNm] | Vbegin [kN] | Vtpv [kN] | Mmax [kN] | Veinde [kN] | Mx [kNm] |
|--------|-----------------|------------------|-----------------|----------------|--------------|--------------|----------------|-------------|
| 7 | 0.0 | 18.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 8 | 0.0 | 30.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9 | 0.0 | 18.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

TOETSING SPANNINGEN

| Staafl | Mat | BC | Sit | Kl | Plaats | Norm | Artikel | Formule | Hoogste toetsing U.C. [N/mm ²] | Opm. |
|--------|-----|----|-----|----|--------|---------|---------|---------|---|------|
| nr. | | | | | | | | | | |
| 1 | 1 | 3 | 1 | 1 | Staafl | EN3-1-1 | 6.3.3 | (6.62) | 0.335 | 79 |
| 2 | 1 | 3 | 1 | 1 | Staafl | EN3-1-1 | 6.3.3 | (6.62) | 0.277 | 65 |
| 3 | 1 | 25 | 1 | 1 | Staafl | EN3-1-1 | 6.3.3 | (6.62) | 0.255 | 60 |
| 4 | 1 | 11 | 1 | 1 | Staafl | EN3-1-1 | 6.3.3 | (6.62) | 0.320 | 75 |
| 5 | 1 | 15 | 1 | 1 | Staafl | EN3-1-1 | 6.3.3 | (6.62) | 0.278 | 65 |
| 6 | 1 | 15 | 1 | 1 | Staafl | EN3-1-1 | 6.3.3 | (6.62) | 0.327 | 77 |
| 7 | 2 | 3 | 1 | 1 | Staafl | EN3-1-1 | 6.3.3 | (6.62) | 0.593 | 139 |
| 8 | 2 | 23 | 1 | 1 | Staafl | EN3-1-1 | 6.3.3 | (6.62) | 0.925 | 217 |
| 9 | 2 | 24 | 1 | 1 | Staafl | EN3-1-1 | 6.3.3 | (6.62) | 0.565 | 133 |
| 10 | 3 | 27 | 1 | 1 | Begin | EN3-1-1 | 6.2.3 | (6.5) | 0.411 | 97 |
| 11 | 3 | 35 | 1 | 1 | Begin | EN3-1-1 | 6.2.3 | (6.5) | 0.352 | 83 |

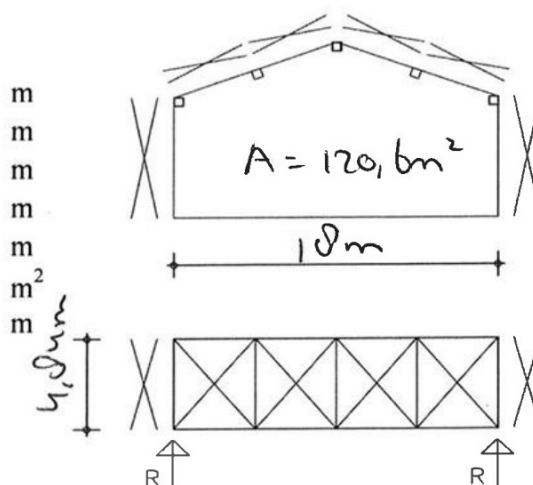
→ profielen voldoen!

STABILITEIT

Afmetingen

| | | |
|------------------------|-------|----------------|
| nokhoogte = | 8,40 | m |
| gothoogte = | 5,00 | m |
| breedte kopgevel = | 18,00 | m |
| lengte langsgevel = | 35,00 | m |
| stramienmaat = | 4,84 | m |
| oppervlakte kopgevel = | 120,6 | m ² |
| breedte dakvlak = | 9,6 | m |

| | |
|------------------------------|---|
| aantal windverbanden | 2 |
| aantal kruizen in dakhelling | 2 |



Uitgangspunten

| | |
|------------------------------|--|
| gebouwtype categorie | E: Ruimten voor opslag- en industrieel gebruik |
| gevolgklasse | CC1 |
| betrouwbaarheidsklasse | RC1 ($K_{fi} = 0,9$) |
| ontwerplevensduur | 15 |
| reductiefactor Ψ_t | 0,85 |
| partitiele factor γ_q | 1,35 |
| locatie i.v.m. windbelasting | 3, Onbebouwd |

| | | |
|---|-------|-------------------|
| Stuwdruk $q_p(z)$ | 0,66 | kN/m ² |
| winddruk $C_{pe, 10 \text{ zone D}}$ | 0,80 | |
| windzuiging $C_{pe, 10 \text{ zone E}}$ | -0,50 | |
| reductiefactor correlatie | 0,85 | mits $h/d < 1$ |

| | | |
|---------------------|------|---|
| vlakheid dak | ruw | $C_{fr} = 0,02$ |
| vlakheid gevel | ruw | $C_{fr} = 0,02$ |
| eigen gewicht dak = | 0,30 | kN/m ² sandwichpanelen incl zonnepanelen |

Reactie op gothoogte

| | | |
|---------------------|------|------------------------|
| druk + zuiging | 18,7 | kN |
| wrijving dak | 1,9 | kN |
| wrijving gevel | 0,5 | kN |
| scheefstand (1/250) | 0,2 | kN |
| $R_{rep} =$ | 21,3 | kN (per zijde/per wvb) |
| $R_d =$ | 28,8 | kN (per zijde/per wvb) |

* REGELS

Koker 70 x 70 x 3 S 275

| | | | | |
|-------------|----------------|--------|-------------------|---------------------|
| drukkracht | $N_{c;s;d}$ | 28,8 | kN | |
| lengte | l_t | 4,84 | m | |
| hoogte | h | 70 | mm | |
| breedte | b | 70 | mm | |
| wanddikte | t | 3 | mm | |
| staal | | S275 | - | |
| E- modules | E_d | 210000 | N/mm ² | |
| oppervlakte | A | 804 | mm ² | $N_{pl;d}$ 221 kN |
| | I_z | 592625 | mm ⁴ | |
| | r_z | 27,1 | mm | |
| | W_{el} | 16932 | mm ³ | |
| | W_{pl} | 20214 | mm ³ | $M_{pl;d}$ 5,6 kNm |
| gewicht | q_p | 6,3 | kg/m ¹ | |
| slankheid | l | 178 | - | |
| knik | ω_{buc} | 0,21 | - | $N_{c;u;d}$ 46,9 kN |

$$U_{e.g.} = 3,6 \text{ mm}$$

$$M_{e.g.} = \frac{1}{8} \times q_D \times l^2 = 0,22 \text{ kNm}$$

$$M_{exc} = N_{c;s;d} \times U_{eg} = 0,10 \text{ kNm}$$

$$0,33 \text{ kNm}$$

| | | | | | | | | |
|---------|-------|------|---|-------------|---|-----|---|------|
| druk | 1.1 x | 28,8 | / | 0,21 | x | 221 | = | 0,68 |
| buiging | 1.1 x | 0,33 | / | 5,6 | | | = | 0,06 |
| | | | | unity check | | | = | 0,74 |

Voldoet

* WINDVERBAND DAKVLAK

Ø 16 4.6 EV | bout M16 8.8 | wartel M16

| | | | |
|--------------|---------|------|----|
| lengte | H | 4,81 | m |
| breedte | B | 4,84 | m |
| diagonaal | L | 6,82 | m |
| verhouding | L / B | 1,41 | - |
| reactie hor. | R_d | 28,8 | kN |

$$F_{t;s;d;diagonaal} = 40,6 \text{ kN}$$

$$F_{t;u;d} = 45,2 \text{ kN}$$

Voldoet

* WINDBOK

| Ø 16 4.6 EV | bout M16 8.8 | wartel M16 |
|-------------|--------------|------------|
|-------------|--------------|------------|

| | | | |
|--------------|-----------|------|----|
| hoogte | $H =$ | 4,80 | m |
| breedte | $B =$ | 4,84 | m |
| diagonaal | $L =$ | 6,82 | m |
| verhouding | $L / B =$ | 1,41 | - |
| reactie hor. | $R_d =$ | 28,8 | kN |

| | | | |
|-------------------------|------|----|----------------|
| $F_{t,s;d;diagonaal} =$ | 40,6 | kN | |
| $F_{t,u;d} =$ | 45,2 | kN | Voldoet |

↳ 2 windverbanden voldoen!

Controle Gordingen

| | | | | |
|---------------------|------|-----------|---------------------|--------------------------------|
| gordingen vurenhout | | | | |
| kwaliteit | C 24 | | | |
| gordingen hoh | 1,35 | m | (linker dakvlak) | |
| gordingen hoh | 1,35 | m | (rechter dakvlak) | |
| spantafstand | 5,00 | m | (maximaal) | |
| dakhelling | 20 | graden | (linker dakvlak) | |
| dakhelling | 20 | graden | (rechter dakvlak) | |
| windgebied | 3 | onbebouwd | | |
| dakbedekking | p(g) | 0,15 | kN/m2 | (dakbedekking incl. gordingen) |
| zonnepanelen | p(g) | 0,15 | kN/m2 | (gehele dak zonnepanelen) |
| houtmaat | b | 71 | mm | |
| | h | 196 | mm | |

Gordingen worden uitgevoerd als gerberliggersysteem om de zwakke as gesteund door dakplaten.

De gordingen worden uitgevoerd als gerberliggersysteem. Bij een overspanning van 5,00 m. vergelijkbaar met één-veldoverspanning van 4,70 m.

zie comp. berekening ; **Gordingen Voldoen**

Project : 14811
Onderdeel : Gordingen
Datum : 22/05/2023
Eenheden : kN/m/rad
Bestand : F:\Tekenkamer\Constructeur\Projecten Construct
Et\Projects\14800\14811 Ateko\gordingen.cnw

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) |
| | NEN-EN 1991-1-3:2003 | C1:2009 | NB:2011 (nl) |
| | NEN-EN 1991-1-4:2005 | C2:2011 | NB:2011 (nl) |
| Hout | NEN-EN 1995-1-1:2005 | A1:2011, C1:2006 | NB:2013 (nl) |
| | NEN-EN 14080:2013 | | |

Gording berekening. (H)

zadeldak dubbele buiging

Algemene gegevens

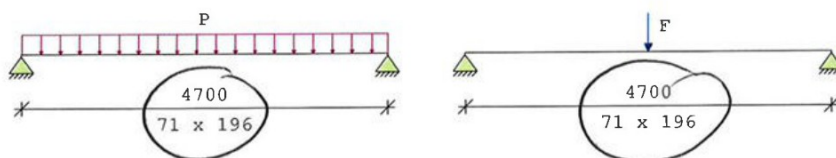
| | | | | | |
|-----------------------|------|------------------------|------------------------|----------------------|-----------|
| B x H | [mm] | : 71 x 196 | Sterkteklasse | : | C24 |
| Overspanning | [mm] | : 4700 | Klimaatklasse | : | II |
| Aantal zijdl. steunen | : | 1 | Referentie periode [j] | : | 15 |
| Opleglengte | [mm] | : 50 | | | |
| Hoh in het dakvlak | [mm] | : 1350 | | | |
| Helling | : | 20.00 | | | |
| Beschot sterkteklasse | : | C24 | | | |
| Dikte beschot | [mm] | : 0 | $E_{0,mean} \times I$ | [Nm ² /m] | : 0.0 |
| Windgebied | : | 3 | Terrein | : | Onbebouwd |
| Gebouw L x B x H | [m] | : 35.00 x 18.00 x 8.40 | | | |

Permanente belastingen G_{rep}

| | | | |
|-----------------------------|---|------|-------------------|
| EG balklaag | : | 0.15 | - eg dak |
| Isolatie | : | 0.15 | - eg zonnepanelen |
| Extra gewicht | : | 0.00 | |
| Totaal [kN/m ²] | : | 0.30 | |

Veranderlijke belastingen

| | | |
|---------------------------|----------------------|--|
| Q_k | [kN] | : 2.00 |
| Q_k oppervlak | [m ²] | : 0.05 x 0.05 |
| Reductiefactor | : | 1.00 |
| Wind $Q_{p,prob}$ | [kN/m ²] | : 0.55 (= $C_{prob}^2 \times Q_p = 0.91^2 \times 0.66$) |
| Sneeuw vormfactor μ_1 | : | 0.80 |



Belastingfactoren (NEN-EN 1990 - Bijlage A1.3)

| | | | | |
|-------------------|----------------|--------|------------|--------|
| Formule 6.10a: | γ_G | : 1.22 | γ_Q | : 1.35 |
| Formule 6.10b: | $\xi \gamma_G$ | : 1.08 | γ_Q | : 1.35 |
| Perm.bel. gunstig | : | 0.90 | | |

Partiële factor (Tabel 2.3 NEN-EN 1995-1-1)

γ_M [-]: 1.30

Stabiliteit

1.Toetsing kipstabiliteit m.b.t. montagefase volgens par.6.3.3. is n.v.t.:
- u hebt het belastingsgeval 'Uitvoering' niet toegepast.

2.Factoren t.b.v. toetsing kipstabiliteit m.b.t. gebruiksfase volgens par.6.3.3:

| | | |
|-------------------|-----|------------------|
| $\kappa_{crit,y}$ | [-] | : 1.00 frm(6.34) |
| $\kappa_{crit,z}$ | [-] | : 1.00 frm(6.34) |

Belastingcombinatie wind omhoog (opbuigend moment):

| | | |
|-------------------|-----|------------------|
| $\kappa_{crit,y}$ | [-] | : 0.94 frm(6.34) |
| $\kappa_{crit,z}$ | [-] | : 1.00 frm(6.34) |

release 6.60b

Project : 14811
Onderdeel : Gordingen
Datum : 22/05/2023
Eenheden : kN/m/rad

Resultaten (maatgevende combinaties)

Factoren t.b.v. toetsing ULS:

k_m [-] : 0.70 par (6.1.6)

| | | | eis | u.c. |
|---|-----------------|---|--|------|
| Geconc. belasting | frm(6.13) | $\tau_{v,d}$ | $= 0.34 < 2.46 \text{ [N/mm}^2\text{]}$ | 0.14 |
| Geconc. belasting | frm(6.3) | $\sigma_{c,90,q,d} / (k_{c,90,q} * f_{c,90,d}) +$ $\sigma_{c,90,F,d} / (k_{c,90,F} * f_{c,90,d}) < 1.00$ | $= 0.27 / 1.54 + 0.71 / 2.31 =$ | 0.49 |
| | frm(6.11) | $\sigma_{m,y,d}$ | $= 9.05 < 14.77 \text{ [N/mm}^2\text{]}$ | 0.61 |
| | frm(6.12) | $\sigma_{m,z,d}$ | $= 3.30 < 17.15 \text{ [N/mm}^2\text{]}$ | 0.19 |
| Geconc. belasting | frm(6.11) | Maatgevende combinatie buiging | | 0.75 |
| Let op: bij 1 of meerdere belastingcombinaties wind treedt een opwaartse oplegreactie op. Houdt hiermee rekening in het ontwerp van de oplegverbinding. | | | | |
| Geconc. belasting | u_{bij} | | $= 12.24 < 18.80 \text{ [mm]}$ | 0.65 |
| Geconc. belasting | $u_{net,fin}$ | | $= 17.18 < 18.80 \text{ [mm]}$ | 0.91 |
| Geconc. belasting | $u_{bij,z}$ | | $= 2.55 < 9.40 \text{ [mm]}$ | 0.27 |
| Geconc. belasting | $u_{net,fin,z}$ | | $= 3.14 < 9.40 \text{ [mm]}$ | 0.33 |

→ gordingen voldoen!

release 6.60b

Project : 14811
 Onderdeel : Wandregels
 Datum : 22/05/2023
 Eenheden : kN/m/rad
 Bestand : F:\Tekenkamer\Constructeur\Projecten Construct
 F:\Projects\14800\14811 Ateko\wandregels.cnw

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) |
| Hout | NEN-EN 1995-1-1:2005 | A1:2011, C1:2006 | NB:2013(nl) |
| | NEN-EN 14080:2013 | | |

Wandregel 71x196mm, lengte 5500mm, hoh 1900mm

Algemene gegevens

| | | | |
|----------------|-----------------|------------------------|-------|
| B x H | [mm] : 71 x 196 | Sterkteklasse | : C24 |
| Overspanning | [mm] : 5500 | Klimaatklasse | : II |
| Opleglengte | [mm] : 50 | Referentie periode [j] | : 15 |
| H.o.h. afstand | [mm] : 1900 | Min. eigenfreq. [Hz] | : 3 |

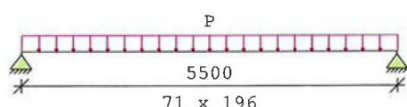
Permanente belastingen G_{rep}

| | |
|-----------------------------|--------|
| EG balklaag | : 0.00 |
| Extra belasting | : 0.00 |
| Totaal [kN/m ²] | : 0.00 |

Veranderlijke belastingen

| | | |
|--------------------|------------------------|--------------------|
| $q_k + P_{wanden}$ | [kN/m ²] : | 0.61 = 0.61 + 0.00 |
| Ψ_0 | [-] : | 0.00 |
| Ψ_2 | [-] : | 0.00 |

$$q_{wind} = 0.55 \times (0.8 + 0.3) = 0.61 \text{ kN/m}^2$$

**Belastingfactoren (NEN-EN 1990)**

| | | | | |
|----------------|------------------|------|--------------|------|
| Formule 6.10a: | γ_G : | 1.22 | γ_Q : | 1.35 |
| Formule 6.10b: | $\xi \gamma_G$: | 1.08 | γ_Q : | 1.35 |

$$0.8 \quad | \quad 0.3$$

Partiële factor (Tabel 2.3 NEN-EN 1995-1-1) $\gamma_M[-] : 1.30$

| | | | | | |
|---|-------------------|--------------|---------------|--------------|--------------|
| Meegenomen combinaties in de berekening : | | $k_{mod}[-]$ | $b_{ef} [mm]$ | $k_{c,90,q}$ | $k_{c,90,F}$ |
| * Perm. + q-last (6.10a) | $(G_{rep} + q_k)$ | 0.60 | 71 | 1.00 | |
| * Perm. + q-last (6.10b) | $(G_{rep} + q_k)$ | 0.80 | 71 | 1.00 | |

Resultaten (maatgevende combinaties)**eis****u.c.**

| | | | | | |
|----------------------|-----------|---|---|------------------------------------|------|
| Perm + qlast (6.10b) | frm(6.11) | $\sigma_{m,y,d}$ | = | 13.01 < 14.77 [N/mm ²] | 0.88 |
| Perm + qlast (6.10b) | frm(6.13) | $\tau_{v,d}$ | = | 0.43 < 2.46 [N/mm ²] | 0.17 |
| Perm + qlast (6.10b) | frm(6.3) | $\sigma_{c,90,q,d} / (k_{c,90,q} \cdot f_{c,90,d}) + \sigma_{c,90,F,d} / (k_{c,90,F} \cdot f_{c,90,d})$ | < | 1.00 | |
| | | | = | 1.20 / 1.54 + 0.00 / 1.54 = 0.78 | |

→ wandregels voldoen!

| | | | | | |
|--------------|---------------|---|---------------|------|------|
| de belasting | u_{bij} | = | 28.18 < 30.25 | [mm] | 0.93 |
| belasting | $u_{net,fin}$ | = | 28.18 < 30.25 | [mm] | 0.93 |