

STATISCHE BEREKENING

Werk: Verbouw woning aan de Kruisstraat 35 Nederweert-Eind.

Onderdeel: Staalconstructies.

Blad: 1 t/m 26 en 2 constructiebladen.

Datum: 04-01-2023

Werknummer: 2702

Opdrachtgever:
Adres:

[REDACTED]

Constructeur:
Adres:
Telefoon:
Email:

[REDACTED]

Inhoudsopgave:

| | | |
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1 Algemene belastingen

Schuindak

| | | | | | | |
|---|----|------------------|-------------|-------------------|------------------|---|
| Pannen | | | 0,44 | KN/m ² | | |
| Zonnepanelen | | | 0,18 | KN/m ² | | |
| Dakplaten | | | 0,18 | KN/m ² | | |
| Gordingen | | | 0,10 | KN/m ² | | |
| Plafond | | | <u>0,10</u> | KN/m ² | | |
| Schuindak | | G _k = | 1,00 | KN/m ² | | |
| Dakhelling | 40 | | | | | |
| Dakbelasting per m ² grondvlak | | G _k = | 1,31 | KN/m ² | | |
| Opgelegde belasting | | Q _k = | 0,00 | KN/m ² | | |
| Sneeuwbelasting | | Q _k = | 0,37 | KN/m ² | | |
| Maximale belasting per m ² grondvlak | | Q _k = | 0,37 | KN/m ² | y ₀ = | 0 |

Houten zoldervloer

| | | | | | | |
|-----------------------------|--|------------------|-------------|-------------------|------------------|-----|
| Underlaymentplaat dik 18 mm | | | 0,15 | KN/m ² | | |
| Balklaag | | | 0,15 | KN/m ² | | |
| Plafond | | | <u>0,20</u> | KN/m ² | | |
| Houten zoldervloer | | G _k = | 0,50 | KN/m ² | | |
| Opgelegde belasting | | | 1,75 | KN/m ² | | |
| Scheidingswanden | | | <u>0,50</u> | KN/m ² | | |
| Houten zoldervloer | | Q _k = | 2,25 | KN/m ² | y ₀ = | 0,4 |

1e Verdiepingsvloer (hout)

| | | | | | | |
|-----------------------------|--|------------------|-------------|-------------------|------------------|-----|
| Underlaymentplaat dik 18 mm | | | 0,20 | KN/m ² | | |
| Balklaag | | | 0,15 | KN/m ² | | |
| Plafond | | | <u>0,20</u> | KN/m ² | | |
| 1e Verdiepingsvloer | | G _k = | 0,55 | KN/m ² | | |
| Opgelegde belasting | | | 1,75 | KN/m ² | | |
| Scheidingswanden | | | <u>0,50</u> | KN/m ² | | |
| 1e Verdiepingsvloer | | Q _k = | 2,25 | KN/m ² | y ₀ = | 0,4 |

1e Verdiepingsvloer

| | | | | | | |
|---------------------|------|------------------|-------------|-------------------|-------------------|-----|
| Eigen gewicht | | | 5,00 | KN/m ² | | |
| Afwerklaag | 0,05 | x | 20 | <u>1,00</u> | KN/m ² | |
| 1e Verdiepingsvloer | | G _k = | 6,00 | KN/m ² | | |
| Opgelegde belasting | | | 1,75 | KN/m ² | | |
| Scheidingswanden | | | <u>0,50</u> | KN/m ² | | |
| 1e Verdiepingsvloer | | Q _k = | 2,25 | KN/m ² | y ₀ = | 0,4 |

2 Uitgangsgegevens

Algemene gegevens

| | | |
|--|-------------|-------------|
| Bouwwerkaanduiding | Woning | |
| Gevolgklasse (Consequence Class) | CC1 | |
| Betrouwbaarheidsklasse (Reliability Class) | RC1 | |
| Ontwerplevensduurklasse | 3 | |
| Ontwerplevensduur | 50 jaar | Categorie A |
| y-factoren voor gebouwen | $y_0 = 0,4$ | $y_2 = 0,3$ |
| Windgebied | 3 (bebouwd) | |

Fundamentele combinaties $K_{FI} \cdot (S \cdot g_G \cdot G_k + S \cdot g_Q \cdot y_{0j} \cdot Q_k)$ (verg. 6.10a)

$K_{FI} \cdot (S \cdot \xi \cdot g_G \cdot G_k + g_Q \cdot Q_k + S \cdot g_Q \cdot y_0 \cdot Q_k)$ (verg. 6.10b)

$g_G = 1,35$ $g_Q = 1,50$

K_{FI} -factor 0,9 $x = 0,89$

$K_\alpha \cdot g_g = 1,22$ $K_\alpha \cdot g_q = 1,35$

reductiefactor verdiepingen:

$a_n = 2 + (n - 2) \cdot y_{0/n}$

bij $n > 2$

Voorschriften

| | |
|------------|-----------------------------|
| Eurocode 0 | Grondslagen van het ontwerp |
| Eurocode 1 | Belastingen op constructies |
| Eurocode 2 | Betonconstructies |
| Eurocode 3 | Staalconstructies |
| Eurocode 5 | Houtconstructies |
| Eurocode 6 | Metselwerkconstructies |

Staal

| | |
|---|-------------------------|
| Profielstaal | S235JR(G2) / S355J2(G3) |
| Stalen kokers en buizen | S275JO |
| Boutkwaliteit | 8.8 |
| Ankerkwaliteit | 4.6 |
| Lashoek minimaal $a=5$ mm mits anders vermeld | |

Hout

| | | |
|----------------|-------------------------|--------------------|
| Sterktenklasse | Naaldhout Kwaliteit C24 | Standaard bouwhout |
| Klimaatklasse | 1 | |

Metselwerk

| | | |
|---|----|-------------------|
| Baksteen genormaliseerde steendruksterkte | 15 | N/mm ² |
| Gemiddelde druksterkte mortel | 5 | KN/m ² |
| Binnenmetselwerk kalkzandsteen, poriso o.g. | 15 | N/mm ² |
| Gemiddelde druksterkte mortel | 5 | KN/m ² |

3 Belastingen stalen liggers

Ligger 1 (eethoek achtergevel buiten) $L_{th} = 2,26$ m

Belastingen

| | | | | | | | | | | |
|---|-------------------|------|------|---|---------|------|------|---|-------------|-------------------|
| Dakbelasting per m ² grondvlak | 1,31 | x | 0,75 | x | 1,00 | x | 1,00 | = | 0,98 | KN/m ¹ |
| Baksteenmetselwerk | 18,00 | x | 0,11 | x | 1,20 | x | 1,00 | = | 2,38 | KN/m ¹ |
| Buitenmuur | 0,42 | x | 1,20 | x | 1,00 | x | 1,00 | = | <u>0,50</u> | KN/m ¹ |
| $G_{k,1} =$ | | | | | | | | = | 3,86 | KN/m ¹ |
| | | | | | | | | | y_0 | |
| Maximale belasting per m ² grondvlak | 0,37 | x | 0,75 | = | 0,28 | x | 0,00 | = | <u>0,00</u> | KN/m ¹ |
| $Q_{k,1} \cdot y_0 =$ | | | | | | | | = | 0,00 | KN/m ¹ |
| | | | | | | | | | y_0 | |
| Maximale belasting per m ² grondvlak | 0,37 | x | 0,75 | = | 0,28 | x | 1,00 | = | <u>0,28</u> | KN/m ¹ |
| $Q_{k,1} \text{ max.} =$ | | | | | | | | = | 0,28 | KN/m ¹ |
| $g_G \cdot G_k + g_Q \cdot y_0 \cdot Q_k$ | $g_G =$ | 1,22 | | | $g_Q =$ | 1,35 | | = | 4,69 | KN/m ¹ |
| $\xi \cdot g_G \cdot G_k + g_Q \cdot Q_k$ | $\xi \cdot g_G =$ | 1,08 | | | $g_Q =$ | 1,35 | | = | 4,55 | KN/m ¹ |

Ligger 2 (eethoek achtergevel binnen) $L_{th} = 2,26$ m

Belastingen

| | | | | | | | | | | |
|---|-------------------|------|------|---|---------|------|------|---|-------------|-------------------|
| Dakbelasting per m ² grondvlak | 1,31 | x | 0,75 | x | 1,00 | x | 1,00 | = | 0,98 | KN/m ¹ |
| 1e Verdiepingsvloer | 0,55 | x | 2,00 | x | 1,00 | x | 1,00 | = | 1,10 | KN/m ¹ |
| Kalkzandsteen | 20,00 | x | 0,11 | x | 1,35 | x | 1,00 | = | <u>2,97</u> | KN/m ¹ |
| $G_{k,1} =$ | | | | | | | | = | 5,05 | KN/m ¹ |
| | | | | | | | | | y_0 | |
| Maximale belasting per m ² grondvlak | 0,37 | x | 0,75 | = | 0,28 | x | 0,00 | = | 0,00 | KN/m ¹ |
| 1e Verdiepingsvloer | 2,25 | x | 2,00 | = | 4,50 | x | 0,40 | = | <u>1,80</u> | KN/m ¹ |
| $Q_{k,1} \cdot y_0 =$ | | | | | | | | = | 1,80 | KN/m ¹ |
| | | | | | | | | | y_0 | |
| Maximale belasting per m ² grondvlak | 0,37 | x | 0,75 | = | 0,28 | x | 1,00 | = | 0,28 | KN/m ¹ |
| 1e Verdiepingsvloer | 2,25 | x | 2,00 | = | 4,50 | x | 1,00 | = | <u>4,50</u> | KN/m ¹ |
| $Q_{k,1} \text{ max.} =$ | | | | | | | | = | 4,78 | KN/m ¹ |
| $g_G \cdot G_k + g_Q \cdot y_0 \cdot Q_k$ | $g_G =$ | 1,22 | | | $g_Q =$ | 1,35 | | = | 8,56 | KN/m ¹ |
| $\xi \cdot g_G \cdot G_k + g_Q \cdot Q_k$ | $\xi \cdot g_G =$ | 1,08 | | | $g_Q =$ | 1,35 | | = | 11,91 | KN/m ¹ |

Ligger 3 (slaapkamer voorgevel)**Lth=** 1,41 m**Belastingen**

| | | | | | | | | | | |
|---|-------|---|------|---|------|---|------|---|-------------|-------------------|
| Dakbelasting per m ² grondvlak | 1,31 | x | 0,75 | x | 1,00 | x | 1,00 | = | 0,98 | KN/m ¹ |
| 1e Verdiepingsvloer | 6,00 | x | 0,50 | x | 1,00 | x | 1,00 | = | 3,00 | KN/m ¹ |
| Kalkzandsteen | 20,00 | x | 0,22 | x | 1,35 | x | 1,00 | = | <u>5,94</u> | KN/m ¹ |
| G_{k,1}= | | | | | | | | = | 9,92 | KN/m ¹ |

y₀

| | | | | | | | | | | |
|---|------|---|------|---|------|---|------|---|-------------|-------------------|
| Maximale belasting per m ² grondvlak | 0,37 | x | 0,75 | = | 0,28 | x | 0,00 | = | 0,00 | KN/m ¹ |
| 1e Verdiepingsvloer | 2,25 | x | 0,50 | = | 1,13 | x | 0,40 | = | <u>0,45</u> | KN/m ¹ |
| Q_{k,1}*y₀= | | | | | | | | = | 0,45 | KN/m ¹ |

y₀

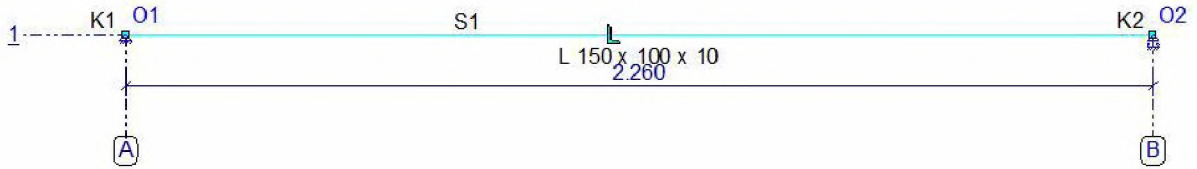
| | | | | | | | | | | |
|---|------|---|------|---|------|---|------|---|-------------|-------------------|
| Maximale belasting per m ² grondvlak | 0,37 | x | 0,75 | = | 0,28 | x | 1,00 | = | 0,28 | KN/m ¹ |
| 1e Verdiepingsvloer | 2,25 | x | 0,50 | = | 1,13 | x | 1,00 | = | <u>1,13</u> | KN/m ¹ |
| Q_{k,1} max. = | | | | | | | | = | 1,41 | KN/m ¹ |

$$g_G \cdot G_k + g_Q \cdot y_0 \cdot Q_k \quad g_G = 1,22 \quad g_Q = 1,35 \quad = 12,66 \text{ KN/m}^1$$

$$\xi \cdot g_G \cdot G_k + g_Q \cdot Q_k \quad g_G = 1,08 \quad g_Q = 1,35 \quad = 12,62 \text{ KN/m}^1$$

3.1 Ligger 1

AFB. GEOMETRIE 1



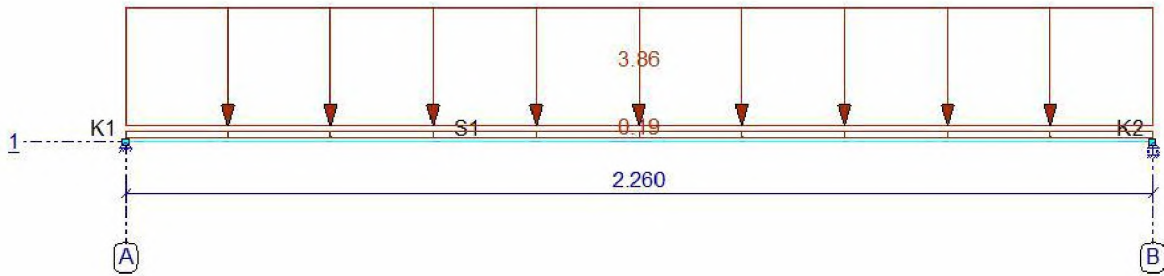
STAVEN

| Staf | Knoop B | Knoop E | X-B | Z-B | X-E | Z-E | Lengte | Profiel | Positie |
|------|---------|---------|-------|-------|-------|-------|--------|---------|------------------|
| S1 | K1 | K2 | 0,000 | 0,000 | 2,260 | 0,000 | 2,260 | P1 | 0,000 - L(2,260) |
| - | - | - | m | m | m | m | m | - | - |

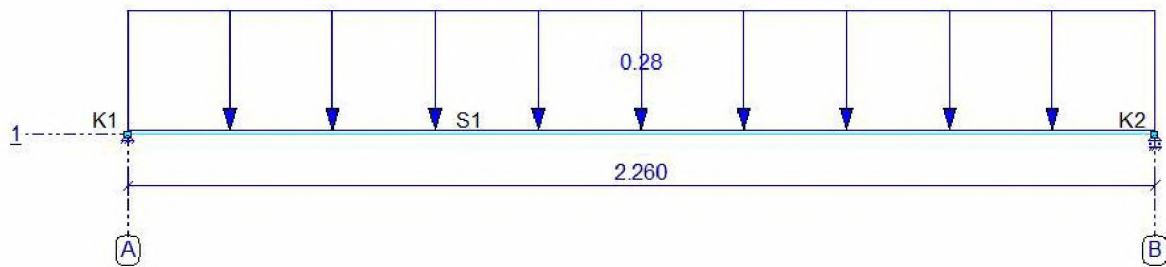
OPLEGGINGEN

| Oplegging | Object | Positie | X | Z | Yr | HoekYr |
|-----------|--------|---------|------|------|---------|--------|
| O1 | K1 | 0,000 | Vast | Vast | Vrij | 0 |
| O2 | K2 | 0,000 | Vrij | Vast | Vrij | 0 |
| - | - | m | kN/m | kN/m | kNm/rad | ° |

AFB. LASTEN B.G.1 PERMANENT



AFB. LASTEN B.G.2 VERDEELDE VERANDERLIJKE BELASTING



BELASTINGSGEVALLEN

| Type | Beginwaarde | Eindwaarde | Beginafstand | Eindafstand | Richting Staaf of knoop |
|---|--------------|----------------|-------------------|-------------|-------------------------|
| B.G.1: Permanent | | | | | |
| q _G | 0,19 (1,00x) | 0,19 (1,00x) | 0,000 | 2,260(L) | Z'' S1 |
| q | 3,86 | 3,86 | 0,000 | 2,260(L) | Z' S1 |
| Som lasten | X: | 0,00 kN | Z: 9,15 kN | | |
| B.G.2: Verdeelde veranderlijke belasting | | | | | |
| q | 0,28 | 0,28 | 0,000 | 2,260(L) | Z' S1 |
| Som lasten | X: | 0,00 kN | Z: 0,63 kN | | |
| - | - | - | m | m | - - |

B.G. OPLEGREACTIES

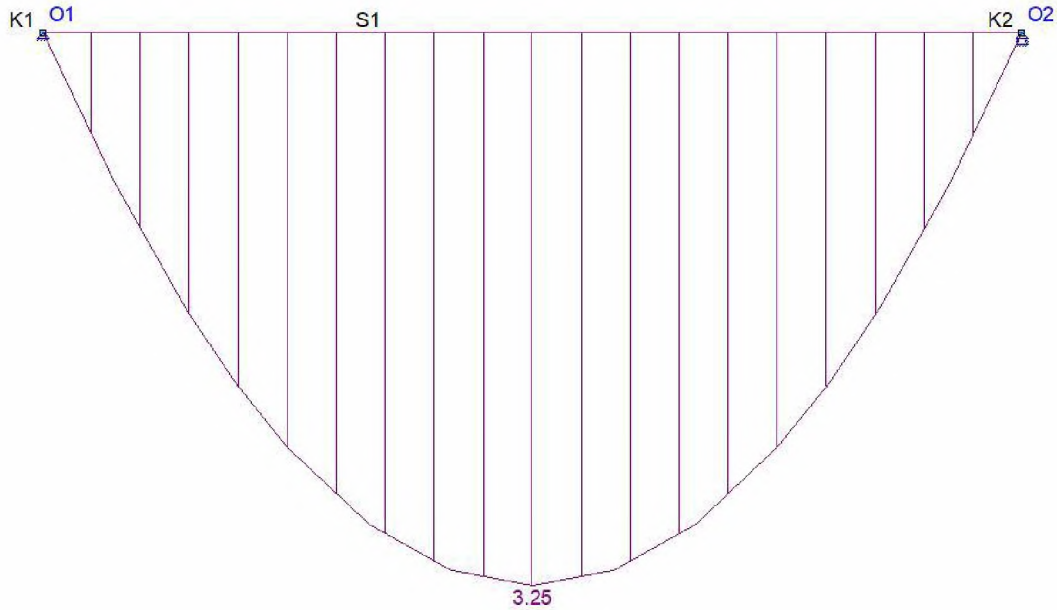
| B.C. | Oplegging | Knoop | X | Z | My |
|-------|---------------------|-------|-------------|--------------|------------|
| B.G.1 | O1 | K1 | 0.00 | -4.58 | 0.00 |
| | O2 | K2 | 0.00 | -4.58 | 0.00 |
| | Som Reacties | | 0.00 | -9,15 | |
| | Som Lasten | | 0.00 | 9,15 | |
| B.G.2 | O1 | K1 | 0.00 | -0.32 | 0.00 |
| | O2 | K2 | 0.00 | -0.32 | 0.00 |
| | Som Reacties | | 0.00 | -0,63 | |
| | Som Lasten | | 0.00 | 0,63 | |
| - | - | - | kN | kN | kNm |

FUNDAMENTEEL BELASTINGSCOMBINATIES (TABEL)

| B.G. | Omschrijving | Fu.C.1 | Fu.C.2 |
|-------|-----------------------------------|--------|--------|
| B.G.1 | Permanent | 1.08 | 1.22 |
| B.G.2 | Verdeelde veranderlijke belasting | 1.35 | 0.54 |

AFB. FU.C. MOMENTEN (MY) OMHULLENDE

Fundamenteel Belastingscombinaties



FU.C. EXTREME STAAFKRACHTEN

| Staat | B.C. | Mb | Mmax | xMmax | Me | x-M0 | x-M0 T/D | Nmax | Vb | Vmax | Ve |
|-------|--------|------|------|-------|------|-------|----------|------|------|-------|-------|
| S1 | Fu.C.2 | 0.00 | 3.25 | 1.130 | 0.00 | 0.000 | 0.000 - | 0.00 | 5.75 | -5.75 | -5.75 |
| - | - | kNm | kNm | m | kNm | m | m - | kN | kN | kN | kN |

AFB. FU.C. OPLEGREACTIES OMHULLENDE

Fundamenteel Belastingscombinaties



FU.C. EXTREME OPLEGREACTIES

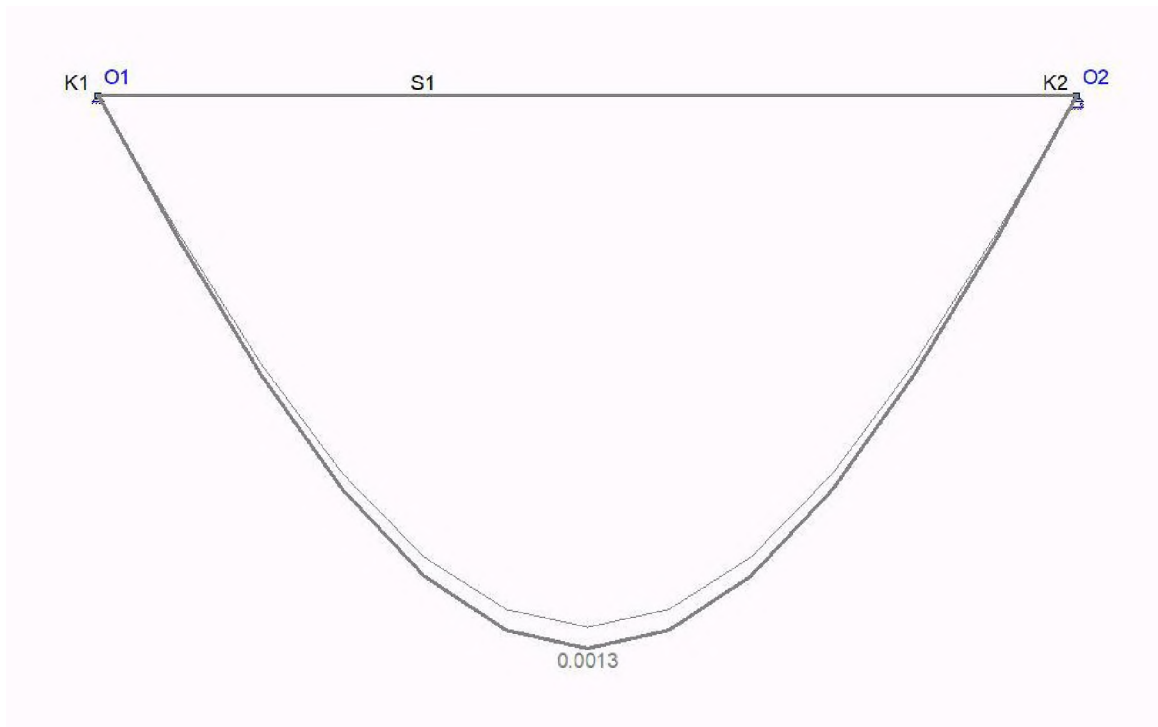
| Opleggin | Knoop | B.C. | Xmax | Z | My B.C. | X | Zmax | My B.C. | X | Z | Mymax |
|--------------------------------|-------|------|------|----|---------|------|-------|---------|-----|----|-------|
| O1 | K1 | | | | Fu.C.2 | 0.00 | -5.75 | 0.00 | | | |
| O2 | K2 | | | | Fu.C.2 | 0.00 | -5.75 | 0.00 | | | |
| Globale extreme waarden | | | | | | | | | | | |
| O1 | K1 | | | | Fu.C.2 | 0.00 | -5.75 | 0.00 | | | |
| - | - | - | kN | kN | kNm | - | kN | kN | kNm | kN | kN |

KARAKTERISTIEK BELASTINGSCOMBINATIES (TABEL)

| B.G. | Omschrijving | Ka.C. | Ka.C.1 | Ka.C.2 |
|-------|-----------------------------------|-------|--------|--------|
| B.G.1 | Permanent | 1.00 | 1.00 | 1.00 |
| B.G.2 | Verdeelde veranderlijke belasting | - | 0.40 | 1.00 |

AFB. KA.C. VERPLAATSINGEN OMHULLENDE

Karakteristiek Belastingscombinaties



B.G. DOORBUIGINGEN

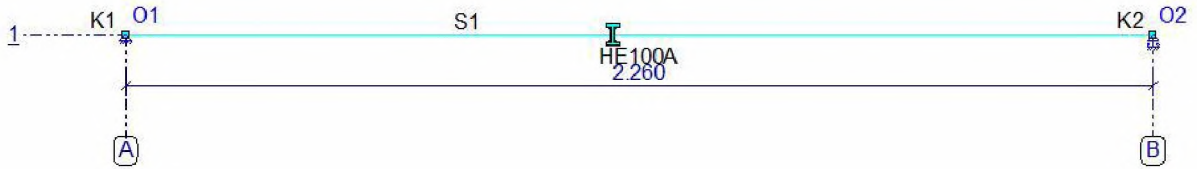
| Staaf | B.G. | Knoop Begin | | | Z'afst | Staaf | | | Knoop Eind | |
|-------|-------|-------------|----------|----------|----------|----------|-------------|----------|------------|--|
| | | X | | | | Z' | Z' glb dist | Z' glb | X | |
| S1 | B.G.1 | 0,000 | 0,000 | 1,130 | 0,0012 | 1,130 | 0,0012 | 0,000 | 0,000 | |
| | B.G.2 | 0,000 | 0,000 | 1,130 | 0,0001 | 1,130 | 0,0001 | 0,000 | 0,000 | |
| - | - | m | m | m | m | m | m | m | m | |

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

| Veld | Toetsing | Combinatie | Artikel | UC max |
|---------------------|----------------------|-------------------|-------------------------------|---------------|
| Veld | Toetsing | Combinatie | Artikel | UC max |
| C1-V1 (0.000-2.260) | Doorsnede | Fu.C.2 | NEN-EN1993-1-1(6.42) | 0,26 |
| C1-V1 (0.000-2.260) | Kiptoetsing | Fu.C.2 | NEN-EN1993-1-1(6.54) | 0,33 |
| C1-V1 (0.000-2.260) | Doorbuigingstoetsing | Qu.C.1 | NEN-EN NEN-EN1990/NB A1.4.2 | 0,13 |

3.2 Ligger 1 (alternatief)

AFB. GEOMETRIE 1



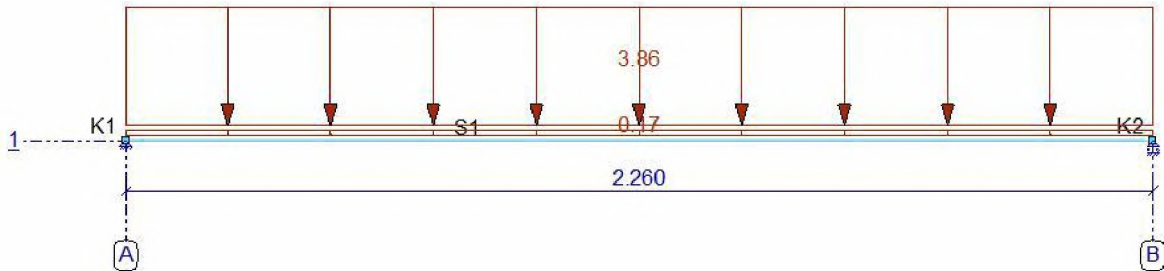
STAVEN

| StAAF | Knoop B | Knoop E | X-B | Z-B | X-E | Z-E | Lengte | Profiel | Positie |
|-------|---------|---------|-------|-------|-------|-------|--------|---------|------------------|
| S1 | K1 | K2 | 0,000 | 0,000 | 2,260 | 0,000 | 2,260 | P1 | 0,000 - L(2,260) |
| - | - | - | m | m | m | m | m | - | - |

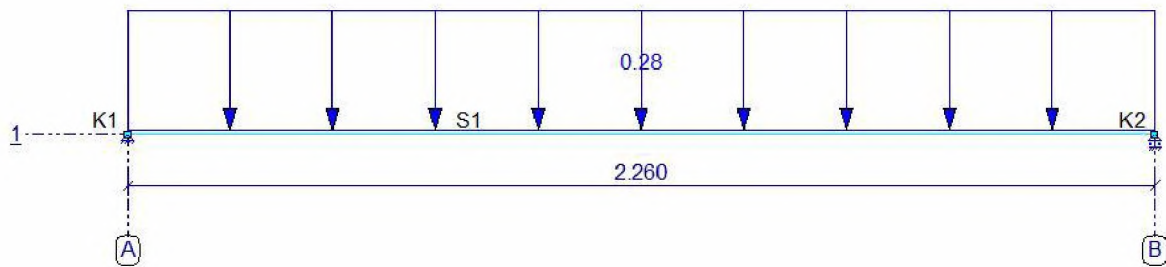
OPLEGGINGEN

| Oplegging | Object | Positie | X | Z | Yr | HoekYr |
|-----------|--------|---------|------|------|---------|--------|
| O1 | K1 | 0,000 | Vast | Vast | Vrij | 0 |
| O2 | K2 | 0,000 | Vrij | Vast | Vrij | 0 |
| - | - | m | kN/m | kN/m | kNm/rad | ° |

AFB. LASTEN B.G.1 PERMANENT



AFB. LASTEN B.G.2 VERDEELDE VERANDERLIJKE BELASTING



BELASTINGSGEVALLEN

| Type | Beginwaarde | Eindwaarde | Beginafstand | Eindafstand | Richting Staaf of knoop |
|-------------------------|-------------|------------|--------------|-------------|-------------------------|
| B.G.1: Permanent | | | | | |

| Type | Beginwaarde | Eindwaarde | Beginafstand | Eindafstand | Richting Staaf of knoop |
|---|--------------|--------------|--------------|-------------|-------------------------|
| B.G.1: Permanent | | | | | |
| qG | 0,17 (1.00x) | 0,17 (1.00x) | 0,000 | 2,260(L) | Z' S1 |
| q | 3,86 | 3,86 | 0,000 | 2,260(L) | Z' S1 |
| Som lasten | X: | 0,00 | kN | Z: | 9,10 |
| | | | kN | | |
| B.G.2: Verdeelde veranderlijke belasting | | | | | |
| q | 0,28 | 0,28 | 0,000 | 2,260(L) | Z' S1 |
| Som lasten | X: | 0,00 | kN | Z: | 0,63 |
| | | | kN | | |
| - | - | - | m | m | - - |

B.G. OPLEGREACTIES

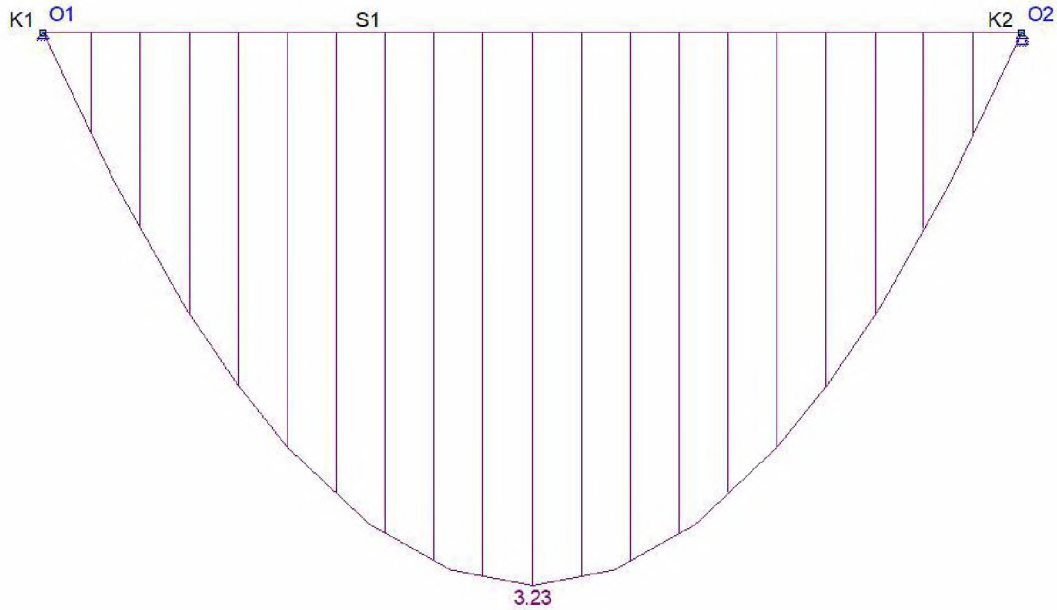
| B.C. | Oplegging | Knoop | X | Z | My |
|-------|---------------------|-------|-------------|--------------|------------|
| B.G.1 | O1 | K1 | 0.00 | -4.55 | 0.00 |
| | O2 | K2 | 0.00 | -4.55 | 0.00 |
| | Som Reacties | | 0.00 | -9.10 | |
| | Som Lasten | | 0.00 | 9.10 | |
| B.G.2 | O1 | K1 | 0.00 | -0.32 | 0.00 |
| | O2 | K2 | 0.00 | -0.32 | 0.00 |
| | Som Reacties | | 0.00 | -0.63 | |
| | Som Lasten | | 0.00 | 0.63 | |
| - | - | - | kN | kN | kNm |

FUNDAMENTEEL BELASTINGSCOMBINATIES (TABEL)

| B.G. | Omschrijving | Fu.C.1 | Fu.C.2 |
|-------|-----------------------------------|--------|--------|
| B.G.1 | Permanent | 1.08 | 1.22 |
| B.G.2 | Verdeelde veranderlijke belasting | 1.35 | 0.54 |

AFB. FU.C. MOMENTEN (MY) OMHULLENDE

Fundamenteel Belastingcombinaties



FU.C. EXTREME STAAFKRACHTEN

| Staat | B.C. | Mb | Mmax | xMmax | Me | x-M0 | x-M0 T/D | Nmax | Vb | Vmax | Ve |
|-------|--------|------------|-------------|----------|------------|----------|------------|-----------|-------------|--------------|--------------|
| S1 | Fu.C.2 | 0.00 | 3.23 | 1.130 | 0.00 | 0.000 | 0.000 - | 0.00 | 5.72 | -5.72 | -5.72 |
| - | - | kNm | kNm | m | kNm | m | m - | kN | kN | kN | kN |

AFB. FU.C. OPLEGREACTIES OMHULLENDE

Fundamenteel Belastingscombinaties



FU.C. EXTREME OPLEGREACTIES

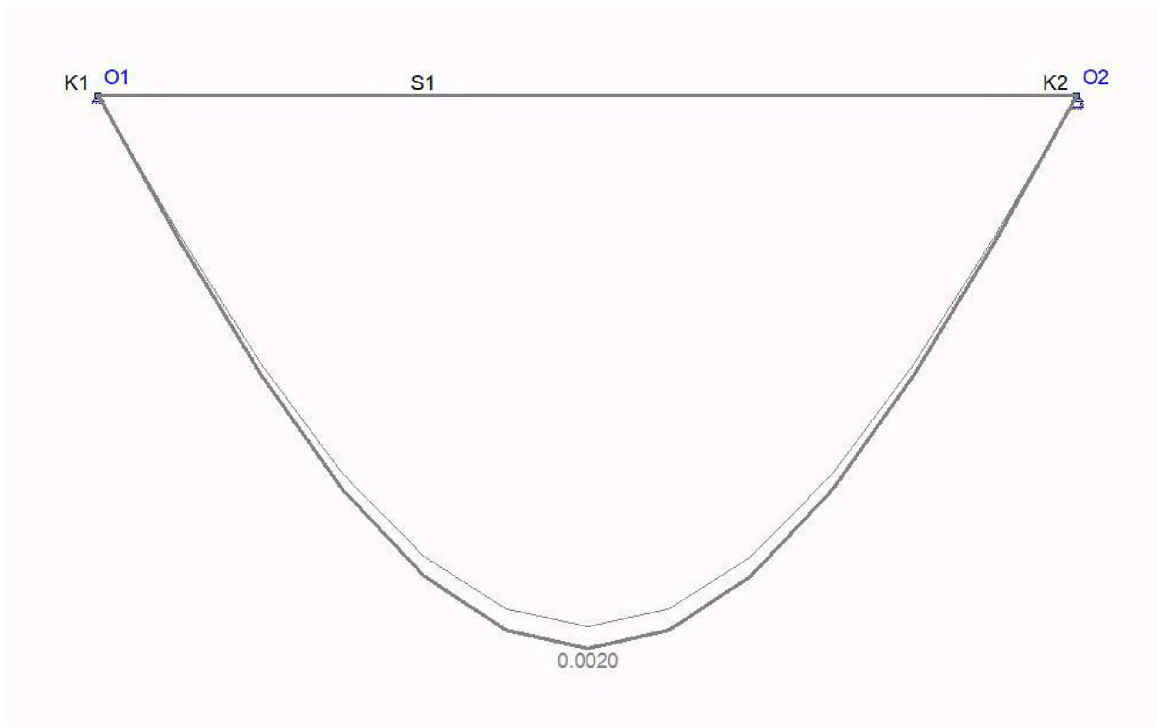
| Opleggin | Knoop | B.C. | Xmax | Z | My B.C. | X | Zmax | My B.C. | X | Z | Mymax |
|--------------------------------|-------|--------|-----------|--------------|------------|----------|-----------|-----------|------------|-----------|-----------|
| O1 | K1 | Fu.C.2 | 0.00 | -5.72 | 0.00 | | | | | | |
| O2 | K2 | Fu.C.2 | 0.00 | -5.72 | 0.00 | | | | | | |
| Globale extreme waarden | | | | | | | | | | | |
| O2 | K2 | Fu.C.2 | 0.00 | -5.72 | 0.00 | | | | | | |
| - | - | - | kN | kN | kNm | - | kN | kN | kNm | kN | kN |

KARAKTERISTIEK BELASTINGSCOMBINATIES (TABEL)

| B.G. | Omschrijving | Ka.C. | Ka.C.1 | Ka.C.2 |
|-------|-----------------------------------|-------|--------|--------|
| B.G.1 | Permanent | 1.00 | 1.00 | 1.00 |
| B.G.2 | Verdeelde veranderlijke belasting | - | 0.40 | 1.00 |

AFB. KA.C. VERPLAATSINGEN OMHULLENDE

Karakteristiek Belastingscombinaties



B.G. DOORBUIGINGEN

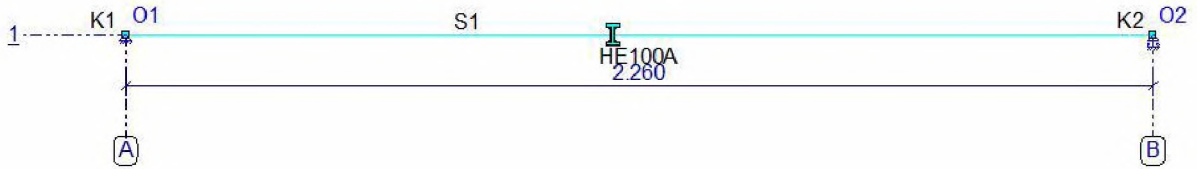
| Staaf | B.G. | Knoop Begin | | | Z'afst | Staaf | | | Knoop Eind | |
|-------|-------|-------------|----------|----------|----------|----------------|----------|----------|------------|--|
| | | X | | | | Z' Z' glb dist | Z' glb | X | | |
| S1 | B.G.1 | 0,000 | 0,000 | 1,130 | 0,0019 | 1,130 | 0,0019 | 0,000 | 0,000 | |
| | B.G.2 | 0,000 | 0,000 | 1,130 | 0,0001 | 1,130 | 0,0001 | 0,000 | 0,000 | |
| - | - | m | m | m | m | m | m | m | m | |

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

| Veld | Toetsing | Combinatie | Artikel | UC max |
|---------------------|----------------------|-------------------|-------------------------------|---------------|
| Veld | Toetsing | Combinatie | Artikel | UC max |
| C1-V1 (0.000-2.260) | Doorsnede | Fu.C.2 | NEN-EN1993-1-1(6.12) | 0,17 |
| C1-V1 (0.000-2.260) | Kiptoetsing | Fu.C.2 | NEN-EN1993-1-1(6.54) | 0,18 |
| C1-V1 (0.000-2.260) | Doorbuigingstoetsing | Qu.C.1 | NEN-EN NEN-EN1990/NB A1.4.2 | 0,21 |

3.3 Ligger 2

AFB. GEOMETRIE 1



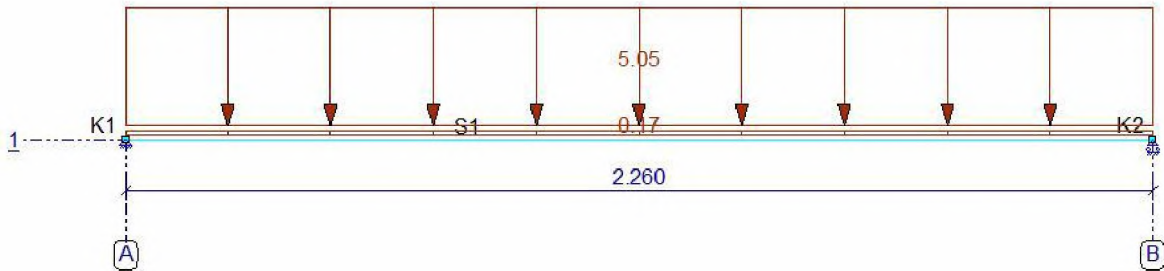
STAVEN

| StAAF | Knoop B | Knoop E | X-B | Z-B | X-E | Z-E | Lengte | Profiel | Positie |
|-------|---------|---------|-------|-------|-------|-------|--------|---------|------------------|
| S1 | K1 | K2 | 0,000 | 0,000 | 2,260 | 0,000 | 2,260 | P1 | 0,000 - L(2,260) |
| - | - | - | m | m | m | m | m | - | - |

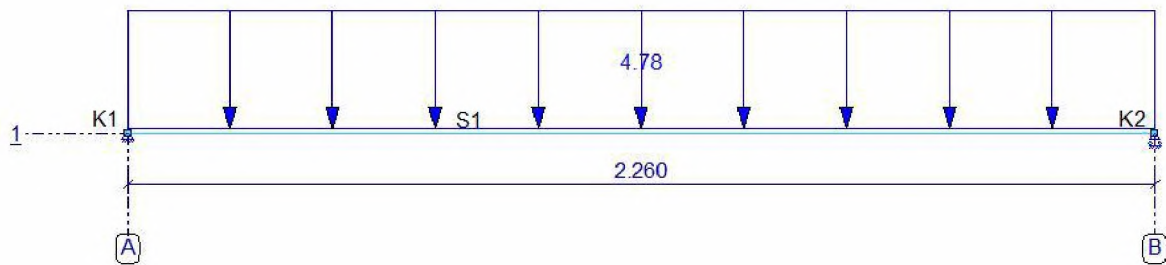
OPLEGGINGEN

| Oplegging | Object | Positie | X | Z | Yr | HoekYr |
|-----------|--------|---------|------|------|---------|--------|
| O1 | K1 | 0,000 | Vast | Vast | Vrij | 0 |
| O2 | K2 | 0,000 | Vrij | Vast | Vrij | 0 |
| - | - | m | kN/m | kN/m | kNm/rad | ° |

AFB. LASTEN B.G.1 PERMANENT



AFB. LASTEN B.G.2 VERDEELDE VERANDERLIJKE BELASTING



BELASTINGSGEVALLEN

| Type | Beginwaarde | Eindwaarde | Beginafstand | Eindafstand | Richting Staaf of knoop |
|-------------------------|-------------|------------|--------------|-------------|-------------------------|
| B.G.1: Permanent | | | | | |

| Type | Beginwaarde | Eindwaarde | Beginafstand | Eindafstand | Richting Staaf of knoop |
|---|--------------|--------------|--------------------|-------------|-------------------------|
| B.G.1: Permanent | | | | | |
| qG | 0,17 (1.00x) | 0,17 (1.00x) | 0,000 | 2,260(L) | Z' S1 |
| q | 5,05 | 5,05 | 0,000 | 2,260(L) | Z' S1 |
| Som lasten | X: | 0,00 | kN Z: 11,79 | kN | |
| B.G.2: Verdeelde veranderlijke belasting | | | | | |
| q | 4,78 | 4,78 | 0,000 | 2,260(L) | Z' S1 |
| Som lasten | X: | 0,00 | kN Z: 10,80 | kN | |
| - | - | - | m | m | - - |

B.G. OPLEGREACTIES

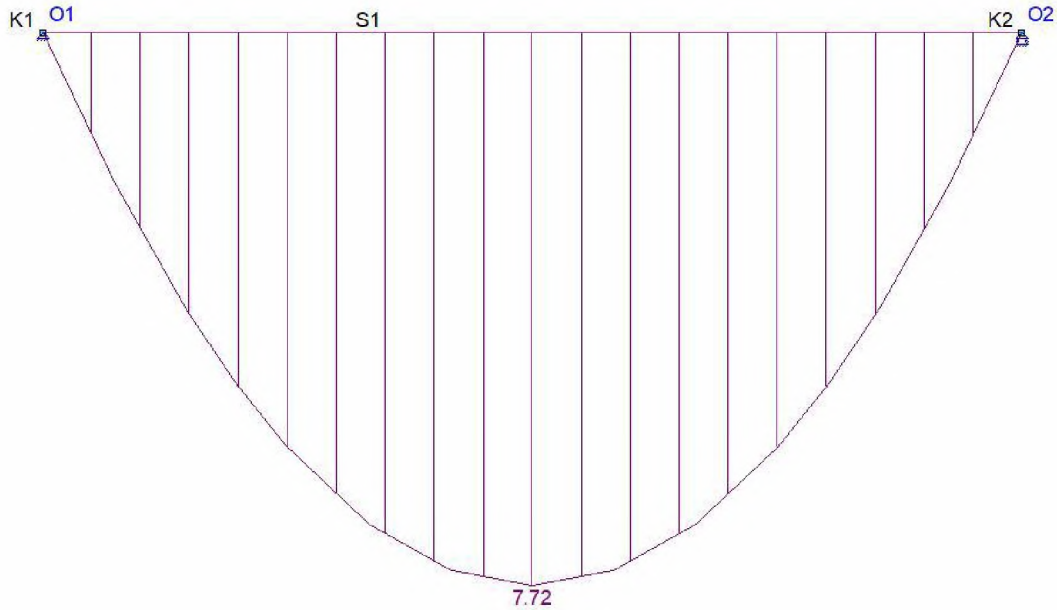
| B.C. | Oplegging | Knoop | X | Z | My |
|-------|---------------------|-------|-------------|---------------|------------|
| B.G.1 | O1 | K1 | 0.00 | -5.89 | 0.00 |
| | O2 | K2 | 0.00 | -5.89 | 0.00 |
| | Som Reacties | | 0.00 | -11,79 | |
| | Som Lasten | | 0.00 | 11,79 | |
| B.G.2 | O1 | K1 | 0.00 | -5.40 | 0.00 |
| | O2 | K2 | 0.00 | -5.40 | 0.00 |
| | Som Reacties | | 0.00 | -10,80 | |
| | Som Lasten | | 0.00 | 10,80 | |
| - | - | - | kN | kN | kNm |

FUNDAMENTEEL BELASTINGSCOMBINATIES (TABEL)

| B.G. | Omschrijving | Fu.C.1 | Fu.C.2 |
|-------|-----------------------------------|--------|--------|
| B.G.1 | Permanent | 1.08 | 1.22 |
| B.G.2 | Verdeelde veranderlijke belasting | 1.35 | 0.54 |

AFB. FU.C. MOMENTEN (MY) OMHULLENDE

Fundamenteel Belastingcombinaties

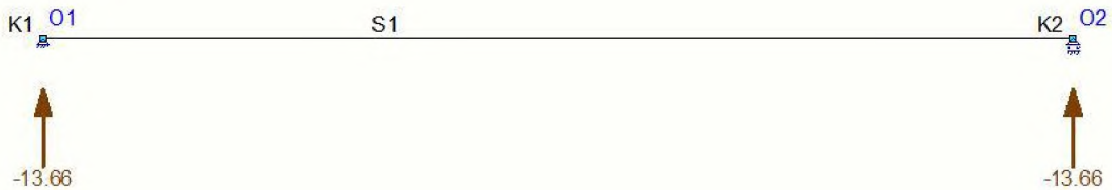


FU.C. EXTREME STAAFKRACHTEN

| Staf | B.C. | Mb | Mmax | xMmax | Me | x-M0 | x-M0 T/D | Nmax | Vb | Vmax | Ve |
|------|--------|------|------|-------|------|-------|----------|------|-------|-------|--------|
| S1 | Fu.C.1 | 0.00 | 7.72 | 1.130 | 0.00 | 0.000 | 0.000 - | 0.00 | 13.66 | 13.66 | -13.66 |
| - | - | kNm | kNm | m | kNm | m | m - | kN | kN | kN | kN |

AFB. FU.C. OPLEGREACTIES OMHULLENDE

Fundamenteel Belastingscombinaties



FU.C. EXTREME OPLEGREACTIES

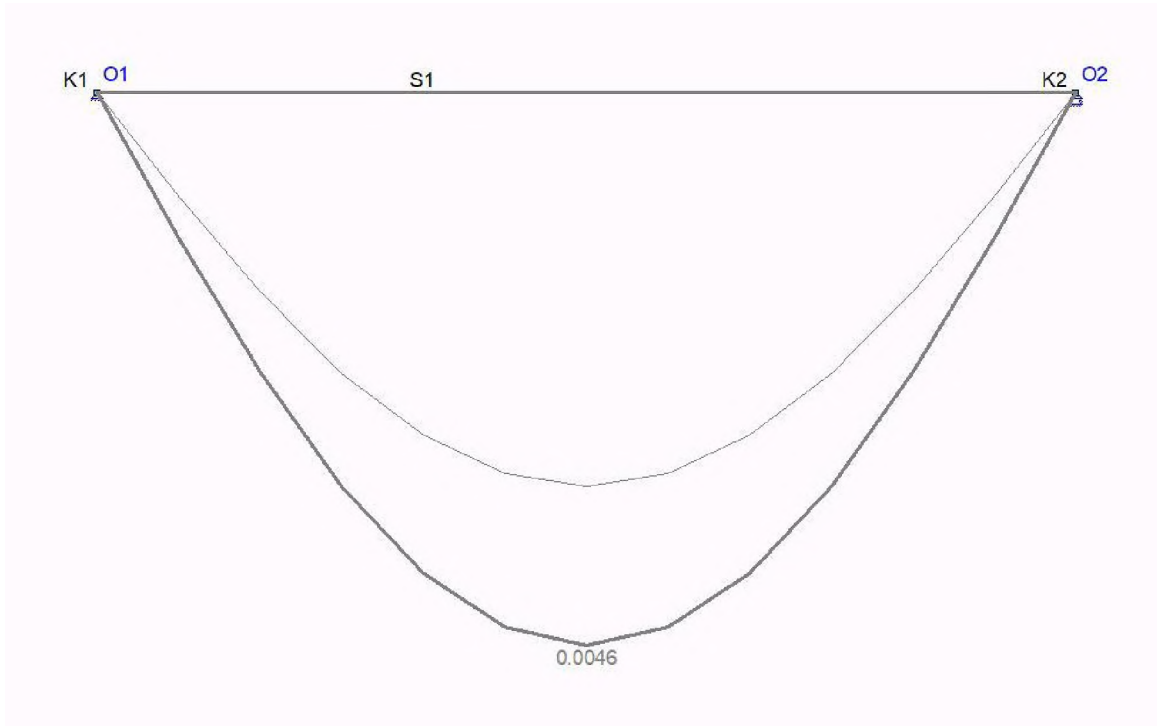
| Opleggin | Knoop | B.C. | Xmax | Z | My B.C. | X | Zmax | My B.C. | X | Z | Mymax |
|--------------------------------|-------|------|------|----|---------|------|--------|---------|-----|----|-------|
| O1 | K1 | | | | Fu.C.1 | 0.00 | -13.66 | 0.00 | | | |
| O2 | K2 | | | | Fu.C.1 | 0.00 | -13.66 | 0.00 | | | |
| Globale extreme waarden | | | | | | | | | | | |
| O2 | K2 | | | | Fu.C.1 | 0.00 | -13.66 | 0.00 | | | |
| - | - | - | kN | kN | kNm | - | kN | kN | kNm | kN | kN |

KARAKTERISTIEK BELASTINGSCOMBINATIES (TABEL)

| B.G. | Omschrijving | Ka.C. | Ka.C.1 | Ka.C.2 |
|-------|-----------------------------------|-------|--------|--------|
| B.G.1 | Permanent | (w1) | 1.00 | 1.00 |
| B.G.2 | Verdeelde veranderlijke belasting | - | 0.40 | 1.00 |

AFB. KA.C. VERPLAATSINGEN OMHULLENDE

Karakteristiek Belastingscombinaties



B.G. DOORBUIGINGEN

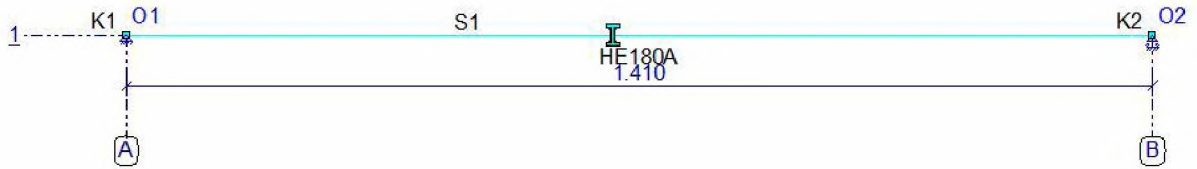
| Staaf | B.G. | Knoop Begin | | | Z'afst | Staaf | | | Knoop Eind | |
|-------|-------|-------------|----------|----------|----------|----------|-------------|----------|------------|--|
| | | X | | | | Z' | Z' glb dist | Z' glb | X | |
| S1 | B.G.1 | 0,000 | 0,000 | 1,130 | 0,0024 | 1,130 | 0,0024 | 0,000 | 0,000 | |
| | B.G.2 | 0,000 | 0,000 | 1,130 | 0,0022 | 1,130 | 0,0022 | 0,000 | 0,000 | |
| - | - | m | m | m | m | m | m | m | m | |

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

| Veld | Toetsing | Combinatie | Artikel | UC max |
|---------------------|----------------------|-------------------|-------------------------------|---------------|
| Veld | Toetsing | Combinatie | Artikel | UC max |
| C1-V1 (0.000-2.260) | Doorsnede | Fu.C.1 | NEN-EN1993-1-1(6.12) | 0,40 |
| C1-V1 (0.000-2.260) | Kiptoetsing | Fu.C.1 | NEN-EN1993-1-1(6.54) | 0,44 |
| C1-V1 (0.000-2.260) | Doorbuigingstoetsing | Qu.C.1 | NEN-EN NEN-EN1990/NB A1.4.2 | 0,34 |

3.4 Ligger 3

AFB. GEOMETRIE 1



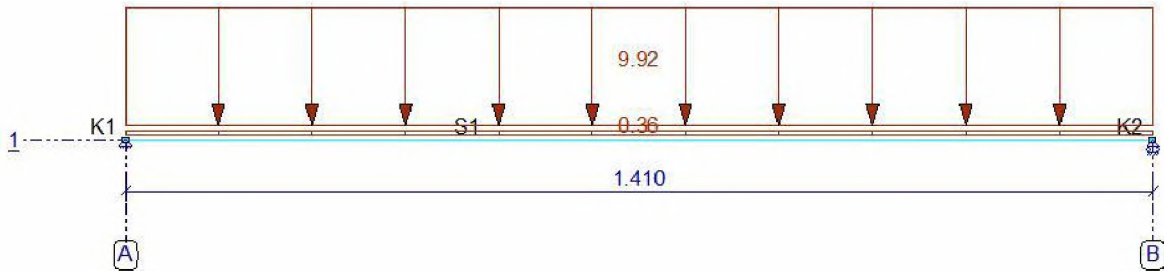
STAVEN

| Staf | Knoop B | Knoop E | X-B | Z-B | X-E | Z-E | Lengte | Profiel | Positie |
|------|---------|---------|-------|-------|-------|-------|--------|---------|------------------|
| S1 | K1 | K2 | 0,000 | 0,000 | 1,410 | 0,000 | 1,410 | P1 | 0,000 - L(1,410) |
| - | - | - | m | m | m | m | m | - | - |

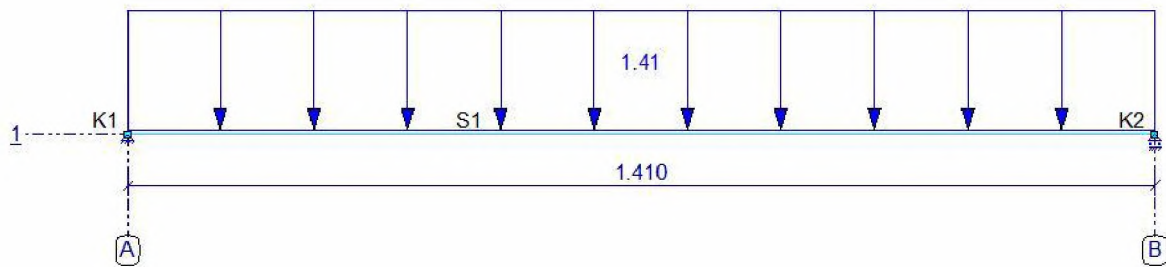
OPLEGGINGEN

| Oplegging | Object | Positie | X | Z | Yr | HoekYr |
|-----------|--------|---------|------|------|---------|--------|
| O1 | K1 | 0,000 | Vast | Vast | Vrij | 0 |
| O2 | K2 | 0,000 | Vrij | Vast | Vrij | 0 |
| - | - | m | kN/m | kN/m | kNm/rad | ° |

AFB. LASTEN B.G.1 PERMANENT



AFB. LASTEN B.G.2 VERDEELDE VERANDERLIJKE BELASTING



BELASTINGSGEVALLEN

| Type | Beginwaarde | Eindwaarde | Beginafstand | Eindafstand | Richting Staaf of knoop |
|-------------------------|-------------|------------|--------------|-------------|-------------------------|
| B.G.1: Permanent | | | | | |

| Type | Beginwaarde | Eindwaarde | Beginafstand | Eindafstand | Richting Staaf of knoop |
|---|--------------|--------------|--------------------|-------------|-------------------------|
| B.G.1: Permanent | | | | | |
| qG | 0,36 (1.00x) | 0,36 (1.00x) | 0,000 | 1,410(L) | Z' S1 |
| q | 9,92 | 9,92 | 0,000 | 1,410(L) | Z' S1 |
| Som lasten | X: | 0,00 | kN Z: 14,49 | kN | |
| B.G.2: Verdeelde veranderlijke belasting | | | | | |
| q | 1,41 | 1,41 | 0,000 | 1,410(L) | Z' S1 |
| Som lasten | X: | 0,00 | kN Z: 1,99 | kN | |
| - | - | - | m | m | - - |

B.G. OPLEGREACTIES

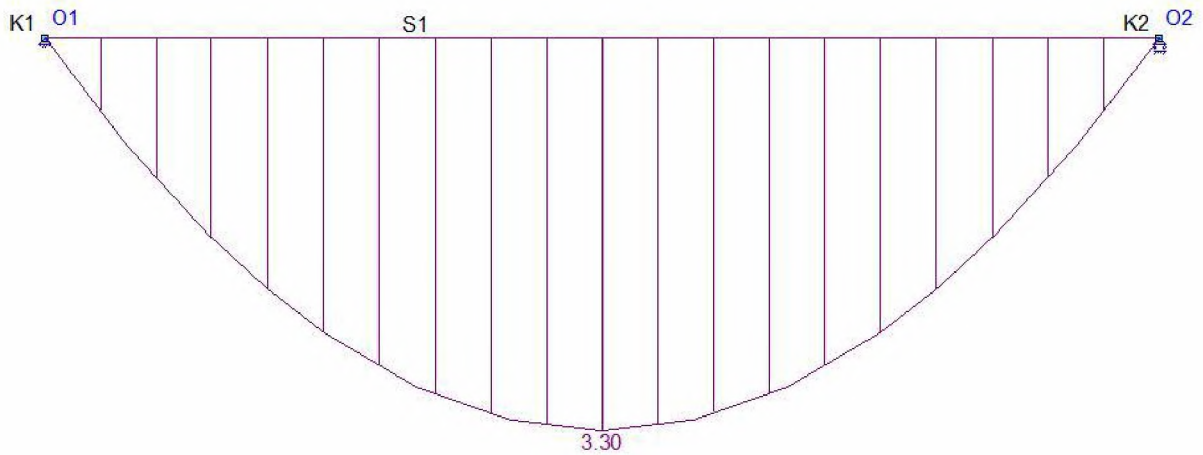
| B.C. | Oplegging | Knoop | X | Z | My |
|-------|---------------------|-------|-------------|---------------|------------|
| B.G.1 | O1 | K1 | 0.00 | -7.24 | 0.00 |
| | O2 | K2 | 0.00 | -7.24 | 0.00 |
| | Som Reacties | | 0.00 | -14.49 | |
| | Som Lasten | | 0.00 | 14.49 | |
| B.G.2 | O1 | K1 | 0.00 | -0.99 | 0.00 |
| | O2 | K2 | 0.00 | -0.99 | 0.00 |
| | Som Reacties | | 0.00 | -1.99 | |
| | Som Lasten | | 0.00 | 1.99 | |
| - | - | - | kN | kN | kNm |

FUNDAMENTEEL BELASTINGSCOMBINATIES (TABEL)

| B.G. | Omschrijving | Fu.C.1 | Fu.C.2 |
|-------|-----------------------------------|--------|--------|
| B.G.1 | Permanent | 1.08 | 1.22 |
| B.G.2 | Verdeelde veranderlijke belasting | 1.35 | 0.54 |

AFB. FU.C. MOMENTEN (MY) OMHULLENDE

Fundamenteel Belastingcombinaties

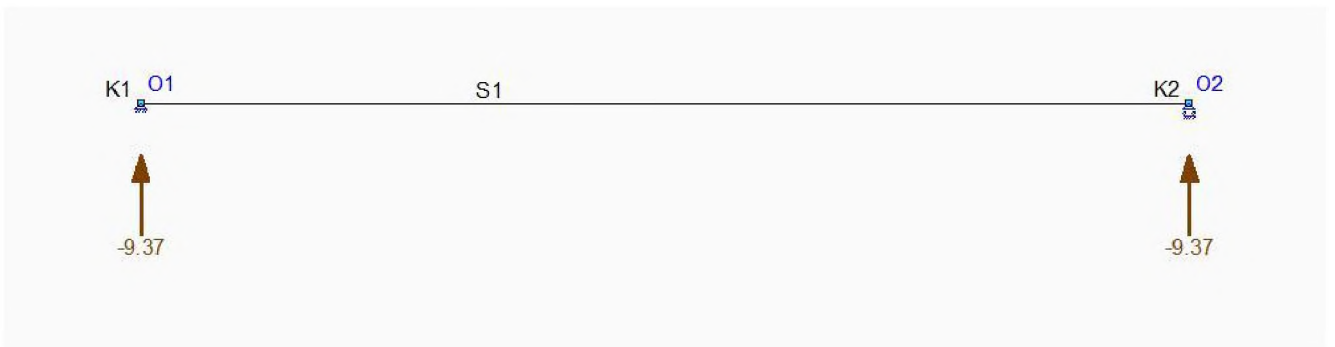


FU.C. EXTREME STAAFKRACHTEN

| Staat | B.C. | Mb | Mmax | xMmax | Me | x-M0 | x-M0 T/D | Nmax | Vb | Vmax | Ve |
|-------|--------|------------|-------------|----------|------------|----------|------------|-----------|-------------|-------------|--------------|
| S1 | Fu.C.2 | 0.00 | 3.30 | 0.705 | 0.00 | 0.000 | 0.000 - | 0.00 | 9.37 | 9.37 | -9.37 |
| - | - | kNm | kNm | m | kNm | m | m - | kN | kN | kN | kN |

AFB. FU.C. OPLEGREACTIES OMHULLENDE

Fundamenteel Belastingcombinaties



FU.C. EXTREME OPLEGREACTIES

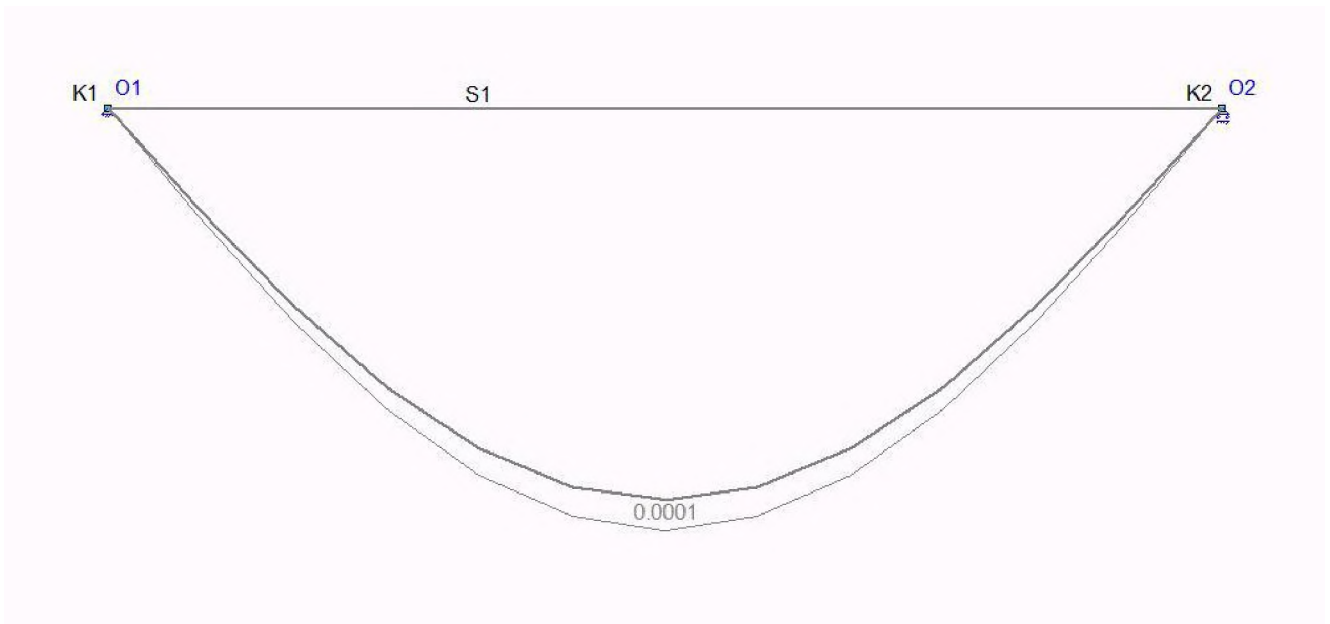
| Opleggin | Knoop | B.C. | Xmax | Z | My B.C. | X | Zmax | My B.C. | X | Z | Mymax | |
|--------------------------------|-------|------|-----------|-----------|------------|------|--------------|-----------|------------|-----------|-----------|------------|
| O1 | K1 | | | | Fu.C.2 | 0.00 | -9.37 | 0.00 | | | | |
| O2 | K2 | | | | Fu.C.2 | 0.00 | -9.37 | 0.00 | | | | |
| Globale extreme waarden | | | | | | | | | | | | |
| O2 | K2 | | | | Fu.C.2 | 0.00 | -9.37 | 0.00 | | | | |
| - | - | - | kN | kN | kNm | - | kN | kN | kNm | kN | kN | kNm |

KARAKTERISTIEK BELASTINGSCOMBINATIES (TABEL)

| B.G. | Omschrijving | Ka.C. | Ka.C.1 | Ka.C.2 |
|-------|-----------------------------------|--------------|--------|--------|
| B.G.1 | Permanent | (w1) 1.00 | 1.00 | 1.00 |
| B.G.2 | Verdeelde veranderlijke belasting | - | 0.40 | 1.00 |

AFB. KA.C. VERPLAATSINGEN OMHULLENDE

Karakteristiek Belastingcombinaties



B.G. DOORBUIGINGEN

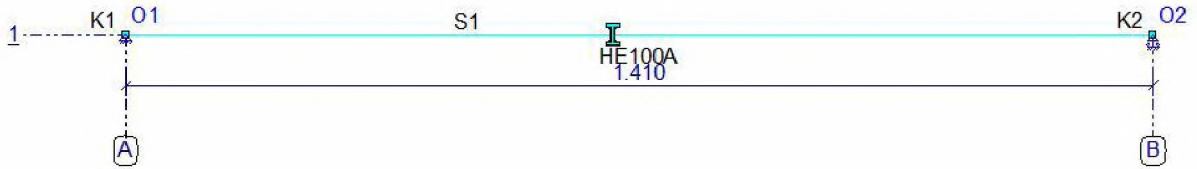
| Staaf | B.G. | Knoop Begin | | | Z'afst | Staaf | | | Knoop Eind | |
|-------|-------|-------------|-------|-------|--------|----------------|--------|-------|------------|--|
| | | X | | | | Z' Z' glb dist | Z' glb | X | | |
| S1 | B.G.1 | 0,000 | 0,000 | 0,705 | 0,0001 | 0,705 | 0,0001 | 0,000 | 0,000 | |
| | B.G.2 | 0,000 | 0,000 | 0,705 | 0,0000 | 0,705 | 0,0000 | 0,000 | 0,000 | |
| - | - | m | m | m | m | m | m | m | m | |

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

| Veld | Toetsing | Combinatie | Artikel | UC max |
|---------------------|----------------------|------------|-------------------------------|--------|
| C1-V1 (0.000-1.410) | Doorsnede | Fu.C.2 | NEN-EN1993-1-1(6.17) | 0,05 |
| C1-V1 (0.000-1.410) | Kiptoetsing | Fu.C.2 | NEN-EN1993-1-1(6.54) | 0,00 |
| C1-V1 (0.000-1.410) | Doorbuigingstoetsing | Qu.C.1 | NEN-EN NEN-EN1990/NB A1.4.2 | 0,02 |

3.5 Ligger 3 (alternatief)

AFB. GEOMETRIE 1



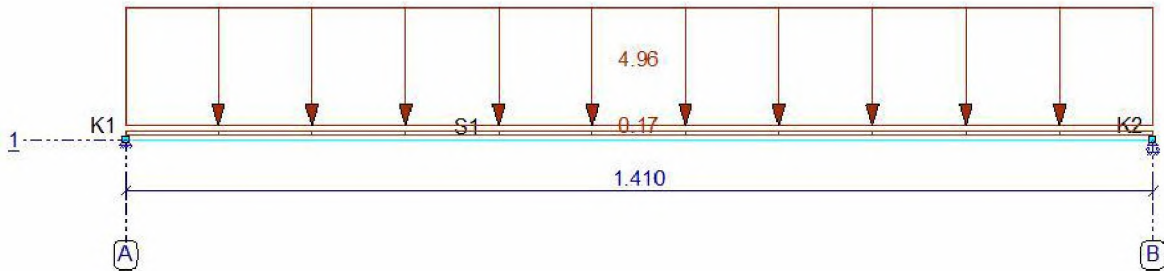
STAVEN

| Staf | Knoop B | Knoop E | X-B | Z-B | X-E | Z-E | Lengte | Profiel | Positie |
|------|---------|---------|-------|-------|-------|-------|--------|---------|------------------|
| S1 | K1 | K2 | 0,000 | 0,000 | 1,410 | 0,000 | 1,410 | P1 | 0,000 - L(1,410) |
| - | - | - | m | m | m | m | m | - | - |

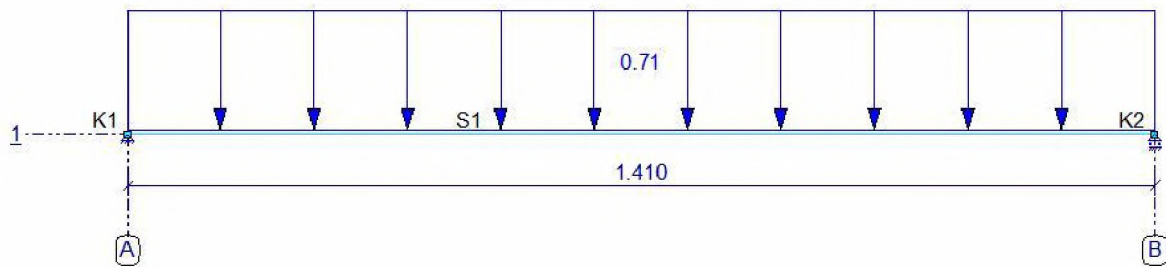
OPLEGGINGEN

| Oplegging | Object | Positie | X | Z | Yr | HoekYr |
|-----------|--------|---------|------|------|---------|--------|
| O1 | K1 | 0,000 | Vast | Vast | Vrij | 0 |
| O2 | K2 | 0,000 | Vrij | Vast | Vrij | 0 |
| - | - | m | kN/m | kN/m | kNm/rad | ° |

AFB. LASTEN B.G.1 PERMANENT



AFB. LASTEN B.G.2 VERDEELDE VERANDERLIJKE BELASTING



BELASTINGSGEVALLEN

| Type | Beginwaarde | Eindwaarde | Beginafstand | Eindafstand | Richting Staaf of knoop |
|---|--------------|--------------|-------------------|-------------|-------------------------|
| B.G.1: Permanent | | | | | |
| Type | Beginwaarde | Eindwaarde | Beginafstand | Eindafstand | Richting Staaf of knoop |
| B.G.1: Permanent | | | | | |
| qG | 0,17 (1.00x) | 0,17 (1.00x) | 0,000 | 1,410(L) | Z' S1 |
| q | 4,96 | 4,96 | 0,000 | 1,410(L) | Z' S1 |
| Som lasten | X: | 0,00 | kN Z: 7,23 | kN | |
| B.G.2: Verdeelde veranderlijke belasting | | | | | |
| q | 0,71 | 0,71 | 0,000 | 1,410(L) | Z' S1 |
| Som lasten | X: | 0,00 | kN Z: 1,00 | kN | |
| - | - | - | m | m | - - |

B.G. OPLEGREACTIES

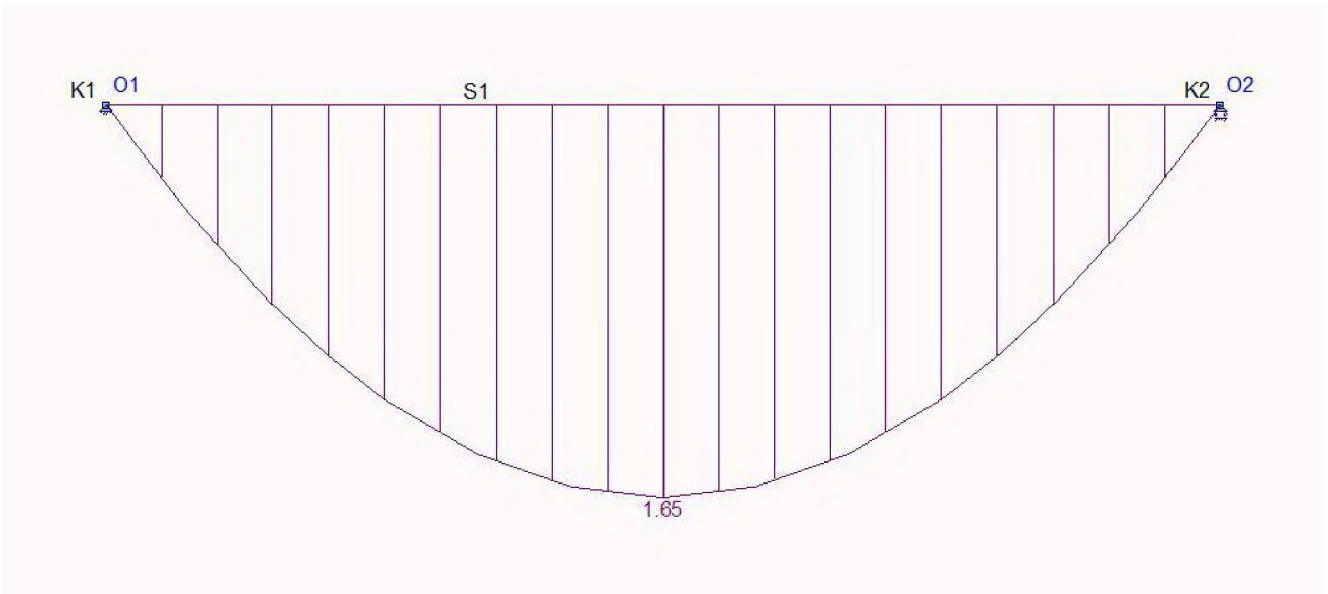
| B.C. | Oplegging | Knoop | X | Z | My |
|-------|---------------------|-------|-------------|--------------|------------|
| B.G.1 | O1 | K1 | 0.00 | -3.61 | 0.00 |
| | O2 | K2 | 0.00 | -3.61 | 0.00 |
| | Som Reacties | | 0.00 | -7.23 | |
| | Som Lasten | | 0.00 | 7.23 | |
| B.G.2 | O1 | K1 | 0.00 | -0.50 | 0.00 |
| | O2 | K2 | 0.00 | -0.50 | 0.00 |
| | Som Reacties | | 0.00 | -1.00 | |
| | Som Lasten | | 0.00 | 1.00 | |
| - | - | - | kN | kN | kNm |

FUNDAMENTEEL BELASTINGSCOMBINATIES (TABEL)

| B.G. | Omschrijving | Fu.C.1 | Fu.C.2 |
|-------|-----------------------------------|--------|--------|
| B.G.1 | Permanent | 1.08 | 1.22 |
| B.G.2 | Verdeelde veranderlijke belasting | 1.35 | 0.54 |

AFB. FU.C. MOMENTEN (MY) OMHULLENDE

Fundamenteel Belastingcombinaties

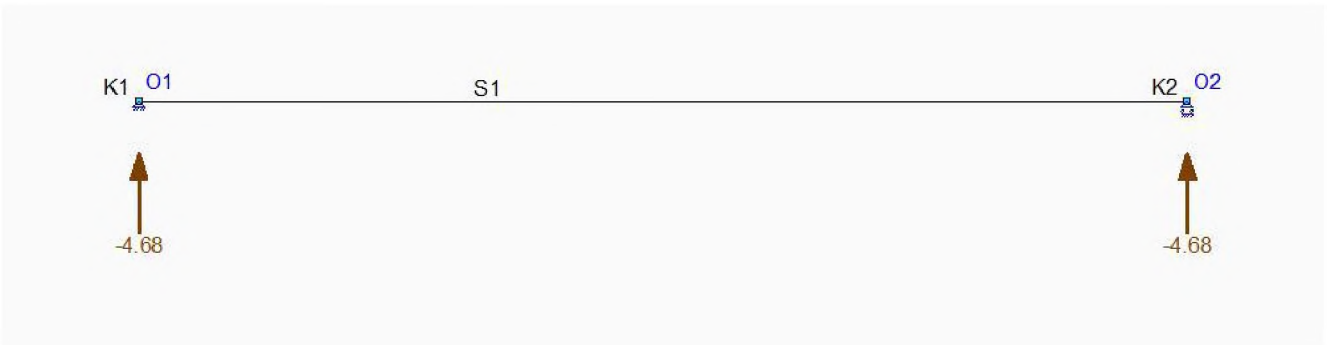


FU.C. EXTREME STAAFKRACHTEN

| Staat | B.C. | Mb | Mmax | xMmax | Me | x-M0 | x-M0 T/D | Nmax | Vb | Vmax | Ve |
|-------|--------|------|------|-------|------|-------|----------|------|------|------|-------|
| S1 | Fu.C.2 | 0.00 | 1.65 | 0.705 | 0.00 | 0.000 | 0.000 - | 0.00 | 4.68 | 4.68 | -4.68 |
| - | - | kNm | kNm | m | kNm | m | m - | kN | kN | kN | kN |

AFB. FU.C. OPLEGREACTIES OMHULLENDE

Fundamenteel Belastingscombinaties



FU.C. EXTREME OPLEGREACTIES

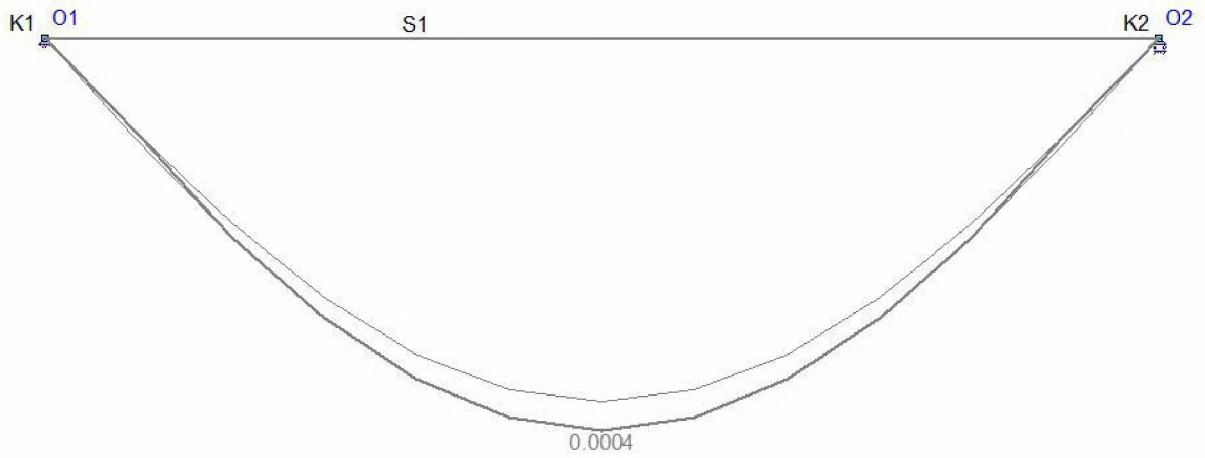
| Opleggin | Knoop | B.C. | Xmax | Z | My B.C. | X | Zmax | My B.C. | X | Z | Mymax | |
|--------------------------------|-------|------|------|----|---------|------|-------|---------|-----|----|-------|-----|
| O1 | K1 | | | | Fu.C.2 | 0.00 | -4.68 | 0.00 | | | | |
| O2 | K2 | | | | Fu.C.2 | 0.00 | -4.68 | 0.00 | | | | |
| Globale extreme waarden | | | | | | | | | | | | |
| O2 | K2 | | | | Fu.C.2 | 0.00 | -4.68 | 0.00 | | | | |
| - | - | - | kN | kN | kNm | - | kN | kN | kNm | kN | kN | kNm |

KARAKTERISTIEK BELASTINGSCOMBINATIES (TABEL)

| B.G. | Omschrijving | Ka.C. | Ka.C.1 | Ka.C.2 |
|-------|-----------------------------------|-------|--------|--------|
| B.G.1 | Permanent | (w1) | 1.00 | 1.00 |
| B.G.2 | Verdeelde veranderlijke belasting | - | 0.40 | 1.00 |

AFB. KA.C. VERPLAATSINGEN OMHULLENDE

Karakteristiek Belastingscombinaties

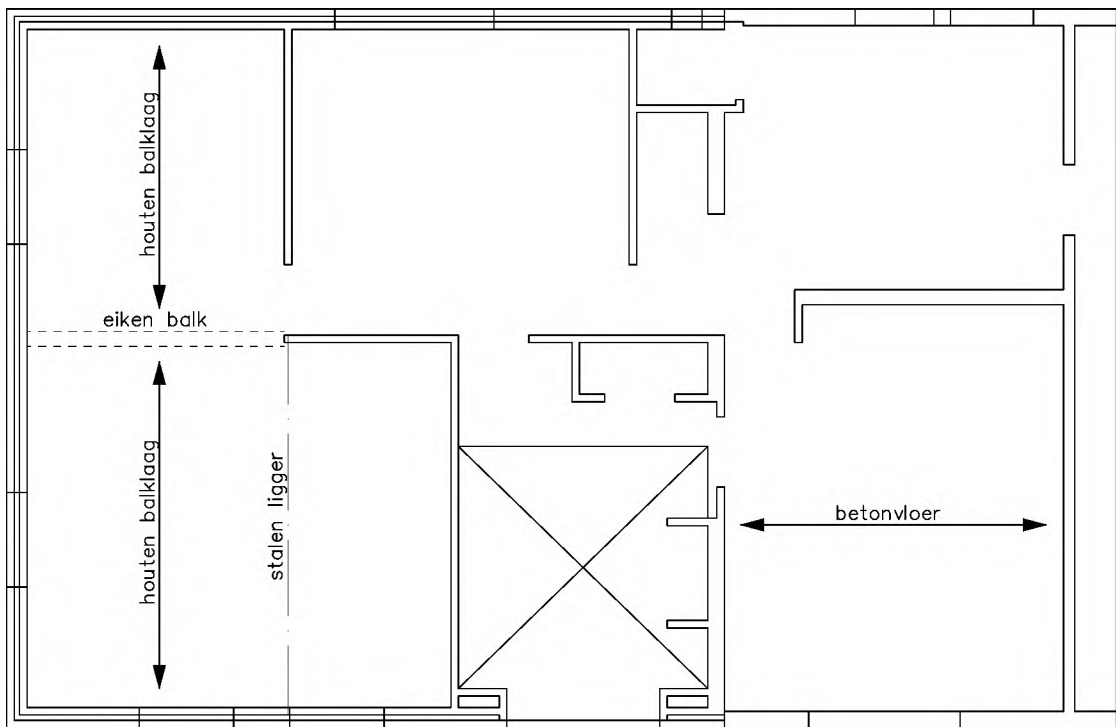


B.G. DOORBUIGINGEN

| Staaf | B.G. | Knoop Begin | | | Z'afst | Staaf | | | Knoop Eind | |
|-------|-------|-------------|-------|-------|--------|----------------|--------|-------|------------|--|
| | | X | | | | Z' Z' glb dist | Z' glb | X | | |
| S1 | B.G.1 | 0,000 | 0,000 | 0,705 | 0,0004 | 0,705 | 0,0004 | 0,000 | 0,000 | |
| | B.G.2 | 0,000 | 0,000 | 0,705 | 0,0000 | 0,705 | 0,0000 | 0,000 | 0,000 | |
| - | - | m | m | m | m | m | m | m | m | |

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

| Veld | Toetsing | Combinatie | Artikel | UC max |
|---------------------|----------------------|------------|-------------------------------|--------|
| C1-V1 (0.000-1.410) | Doorsnede | Fu.C.2 | NEN-EN1993-1-1(6.12) | 0,08 |
| C1-V1 (0.000-1.410) | Kiptoetsing | Fu.C.2 | NEN-EN1993-1-1(6.54) | 0,09 |
| C1-V1 (0.000-1.410) | Doorbuigingstoetsing | Qu.C.1 | NEN-EN NEN-EN1990/NB A1.4.2 | 0,07 |



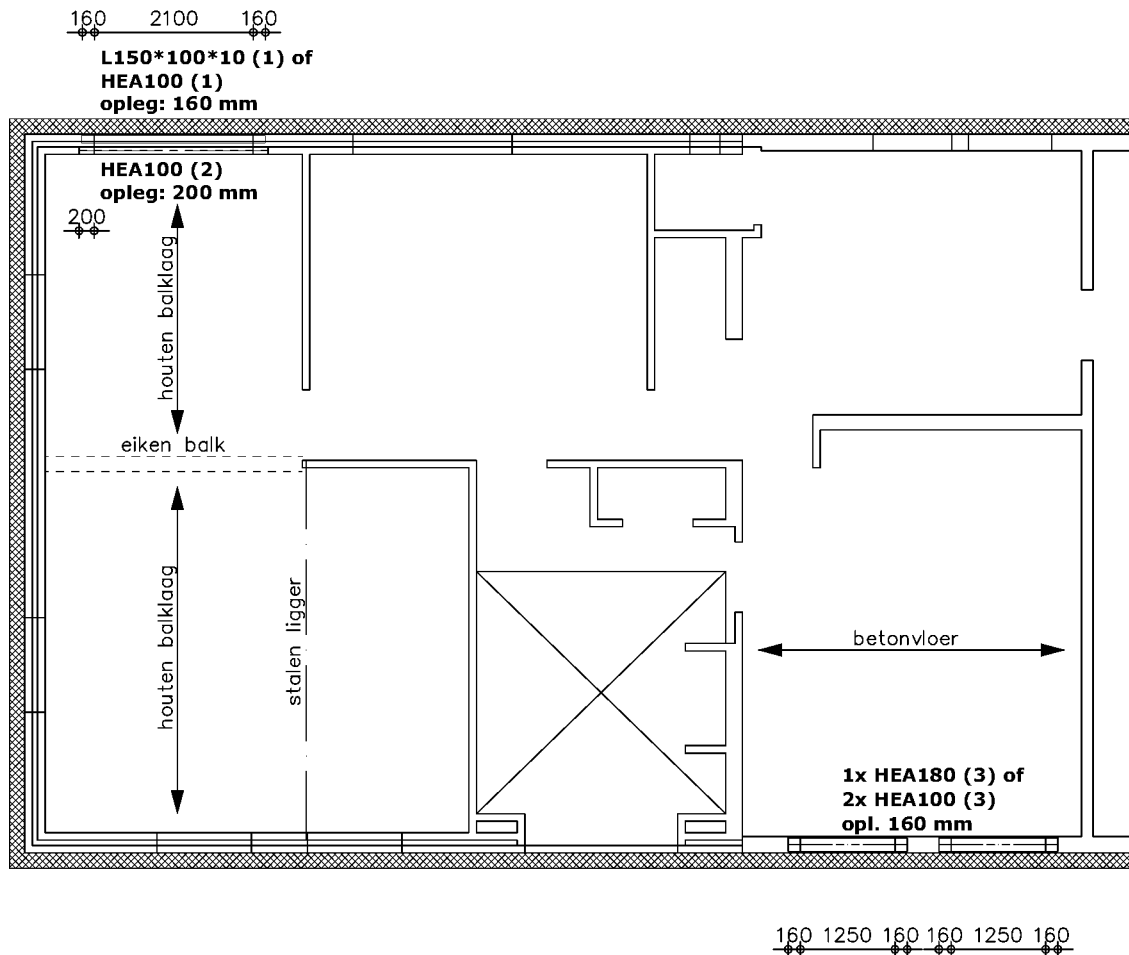
1e Verdiepingsvloer
bestand

Algemeen

- maten in millimeters en in het werk controleren.
- binnenmetselwerk kalkzandsteen kwaliteit CS12, morteldruksterkte 10 N/mm² of
- binnenmetselwerk poriso stuc (genormaliseerde druksterkte 15 N/mm²), morteldruksterkte 10 N/mm²
- binnenmetselwerk wanden met elkaar in "verband" te metselen, t.b.v. stabiliteit
- als onderlegging is gebruikt de digitale architecten tekening
- overzicht is mogelijk niet 1:1 getekend
- alvorens wordt begonnen met de sloopwerkzaamheden, bestaande constructies in het werk te controleren en bij afwijkingen ervan constructeur op de hoogte brengen
- t.p.v. oplegging stalen balken, zorgen voor "gezond" metselwerk
- stalen balken (bij verbouwingen) op spanning aanbrengen.

Renvooi staalconstructie (tenzij anders aangegeven)

- staalkwaliteit: walsprofielen S235JRG2, kokers S275JOH.
- oppervlaktebehandeling volgens bestek.
- bouten en moeren: kwaliteit 8.8, gerold draad.
- ankers : kwaliteit 4.6
- boor- en/of chemische ankers aanbrengen volgens voorschrift fabrikant.
- laswerk volgens NEN 2063:1988/C1:2001 lasdikte min. 5 mm, tenzij anders aangegeven.



1e Verdiepingsvloer nieuw